



111 Town Square Place, Suite 601
Jersey City, NJ 07310
www.r-tele.com

R&R Managed Telecom Services

Switch Partition User Manual

Rel. 3.19

This Manual provides operation reference for R&R Switch Management Interface operation.

This Manual does not provide guidance for Call Troubleshooting and TDM trunk group provisioning. For this information please refer to respective guides.

Contents

General Service Description	4
1.1. Switch Management Interface	5
JAVA User Interface installation & update	5
User roles	5
Main screen	6
Left Pane of Main screen of the Interface	7
Switch default time zone and TimeZone function	8
Right pane of Main screen of the Interface	9
Minutes Graph	10
TG Usage Graph & Show TG Counters	10
Duration Histogram	11
1.2. PROVISIONING MEMBERS AND END-POINTS	12
Managing Switch Members	12
Creating a SwitchMember entity	13
Creating TrunkGroups	14
New Trunk Group order	14
1.3. ROUTING PROCEDURE	16
Automated routing with No-Loss Least Cost Routing (LCR) suggestion	17
Sequence options	19
Clicking on Rule cells will bring down Sequence selection choices.	19
No-Loss function defined	20
Copying LCR suggestion to production routing	20
Making Manual Changes to Automated Routing	20
Carrier Routing Label	20
Using Preview and Apply changes buttons	21
Limitations of Automated Routing procedure	21
Manual routing procedure	22
Creating a Routing Label container	23
Automatic Rerouting function defined	24
Creating an Outbound Element for Routing Label	25
Outbound Element type explained	26
Digit Manipulation Rule (outbound tech prefix)	26
Sequence number of Outbound Element	27
Creating an Incoming Routing rule	28
Longest Match Routing principle	30
Using Country "None" for routing	30
Choosing Element Type for Incoming Routing Rule	31
Populating Fields for Incoming Routing Rule	31
Submitting Incoming Routing Rule	31
Navigating through existing Incoming Routing Rules	32
Editing existing Incoming Routing Rules	32
Routing Examples	33
Grouping Clients for Routing. Routing Class defined.	33
Testing Routing setup	34
R&R Call Testing Facility	34
Manual testing using SIP phone via Registrar	36
Manually using static IP	37
A-number routing	38
Intra-EU routing and billing	39
1.4. MANAGING TRUNK GROUPS, SWITCHMEMBER TRAFFIC	40
Modifying Trunk Groups	40
Enabling/Disabling SwitchMembers	40
1.5. MANAGING DIALING CODE LISTS	42
Preloaded "Master" Country and Destinations list	42

Manage "Master List" Destinations.....	43
Managing Master Dialing Codes	44
Adding a Dialing Code to a "Master List" Destination.....	44
Bulk upload of Dialing codes to "Master Table".....	45
Editing/Deleting a Dialing Code to a Destination.....	46
Carrier-specific Dialing Codes and Destinations	46
1.6. MANAGING BILLING and RATES	48
Managing Carrier Rates	48
Uploading rates using Rate Reformat tool	48
Checking existing rates	50
Looking up historical rates to a single Destination	51
Looking up Carrier Rates in LCR style	52
Exporting LCR table (Target rates).....	52
Managing Client Rates	53
Uploading Client Rates	55
Running Billing Reports	57
Financial Status Report	59
Analyzing QOS and Profit Index.....	61
Exporting Financial Report data	62
Export rated CDRs	62
1.7. TRANSACTIONS ACCOUNTING	64
Managing transactions accounting.....	64
Financial & fraud prevention alerts	66
1.8. CDR MENU AND TROUBLESHOOTING	68
CDR Search Filters.....	69
Looking up CDR values.....	70
Description of retrieved data in CDR Search menu	71
CDR Search → In/Out Summary	72
Summary by Call Type report.....	72
Zero completion by Destination report.....	73
Calls with long duration report.....	73
Export CDRs.....	74
1.9. TRAFFIC REPORT MENUS	75
1.10. ALARM INTERFACE	76
Types of available Alarms	76

General Service Description

R&R service is positioned as a “turn-key” voice traffic management system that includes all hardware and software needed to successfully operate the business;

- Next-Gen switching platform based on Sonus switches and SBCs
 - o Support of all TDM and VoIP protocols
 - o IP-IP, TDM-IP, IP-TDM, TDM-TDM switching
 - o #1 deployed next-gen switch with highest standards of reliability
- Fully managed network infrastructure in major traffic hubs around the globe
 - o Redundant 10G BGP uplinks to top Internet providers
 - o Several security layers to mitigate SIP and DDOS attacks
 - o Access to Internet Exchanged hubs and TDM Meet Me Rooms
- Traffic management system
 - o Real-time call routing including lossless routing based on LCR suggestion
 - o A-number routing
 - o Group routing (wholesale, Retail, Premium) with unlimited number of groups
- Billing system
 - o Support for A-number based billing
 - o Billing system that accounts for TimeOfDay/DayOfWeek rates
 - o Billing reports for Clients and Suppliers
 - o Spreadsheet format and/or automatic invoice generation
- Near real-time traffic reporting
 - o Continuously updating call statistics and preparing traffic reports
 - o Traffic quality reporting compliant with ITU E.411 and E.425 standards
 - o Powerful report filtering and visual data representation
- Carrier Rate management
 - o Individual dialing code tables per each supplier
 - o One-click reformatting of received rate offers
 - o Carrier rate upload function with analysis and error checking
- Traffic alerts
 - o Auto-generated alerts based on quality or financial usage thresholds
 - o Alerts defined broadly or per particular route
- Troubleshooting
 - o Access to TDM and VoIP call traces
 - o Detailed CDR showing disconnect reasons and disconnect initiators

1.1. Switch Management Interface

Switch Management Interface allows Users to have a full control over the switch operations. Users may manage switch operations 24/7 with changes effective immediately. There are 2 version of SMI

- JAVA GUI
 - o A locally installed application that runs on any x86 CPU
- Web GUI
 - o HTML5 based application supported in any modern browser

This manual includes screenshots from JAVA GUI but functionality of Web GUI is similar and this manual can be used as a guide for both. For access information please contact your R&R sales rep.

JAVA User Interface installation & update

JAVA GUI should be installed on a Windows PC, Linux or MAC computers (further "PC") with JAVA Run-time engine software. There are no strict minimum requirements for a PC, however we recommend using computer with 4GB of RAM as JAVA uses RAM extensively.

Link to install R&R Switch Interface application to PC or MAC is provided at the time of service request. You should receive 2 emails from R&R Customer Support specialist.

At the time of installation application will create icons on your Desktop and in Start Menu.

SMI uses Java 1.8.x or higher version and if you are having problems installing GUI please to go to Add/ Remove programs to uninstall all Java files and then re- install newer version from www.java.com

JAVA application will be uploaded/updated automatically when User starts SMI for a first time. If you experience problems with restarting the interface please opening JAVA icon in Control Panel (Windows) and delete temporary files.

Reloading of SMI application will check for the latest updates. Updates are automatically installed.

User roles

Each managed system can be simultaneously accessed by multiple Users. Users are defined by R&R tech support based on written requests. We encourage you to provide each responsible employee with individual login information for security reasons.

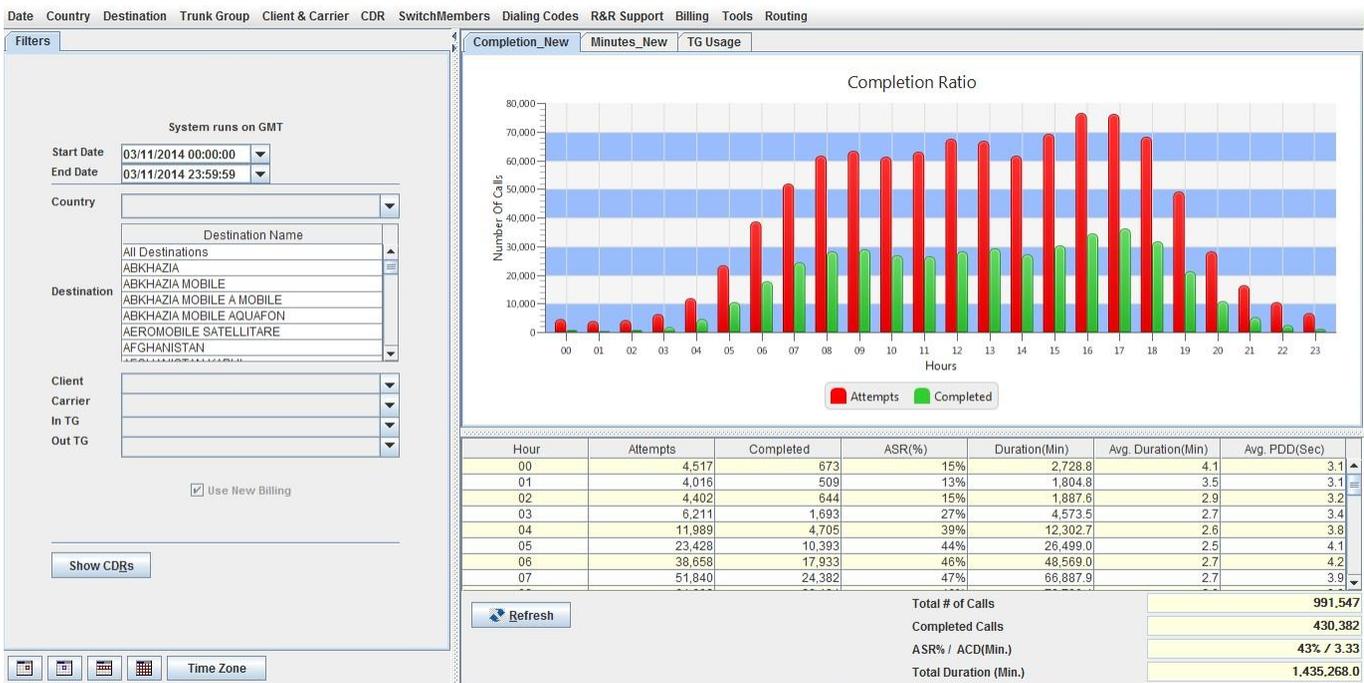
All User actions are logged and will be made accessible for a review upon request.

User roles:

- ADMIN – all menus are visible and editable, controls Account Manager’s access to data.
- ADMIN SPECTATOR – same as above but in read-only mode
- ENGINEER* – all menus except Billing are visible and editable.
- ENGINEER SPECTATOR – same as above but in read-only mode
- ACCOUNT MANAGER - all menus are visible and editable but viewable and editable information is limited to only Selected Clients as allowed by Admin
- ROUTING – full access, but can’t issue provisioning Orders
- ACCOUNTANT – restricted access to Routing and Tools menus.
- ANALYST – restricted access to Routing, Tools and Billing menus.

Main screen

Main Interface window automatically loads on application startup with filters set for all Client/Carrier for current date.



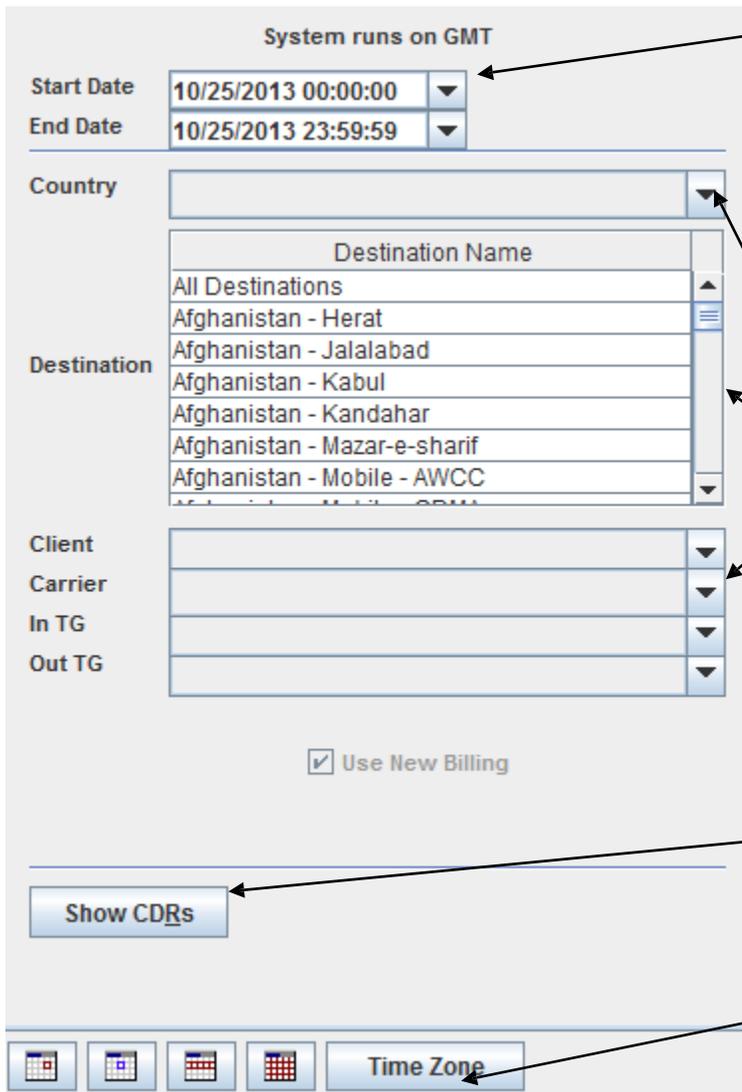
Main screen is vertically divided into two functional parts:

Left pane is a data filter menu. All reports and graphs are using Left pane Filters.

Right pane is a reporting screen showing hourly statistics for selected traffic, including ASR, ACD and PDD values. Right pane also has 2 graphs representing data in bar or line graph format.

Left Pane of Main screen of the Interface

Left pane allows user to filter data for graphical representation and over 50 traffic reports. Blank field means no filter applied. To display new data on the right pane press  button on the bottom of the right pane.



The screenshot shows the left pane of the interface with the following elements:

- System runs on GMT** (header)
- Start Date**: 10/25/2013 00:00:00 (dropdown)
- End Date**: 10/25/2013 23:59:59 (dropdown)
- Country**: (empty dropdown)
- Destination**: List of destinations including All Destinations, Afghanistan - Herat, Afghanistan - Jalalabad, Afghanistan - Kabul, Afghanistan - Kandahar, Afghanistan - Mazar-e-sharif, and Afghanistan - Mobile - AWCC.
- Client**: (empty dropdown)
- Carrier**: (empty dropdown)
- In TG**: (empty dropdown)
- Out TG**: (empty dropdown)
- Use New Billing
- Show CDRs** button
- Time Zone** button

Annotations:

- Date and Time Filter**: Choose a date from drop-down menu and adjust time. Default time zone is specified there.
- Additional Data Filters can be mixed in all possible ways**: Points to the Destination, Client, Carrier, In TG, and Out TG filters.
- Shortcut to CDR search using defined filter**: Points to the Show CDRs button.
- Shortcut buttons for Today, Yesterday, Whole week, Whole Month, and Time Zone conversion**: Points to the Time Zone button.

Switch default time zone and TimeZone function.

Call records are stored in default system time zone.

Default system time for USA New York switch is New York Time - EST (GMT -5) or EDT (GMT-4).

Default system time for Frankfurt switch is GMT.

Default system time for Tokyo switch is JST.

 button brings up a world time-zone menu that simplifies adjustment of Billing Period for different time zones.

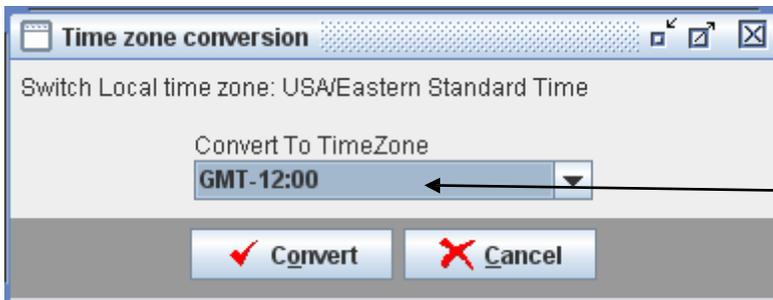
If User wants to create a report for timing other than default it can be done by changing time fields in

Date Filter manually or using  function to have system automatically recalculate preselected Time interval to a required time zone.

For automatic conversion:

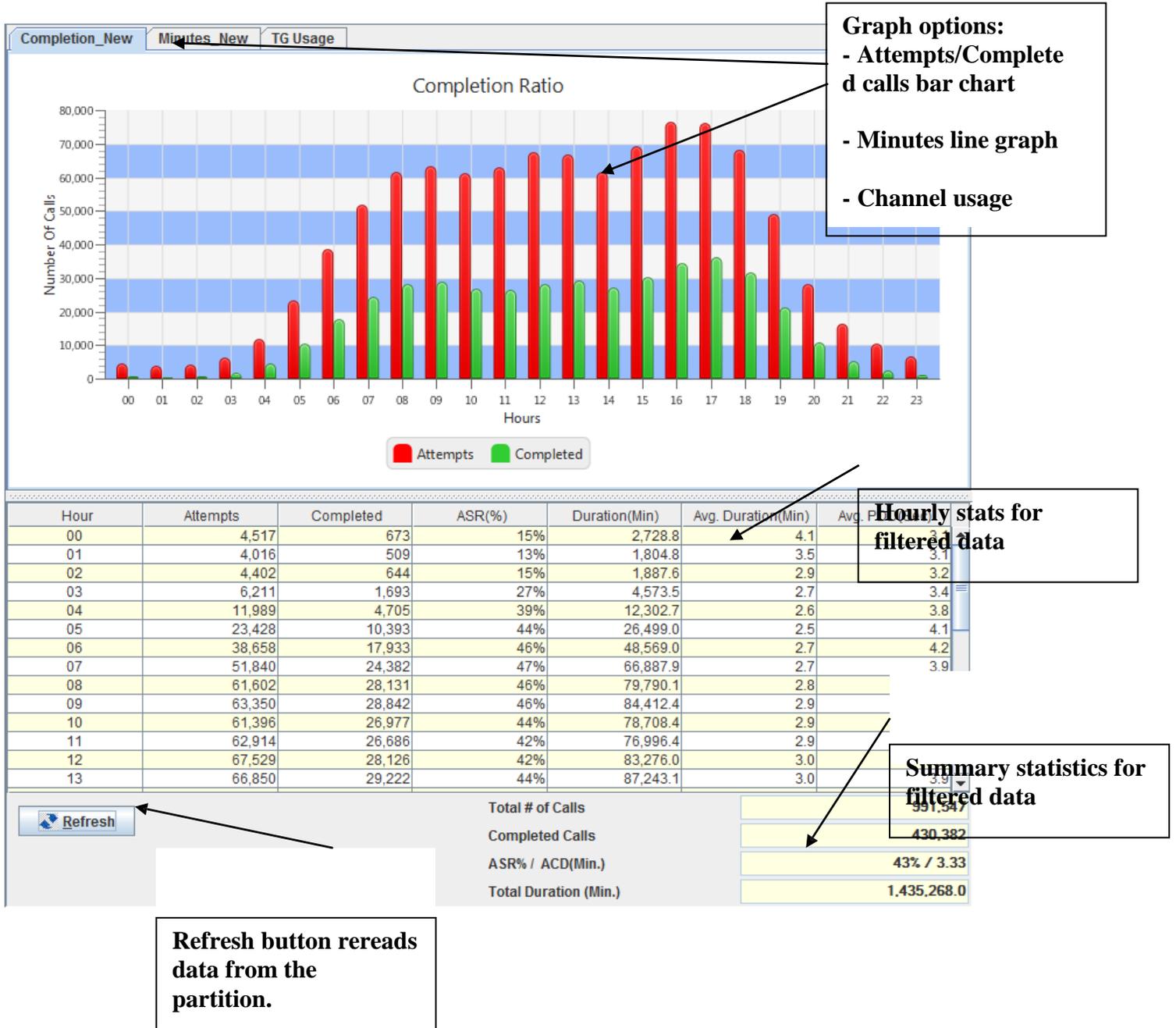
First select Dates and Time in Date Filter as required (disregard time zone)

Then click TimeZone button and select desired Time zone and choose Convert.



Pick a desired time-zone and convert preselected time to selected Zone.

Right pane of Main screen of the Interface



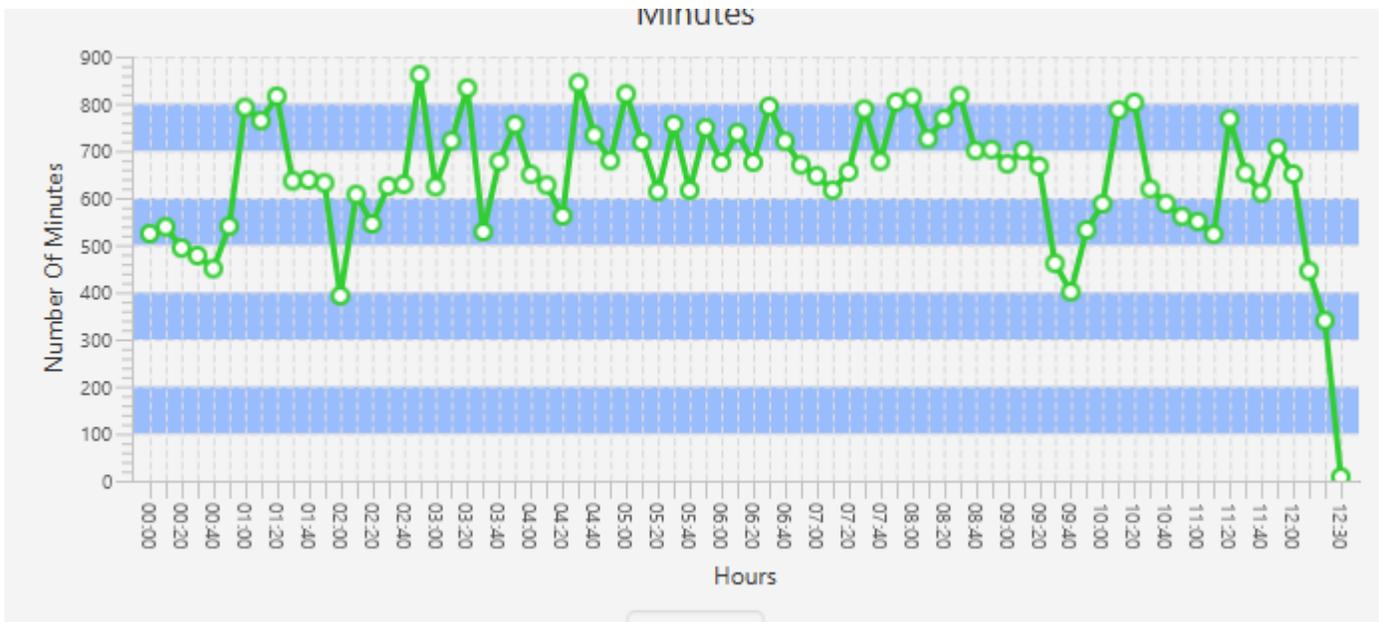
Right Pane provides statistical information for traffic filters set on the Left Pane. Please click refresh after changing filters to update Right Pane info.

Depending on time interval selected in Filter Panel data will be displayed in hourly statistics (less than 48 hours selected) or daily statistics (between 48 hours and 31 day).

Minutes Graph

Minutes graph shows a line graph of minutes per period based on Filter panel selection

Discrepancy between Attempt and Minutes graph can be used for troubleshooting.



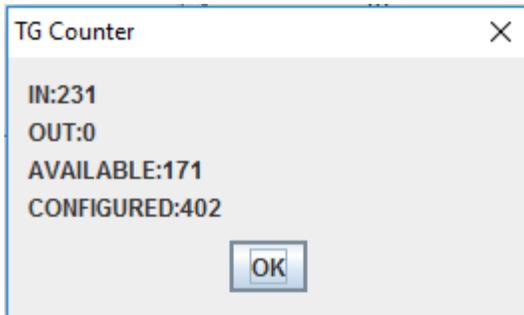
TG Usage Graph & Show TG Counters

When a TG selected on the Filter panel a TG Usage tab becomes activated and will show historical usage for the selected trunk. TG usage data is takes in 15 minutes intervals and is stored for 14 days.

Show TG Counters button on the left will show current status of the selected Trunk.

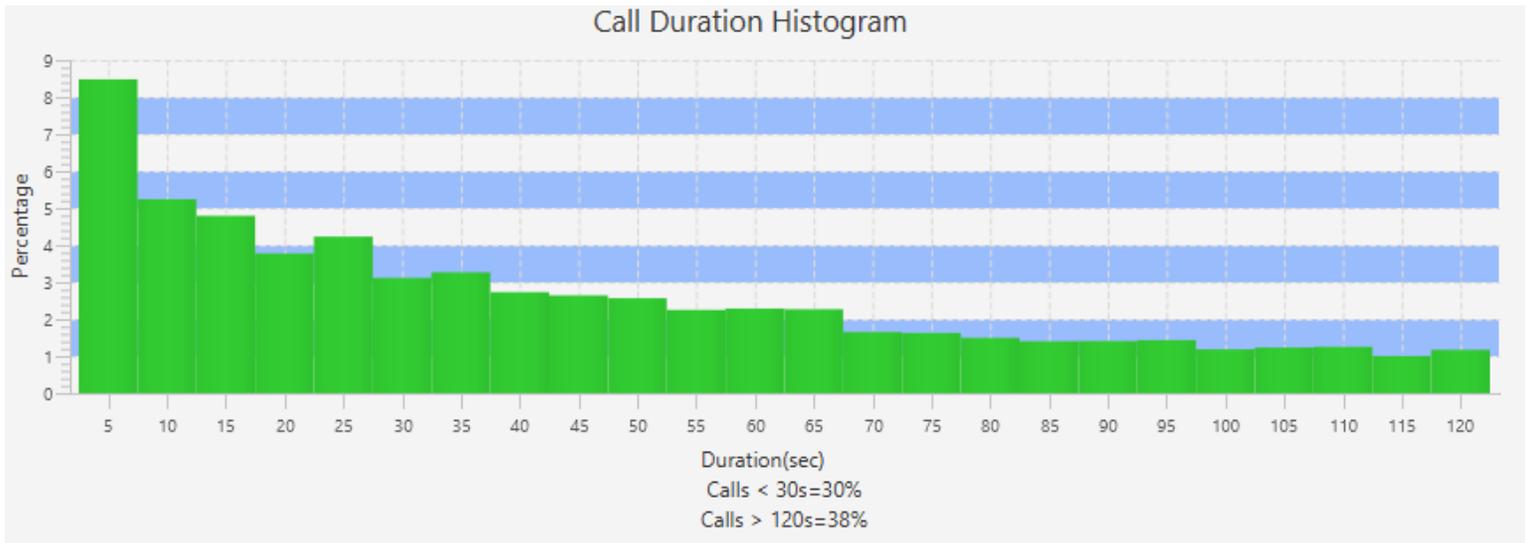
For SIP trunk it shows current number of active calls in either direction along with allowed limit.

For TDM trunk it shows current status along with number of configured and available CICs.



Duration Histogram

Duration Histogram chart shows percentage of calls with certain call duration. This graph is useful in troubleshooting low ACD. Besides histogram screen also shows percentage of calls that are shorter than 30sec and longer than 2 minutes.



1.2. PROVISIONING MEMBERS AND END-POINTS

Managing Switch Members

SwitchMember is a main entity in R&R system that has own pricing information, carrier code list, and routing rules. An example of a SwitchMember will be “TATA” representing a partner that can exchange voice traffic with you in either direction.

Note that each interconnected party may be represented by several SwitchMembers. Expanding on example above another SwitchMember “TATA-CLI” can be defined in the system. Sell rates, buy rates, routing tables will be different for this Member.

Similarly a “TATA-EUoriginated” SwitchMember can be created that will have calls from defined EU region automatically assigned and that require separate routing/billing.

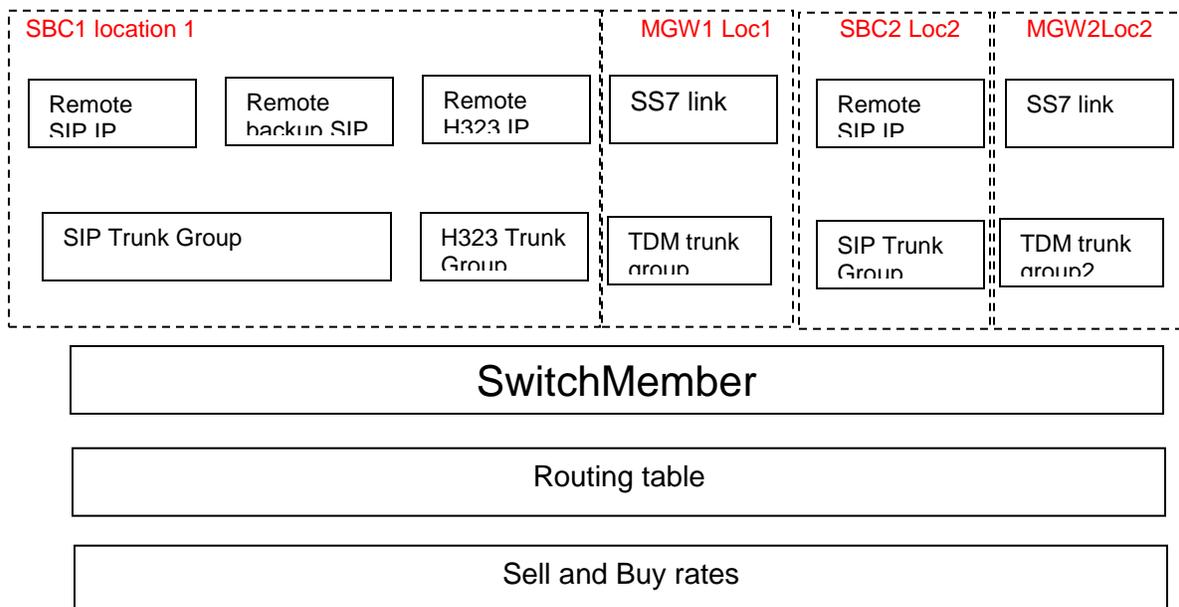
Each SwitchMember can have one or multiple TrunkGroups, including TrunkGroups using different protocols (TDM, SIP, H.323). Rules how to prioritize trunks and remote IPs will be discussed in Routing Section.

SwitchMember entity is not tied to a one network device. Customer using geo-redundant service may have a SwitchMember defined on multiple devices and all stats will be gathered and shown together.

Incoming routing rules are defined for SwitchMember entity and will be applied to all TrunkGroups that belong to it.

In case Client A is willing to send you traffic that must be differentiated either for Routing or Billing reasons, i.e. Wholesale and Premium, you will need to define two separate SwitchMembers and create two inbound TrunkGroups.

System hierarchy



Creating a SwitchMember entity

To create a new switch member choose *SwitchMember* menu on your Main Screen then click



to add your Client / Carrier name.

Member Name: Provide Member Name that will be visible in routing and billing reports.

Abbreviation: 3 letter abbreviation that will ID this SwitchMember in the system

Hide Rates: Option to remove rates from LCR analysis and display

Currency: Billing currency for this SwitchMember

Description: Member info, responsible employees for the account and other information

Email section defines rules for email notifications. Email fields are prepopulated from your System configuration file but can be changed manually

SwitchMember screen also offers setup for Auto-Billing operations. Auto-Billing will generate invoices according to your billing terms arrangement and automatically send emails to provided email addresses.

Automatically created invoices will use your logo and banking information on the invoice header and

Partner's banking information in the body.

Carrier Auto Invoice will generate counter-invoice to simplify matching with bills received from your providers.

Negative Margin Alert will generate automated alert when traffic with negative margin is observed for this Member

Allow partial country offer allows Sell Rate offers that are omitting destinations in any given country. Such offers bear risk of running into negative margin while performing manual routing so need to be used with caution.

Surcharge Name and value are ways to include usage based increment to the invoice such as VAT or other fee.

Creating TrunkGroups

VoIP Trunk Groups are created via User Interface. TDM Trunk Groups must be ordered via R&R sales representative.

To create new Trunk Group or review existing configuration please go to SwitchMembers->Orders

Selecting Switch Member and clicking Refresh will display existing TG configuration, including Local IP address, protocol, TG name, TG capacity limitation and other information.

Clicking "Show Order History" will display all previous orders issued for this SwitchMember as well as status of those orders.

The screenshot shows a web application window titled "Order Form". At the top, there is a "Trunk Groups" section with a dropdown menu for "Switch Member" set to "Andrey-Test2" and a "Refresh" button. Below this is a table with columns: TG Name, Protocol, Inbound Pr..., Local IP, Capacity, Direction, CPS in/out, Max PDD, Reroute aft..., Codec Profile, Inbound IP/..., Outbound IP, Port, and OutDMRul... The table contains four rows of data for different trunk groups.

Below the table are four buttons: "New Trunk Group", "Edit Trunk Group", "Show Order History", and "Delete Trunk Group".

At the bottom, there is an "Orders" section with a table. The columns include: Order Nu..., Protocol, Direction, CPS in/out, Max PDD, Reroute a..., Codec Profile, Local Sig..., IPCallLimit, JobStatus, JobStart, JobEnd, OrderType, TGName, Inbound P..., and OutDMRul... The table lists several orders with their respective details.

New Trunk Group order

Populating New Trunk Group order is self-explanatory. To populate multiple IP addresses (as shown in example below) populate IP address or IP range first and click "Add IP" to add it to the table.

Note that each TG may have multiple IPs assigned to it. In case of outbound TG multiple IPs are used in RoundRobin sequence with no fallback to next IP address for a single call attempt.

When order is ready click Save to schedule order for provisioning. It takes about 5 minutes to complete the order and provision it in all entities such as Billing server, Firewall, Routing engine.

Note: You need to restart User Interface to have new SwitchMember displayed in Routing Window.

Creating first Outbound or Bi-Directional TG for Member will also trigger creation of Carrier Routing Label named XXX0, where XXX is a 3 letter Member ID. This Routing Label will be used by LCR automated routing.

IMPORTANT: Do not change Carrier Routing Label in a way that would allow termination to other Carriers. This will disrupt LCR logic and may lead to financial losses.

For VoIP Trunk Groups the following attributes are manageable via User Interface.

- Create VoIP trunk group
- Manage IP addresses per TG
- Manage outbound port
- Limit number of concurrent calls per TG
- Manage in/out tech prefix
- Block/Unblock Trunk Group

Advanced Settings button allows configuration of trunk group codec/transcoding parameters, calls per second limits, limits for PDD and call hunting strategy.

1.3. ROUTING PROCEDURE

Prerequisites:

- Defined Switch Member
- Provisioned Trunk Group

Routing procedure specifies rules for directing traffic from Client to Carrier. Without present routing rule Switch will not route traffic. User has to define allowance rules in order to pass traffic.

Understanding Call Flow within the Switch

I. Inbound SIP/H.323 traffic is verified for originating IP address, destination IP address, destination IP port, protocol and technical prefix. If all parameters match provisioned parameters traffic reaches your System and call attempts will be recorded. Calls that don't match these criteria will be rejected by firewall and no reply sent out to the originator.

II. Switch strips off inbound tech prefix and presents number for billing and reporting purposes in E.164 format: Country Code – City Code – Number.

III. Switch looks up whether there's a Routing Rule for every called number for originating SwitchMember. If no rule exists Switch will drop the call with INTERNAL error code 150 – NO PSX ROUTES and will record outbound carrier as UNKNOWN, Outbound Trunk Group UNKNOWN.

IV. If Routing Rule exists, call will be directed to a specified Routing Label. Routing Label is a virtual container that holds defined Termination points and their selection priority.

V. There's no limit on number of Routing Labels or Routing Rules in the switch.

Routing set up is done through Sonus Routing menu on the main screen.

User Interface offers two distinct method of creating routing rules:

- 1) Automated, with Least Cost Routing (LCR) suggestion
- 2) Manual routing

Please note that two routing modes coexist and act upon the same Routing Table. The only difference is the way routing and billing data is presented.

Automated routing with No-Loss Least Cost Routing (LCR) suggestion

This is a recommended routing method for all new Users. This method simplifies analysis of offered codes, compares Buy rates to Sell rates and analyzes Quality Flags imported with Carrier Rate updates.

Tools	Routing
	Routing Label (Ver 7.1)
	Incoming Routing (Ver 7.1)
	Incoming Routing LCR (Ver 7.1)
	Traffic Management (Ver 7.1)
	Assign Routing Class (Ver 7.1)

Prerequisites for LCR suggested routing:

Client and Carrier's SwitchMembers
Inbound and outbound trunks
Defined Client Rates
Defined Carrier Rates

How LCR table is created

R&R uses the most comprehensive price analysis for creating an LCR suggestion. Using method described below all offered codes are analyzed and all cost saving opportunities are captured.

1. System looks up all currently offered Dialing codes from all Carriers that are
 - a. Have Quality Flag > 0
 - b. Not forced to be hidden in SwitchMember menu
2. A table of unique dialing codes is created. If any code was offered at least once – that code will be in this table.
3. System runs LCR simulation for each code over each Carrier to obtain Buy rate.
4. System sorts offers using formula that prioritizes higher QOS, lower cost and checks for CLI flag requirements.
5. Final table is presented in Suggestion part of the LCR Routing screen

Routing LCR screen:

Incoming Routing LCR

Client: COC-TRA09 Routing Class: [dropdown]

Destination Country: Lithuania (+370) [Display Routing Table] Present Routing Table

Destination: [dropdown] Suggested LCR

Code: [input]

#	Status	Destination Name	Sell Dialing...	Subcodes	Sell price	Time Profile	Carrier1_price	Carrier2_price	Carrier3_price	Rule	Copy LCR	Carrier1_pri...	Carrier2_pri...	Carrier3_pri...	Rule
		Lithuania	370		0.029	ALL				seq	←---	NO-ROUTE			seq
				3703	0.029	ALL				seq	←---	NO-ROUTE			seq
				3704	0.029	ALL				seq	←---	SOT \$0.02...			seq
				3705	0.029	ALL				seq	←---	SOT \$0.02...			seq
		Lithuania Vilnius	37052		0.029	ALL				seq	←---	SOT \$0.02...			seq
		Lithuania Cell	3706		0.15	ALL				seq	←---	DXT \$0.032	AVL \$0.0569	VAG \$0.114	seq
		Lithuania Cell Tele2	37060		0.071	ALL				seq	←---	SOT \$0.05...	TMC \$0.06...	CML \$0.07	seq
		Lithuania Cell Omnitel	37061		0.105	ALL				seq	←---	DXT \$0.0837	LNC \$0.086	TMC \$0.094	seq
		Lithuania Cell Omnitel	37062		0.105	ALL				seq	←---	DXT \$0.0625	LNC \$0.086	TMC \$0.094	seq
0				370620	0.105	ALL				seq	←---	DXT \$0.0837	LNC \$0.086	TMC \$0.094	seq
1				370621	0.105	ALL				seq	←---	DXT \$0.0625	TMC \$0.08...	LNC \$0.086	seq
2				370622	0.105	ALL				seq	←---	DXT \$0.0625	TMC \$0.08...	LNC \$0.086	seq

Preview Apply Changes Cancel Export Routing Copy LCR all

Definition of columns:

- line number, used to identify errored lines.

Status – has values “blank”, Changed, Queued, Processed, Error.

Destination Name – Shows defined destinations name as provisioned in Master Dialing Code table.

Sell Dialing Code – dialing code associated with Destination Name

Subcodes – dialing codes that are offered by at least one active Carrier, but not defined in Master table.

Sell price – Price set for selected Client

Time Profile – reserved for future use

CarrierX, price – shows Carriers in positions 1-3 in routing for each code, and their respective pricing.

Rule – route selection rule applied to Routing Label.

Copy LCR – is a button to copy suggested LCR for code to production routing table.

CarrierX, price; Rule – shows suggested routing for this code based on maximum margin.

Present Routing Table

This table shows current routes for each dialing code. Even though system shows routes per each code, actual route for code may not exist, but system uses longest match principle to calculate routing rule that will apply.

Every cell in this table is clickable and User can change present selection or adjust prioritization rule.

Carrier1, price	Carrier2, price	Carrier3, price	Rule
Manual Routing			seq
SOT \$0.062	VAG \$0.043	CML \$0.044	seq
VAG \$0.066	TMC \$0.073	GTC \$0.079	seq
VAG \$0.033	TMC \$0.0695	GTC \$0.079	seq
VAG \$0.049	TMC \$0.0695	GTC \$0.079	seq
VAG \$0.066	TMC \$0.0695	GTC \$0.079	seq
VAG \$0.033	TMC \$0.0695	GTC \$0.079	seq
VAG \$0.066	TMC \$0.0695	GTC \$0.079	seq
VAG \$0.066	TMC \$0.0695	GTC \$0.079	seq
VAG \$0.066	TMC \$0.0695		seq
VAG \$0.066	TMC \$0.0695	GTC \$0.079	seq
TMC \$0.0695			seq
VAG \$0.066	TMC \$0.0695	GTC \$0.079	seq
VAG \$0.066	TMC \$0.0695	GTC \$0.079	seq
VAG \$0.066	TMC \$0.0695	GTC \$0.079	seq
NO-ROUTE			seq
NO-ROUTE			seq
NO-ROUTE			seq

Manual Routing – as shown in line one specifies that system has a Route but it's defined through older Incoming Routing screen and hence carrier sequence cannot be determined.

No-Route – tells that route is explicitly provisioned for this code but there will be no outbound Carrier. Such call will be released with 3 No Route Destination (Internal).

Sequence options

Clicking on Rule cells will bring down Sequence selection choices.

RoundRobin, 40-40-20 and 70-20-10 are to be used with 3 routing selections RoundRobin, 70-30 and 90-10 to be used with 2 routing choices

Only sequence can be used with single choice.

Rule
seq
seq
proportion
round robin
40-40-20
70-20-10
70-30
90-10

No-Loss function defined

Automated LCR generation is designed in a way that system will only suggest routes for each Dialing Code where sell price is higher or equal to buy price. Only active Carrier Rates will be shown, as defined under SwitchMember menu.

System will convert offered termination rates to a common currency and will apply Quality Flag using financial formula to predict highest resulting profit.

Defined No-Loss routing rules are static. As of now routing rules WILL NOT change with changes in Carrier/Client rates. Rerun Incoming LCR menu and update routing using new suggestions.

Copying LCR suggestion to production routing

Clicking on “←” button in Copy LCR column will copy suggested routing sequence for that code.

On the bottom of the screen, button “Copy LCR All” will copy entire suggested routing to production routing.

Making Manual Changes to Automated Routing

All Routing table entries can be manually modified by clicking on any CarrierX, rate cell. A drop-down window will appear listing all available choices. Manual changes can be applied even when no Client/Carrier rates were uploaded into the system, however Manual changes are not subject to No-Loss restrictions.

The screenshot shows the 'Incoming Routing LCR' application window. At the top, there are fields for 'Client' (A1A-test-TRA88) and 'Destination Country' (Armenia (+374)). Below these is a 'Routing Class:' field and a 'Display Routing Table' button. The main area is a table with columns: #, Status, Destination Name, Sell Diali..., Subcodes, Sell price, Time Pro..., Carrier1, price, Carrier2, price, Carrier3, price, Rule, Copy LCR, Carrier1, ..., Carrier2, ..., Carrier3, ..., Rule. Row 39 is highlighted in green. A dropdown menu is open over the 'Carrier1, price' cell of row 39, showing options: AF2 \$.09, ASF \$.09, STS \$.1, LNC \$.132, TMC \$.133, DXT \$.134, VAG \$.135, and SOT \$.146. A callout box labeled 'Manual Carrier selection' points to this dropdown menu. At the bottom, there are buttons: Preview, Apply Changes, Cancel, Export Routing, and Copy LCR all.

#	Status	Destination Name	Sell Diali...	Subcodes	Sell price	Time Pro...	Carrier1, price	Carrier2, price	Carrier3, price	Rule	Copy LCR	Carrier1, ...	Carrier2, ...	Carrier3, ...	Rule
36				3747	0	ALL				seq	←	NO-ROU...			seq
37		Armenia Mobile Vivacell	37477		0	ALL				seq	←	NO-ROU...			seq
38				3749	0	ALL				seq	←	NO-ROU...			seq
39		Armenia Mobile Beeline	37491		0	ALL				seq	←	NO-ROU...			seq
40				374910	0	ALL	AF2 \$.09			seq	←	NO-ROU...			seq
41				3749144	0	ALL	ASF \$.09			seq	←	NO-ROU...			seq
42		Armenia Mobile Beeline	37492		0	ALL	STS \$.1			seq	←	NO-ROU...			seq
43		Armenia Mobile Vivacell	37493		0	ALL	LNC \$.132			seq	←	NO-ROU...			seq
44				3749329	0	ALL	TMC \$.133			seq	←	NO-ROU...			seq
45		Armenia Mobile Vivacell	37494		0	ALL	DXT \$.134			seq	←	NO-ROU...			seq
46		Armenia Mobile Orange	37495		0	ALL	VAG \$.135			seq	←	NO-ROU...			seq
47				3749597	0	ALL	SOT \$.146			seq	←	NO-ROU...			seq
48		Armenia Mobile Beeline	37496		0	ALL				seq	←	NO-ROU...			seq
49		Armenia Karabakh Mobile	37497		0	ALL				seq	←	NO-ROU...			seq

Carrier Routing Label

In Automated routing User only selects a Carrier name, however the system represents each Carrier as RoutingLabel. See Manual Routing procedure for more information on Routing Label use and definition.

With each new Carrier having outbound Trunk Group, system will automatically create a Routing Label named "XXX0", where XXX is a three symbol abbreviation of Carrier. This is called Carrier Routing Label.

It's possible to manually create additional Carrier Routing Labels formatted as XXX1, XXX2 and so on. This might be needed when multiple egress trunks exist to same Carrier and there is a requirement to differentiate which traffic sent to which trunk.

Note that LCR will always recommend using "XXX0".

Using Preview and Apply changes buttons

When changes are made to production routing table, you will see Status changed to Queued. That means that rule for this code will be created in routing table, but since one rule can affect more than one code (using longest match principle), we're using Preview function.

Preview will display actual routing table as it will look after requested change. Codes that will be changed by new routing rule will get status "Changed". Carefully review this table to make sure that Preview shows routing table as desired.

This function is done to simplify routing for long code tables that use same routing rules. For example, to route all mobile traffic for Colombia you can use just one rule for code 573 and this rule will automatically be applied to all codes that start with 573, for example 57301, 57320, etc.

Naturally, if you use "Copy LCR all" then every defined dialing code will be populated with its own routing rule. This is the quickest approach, however such approach makes it more difficult to manually adjust suggested routing to a multiple codes.

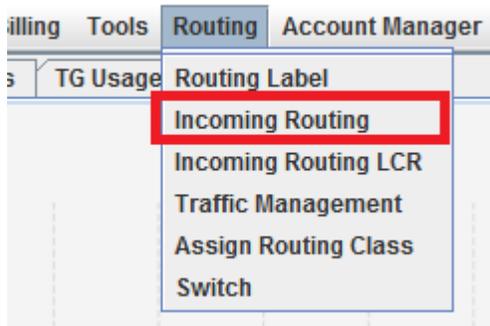
Limitations of Automated Routing procedure

Automated Routing was designed to cover absolute majority of routing rule needs, however there might be some exceptions that cannot be covered by Automated procedure, in this case please use Manual Routing procedure described in next Clause.

Currently depth of routing is limited to 3 carriers

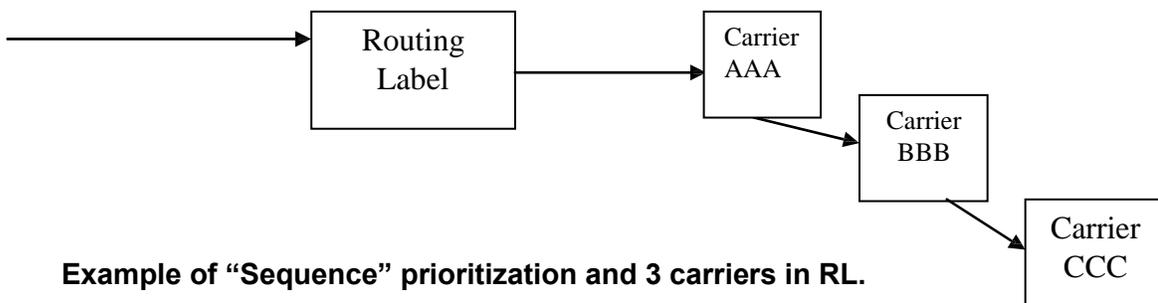
There are only 5 pre-defined prioritization rules (sequence, round-robin and several types of proportion routing)

Manual routing procedure



Manual Routing is based on the following steps:

1. Create a Routing Label - a container of outbound routes and a selection priority between them.
2. Create Incoming Routing that allows incoming calls from Clients to reach Routing Label container.



Example of "Sequence" prioritization and 3 carriers in RL.

Creating a Routing Label container

Open Routing menu screen: Routing -> Routing Label.

Name	Description	Prioritization Type	Number Of Routes Per Call
TEST	only for test during TDM integration	Sequence	10
TEST-RR	R&R	Sequence	10
TURKEY_MOB_TURKTEL_H	TURKEY_MOB_TURKTELEKOM_HUBBING	Proportion	10
UKRAINE_MOB_ASTEJIT	UKRAINE_MOB_ASTEJIT	Proportion	10
UKRAINE_MOB_ASTEJ_C	UKRAINE_MOB_ASTEJ_C	Proportion	10
UKRAINE_MOB_INTERT_H	UKRAINE_MOBILE_INTERTELECOM_HUB...	Proportion	10

Sequence	Outbound Element	Element Type	Gateway	Status	DM Rule
1	SWFMDT1CAASS7	Trunk Group	GSX5	<input checked="" type="checkbox"/>	
2	SWFMDT2BFESS7	Trunk Group	GSX5	<input checked="" type="checkbox"/>	

To create a new Routing Label click  and populate fields Name, Description and Prioritization Type.

Please note Name field should not contain spaces.

Routing Label name does not define routing codes or routing destination names. User may use Routing Label name after specific destination (Ukraine_Kiev) or after sequence of carriers (Carr1_Carr2) or both(Kiev_Carr1_Carr2).

Description Name has informative purpose only. User is free to fill any supporting information in that field. Spaces and Special characters are allowed.

Prioritization type defines selection rule for outbound elements within Routing Label.

- Sequence will send all call attempts to the Outbound element with lowest sequence number first. Calls will be redialed to next Termination elements in sequence if conditions defined in 1.3.1.1 are met.
- Proportion will send first call attempt to Outbound Element according to a chance value shown in the interface. Failed calls may be redialed further according to sequence priority.
- Round Robin will distribute first call attempts equally among all active Outbound Elements by changing sequence numbers for available options.

Routing Label defines up to 10 outbound elements. User may manage outbound elements with lower navigational bar after highlighting desired Routing Label.

Sequence	Outbound Element	Element Type	Gateway	Proportion	Status	DM Rule
1	TRAXCOTG	Trunk Group	TRAXCOTG	0	<input checked="" type="checkbox"/>	add 011

Sequence number for automatic rerouting function.

Element type: Trunk Group, Routing Label, Partition.

Proportion value for percentage based routing.

Applied Digit Manipulation Rule (outbound Tech prefix)

Please note that changes to Routing Label will affect all traffic routed to the given Routing Label.

Automatic Rerouting function defined

When a call reaches Routing Label it is routed over Outbound Element with the lowest sequence number or according to Proportion assigned.

In case call cannot be completed over first chosen Outbound Element it may be automatically rerouted to the Outbound Element with next Sequence number.

In order for rerouting to occur the following conditions must be met:

- Call has been disconnected by Called party
- Call has been disconnected prior to receiving Progress or Alert messaging (can be overridden by Trunk settings)
- Received Disconnection Reason is suitable for rerouting (can be overridden by disconnect manipulation rule)

List of Disconnect Reasons (Q.850) that cause route hunting by default:

- 2
- 3
- 21
- 34
- 38
- 41
- 42
- 44
- 47
- 65
- 79
- 81
- 128
- 130
- 131

135
140
143
147
149
151
152
166

Mapping from SIP disconnect reasons to Q.850 is done according to RFC 3398. A separate [R&R guide document for code mapping](#) is available.

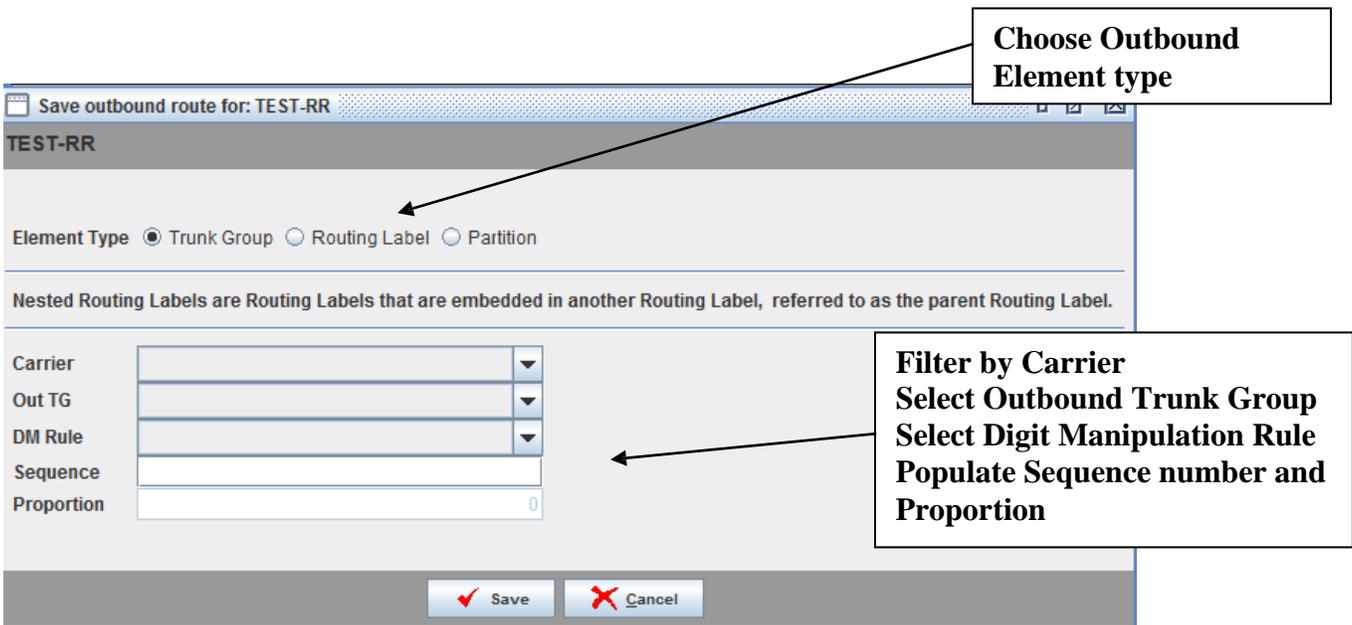
Creating an Outbound Element for Routing Label

When Routing Label is created User shall add outbound elements to it.

Empty Routing Label will fail call with internal disconnect reason 150-NO PSX ROUTES FOUND and can be used as a blocking destination for calls. For example, when certain codes must be blocked for routing while letting shorter dialing codes complete.

First, highlight Routing Label that has to be managed. Bottom portion of the Routing Label screen will show existing Outbound Elements sorted by sequence number.

Use  to create a new Outbound Element. The following window will appear



Choose Outbound Element type

Save outbound route for: TEST-RR

TEST-RR

Element Type Trunk Group Routing Label Partition

Nested Routing Labels are Routing Labels that are embedded in another Routing Label, referred to as the parent Routing Label.

Carrier

Out TG

DM Rule

Sequence

Proportion

Save Cancel

**Filter by Carrier
Select Outbound Trunk Group
Select Digit Manipulation Rule
Populate Sequence number and Proportion**

To edit an Outbound Element User need to highlight it and press  or double-click on existing Outbound Element.

Outbound Element type explained

Trunk Group – provisioned VoIP or TDM Trunk Group. Select one from the drop-down list. Please read “Trunk Group name conventions” for information that is ciphered in the Trunk Group name.

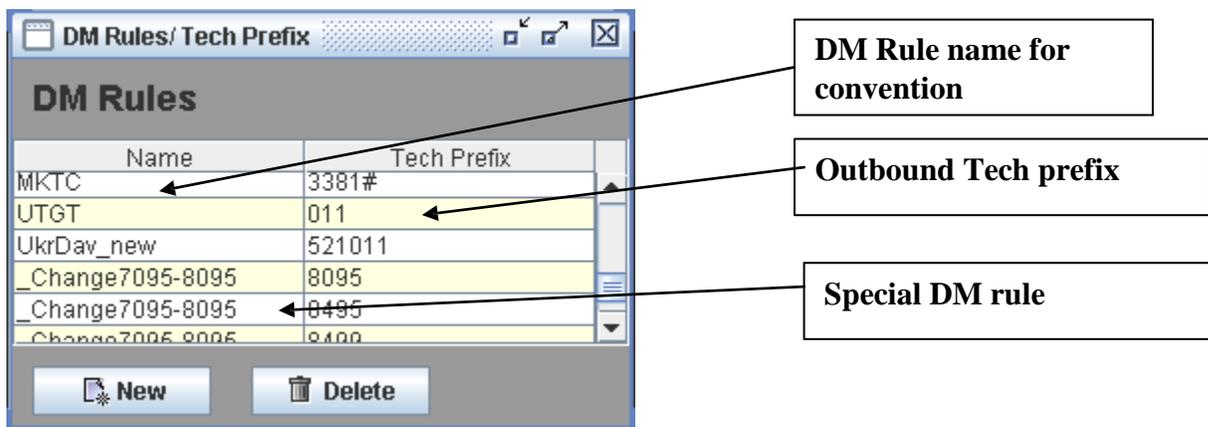
Routing Label – call will be forwarded to another existing Routing Label. Please note that using nested Routing Label is limited to one level, i.e. User should not use outbound element Routing Label if that Routing Label contains another nested Routing Label.

Digit Manipulation Rule (outbound tech prefix)

Ingress Tech Prefix is being stripped off prior to reaching User Partition. By default, outbound number is in E.164 format.

Digit Manipulation Rule (DM Rule) is used to add User-defined prefix in front of Egress Dialed Number. Additionally DM/PM rule can also define requested parameter manipulation, like manipulating Calling Number, Nature of Address, Billing number or SIP-PAI.

To create a new rule click  button in Routing Label screen. A new window showing existing DM rules will appear.



The screenshot shows a window titled "DM Rules/ Tech Prefix" with a table of rules. The table has two columns: "Name" and "Tech Prefix". The rules listed are:

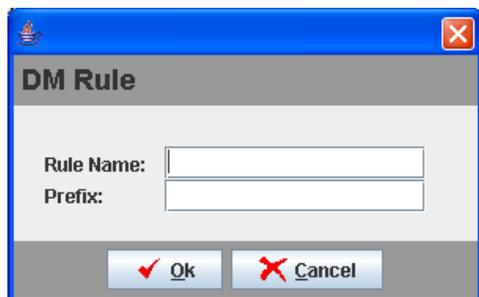
Name	Tech Prefix
MKTC	3381#
UTGT	011
UkrDav_new	521011
_Change7095-8095	8095
_Change7095-8095	8495
_Change7095-8095	8495

Callouts point to specific elements:

- DM Rule name for convention**: Points to the "Name" column header.
- Outbound Tech prefix**: Points to the "Tech Prefix" column header.
- Special DM rule**: Points to the row with the name "_Change7095-8095" and tech prefix "8495".

Buttons for "New" and "Delete" are visible at the bottom of the window.

User may add a new DM rule by clicking  button.



The image shows a dialog box titled "DM Rule". It has a blue title bar with a close button (X) in the top right corner. The main area is light gray and contains two text input fields. The first field is labeled "Rule Name:" and the second is labeled "Prefix:". Below the input fields are two buttons: "Ok" with a checkmark icon and "Cancel" with a red X icon.

Rule Name defines a name that will be shown when selecting DM Rule for Outbound Element. We suggest using names that are easily associated with Carrier's name or with the implemented DM Rule.

Prefix field defines Egress Tech Prefix that will be added in front of Egress Called Number. User is allowed to use any numerical values and a # sign.

User may also request Special DM Rule that modifies Egress Called Number (strip digits, substitute digits, etc.) Please request assistance through Tech Support Interface.

Sequence number of Outbound Element

Sequence number can be a numerical value from 1 to 10. Outbound Elements are chosen according to Sequence number from lowest to highest. Please read above for more details on Sequence selection and Automatic Rerouting.

User may use non-consecutive numbers in Sequence field.

Creating an Incoming Routing rule

Prerequisites:

- Defined Switch Member
- Inbound Trunk Group
- Routing Label

Incoming Routing Rule allows call from a Client to be routed to the Carrier. If no Incoming Routing Rule exists call will be dropped with Disconnection Reason 3 and Disconnect Initiator Internal. Users are able to see these call attempts in the GUI.

Incoming Routing Rule creates an allowing entry in the Routing Table. It links incoming SwitchMember, dialed Country and Destination to a Routing Label - a container that defines possible termination options and selection priority for them.

Only one Routing Rule is possible for a given SwitchMember and Origination Number, Destination Country + National Code, Timezone. System will not allow User to create duplicated or conflicting rules.

There are three ways to route calls for Switch Member:

- Routing on destination number only
- Routing for ANI-DestinationNumber pair
- Group routing

Individual routing creates individual routing table for each Member.

Group routing is employed to simplify routing process when there are multiple SwitchMembers that require same routing rules. To route multiple Members by the same Routing Rules User needs to create a Routing Class, create routing rules for it and assign Routing Class to desired SwitchMembers. *Note that two routing modes cannot overlap. Each Member can either have Standard Routing or be assigned to Routing Class.*

To create Incoming Routing please follow "Routing" -> "Incoming Routing".

Incoming Routing window is vertically divided into two parts. On the top User can select and filter Incoming routes and the bottom part shows contents or Routing label associated with highlighted Routing Rule.

Route Filters

Incoming Routing

Route Filter

Element Type: Member & Subscriber | Member-Code: Auris-AUR-ETB1B

Destination Country: [Dropdown] | Country Code: 57 | City Code: [Dropdown]

Routing Rules

Type	Name	Origination Number	Destination Country	Country Code	Destination National	Routing Label	Routing Class	Time Range Profile
Member	Auris-AUR-ETB1B		Colombia	57		TRAF_CLIENT_ETB_SIF2	ALL	
Member	Auris-AUR-ETB1B		Colombia	57	30	PORTANUM_CLIENT_TIGO	ALL	
Member	Auris-AUR-ETB1B		Colombia	57	310	PORTANUM_CLIENT_CO...	ALL	
Member	Auris-AUR-ETB1B		Colombia	57	311	PORTANUM_CLIENT_CO...	ALL	
Member	Auris-AUR-ETB1B		Colombia	57	312	PORTANUM_CLIENT_CO...	ALL	
Member	Auris-AUR-ETB1B		Colombia	57	313	PORTANUM_CLIENT_CO...	ALL	
Member	Auris-AUR-ETB1B		Colombia	57	314	PORTANUM_CLIENT_CO...	ALL	
Member	Auris-AUR-ETB1B		Colombia	57	315	PORTANUM_CLIENT_MO...	ALL	
Member	Auris-AUR-ETB1B		Colombia	57	316	PORTANUM_CLIENT_MO...	ALL	

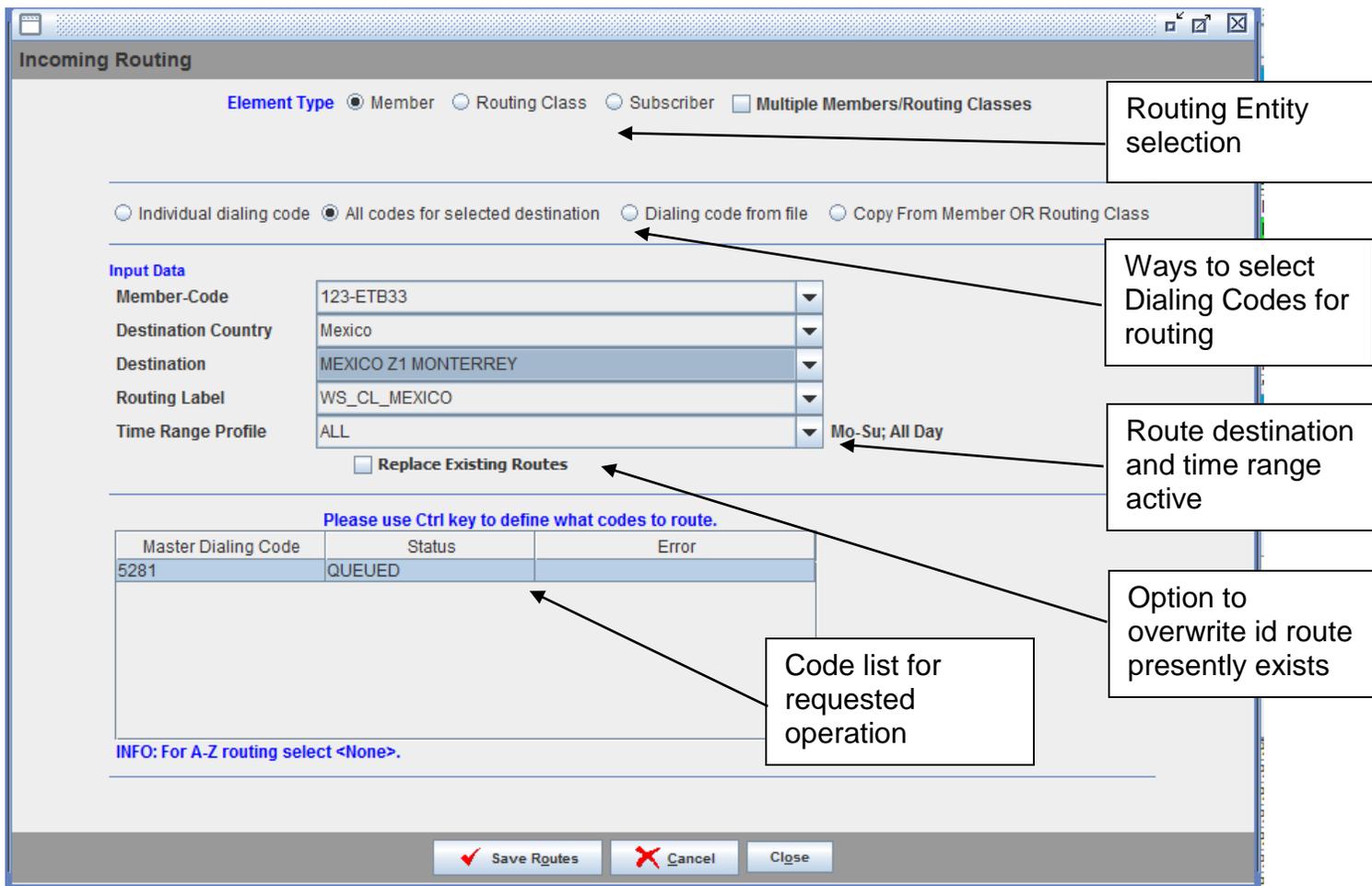
Termination

routing Label: PORTANUM_CLIENT_COMC | Prioritization Type: Sequence | Description: Trafico Clientes para COMCEL | Max routes to return: 10

Sequence	Outbound Element	Element Type	Gateway/Member	Status	Outbound Prefix
2	ETB_BTW_MOVILES	Routing Label		<input checked="" type="checkbox"/>	
3	PORTANUM_MOVIL_NAC	Routing Label		<input checked="" type="checkbox"/>	
4	ETB_IBASIS	Routing Label		<input type="checkbox"/>	
6	ETB_TATA	Routing Label		<input type="checkbox"/>	

Contents of Routing Label

To create a new Incoming Routing Rule press . A new window appears.



Longest Match Routing principle

All routing in the switch is following the “Longest Match” principle. Switch will look for routing rule that matches maximum length of Dialed Number.

For example: there is a rule for India allowing numbers Destination National “11”

91 11 123456 will be routed to desired Routing Label

91 12 123456 will not be routed by this rule. System will look for Rules with India and “1” as Destination National if no such rule exists, the system will look for India with empty Destination National fields. If none exists call will be rejected.

Using Country “None” for routing

Routing system allows to select Country “None” - this selection will be used as longest match for all numbers that do not have explicit routing rule.

Note: Be careful with routing to “None” for production Clients as you’re opening all traffic for those Clients.

Choosing Element Type for Incoming Routing Rule

There are 3 Element Types for Incoming Routing

Partition – routes incoming calls from another R&R Partition.

Member – multiple Trunk Groups may be arranged under Member. The Incoming Routing Rule created for Member will be applied to each Trunk Group that belongs to it.

Routing Class – an inbound container of Routing Rules that can be assigned to a Member. Members that are assigned to Routing Class are sharing same Routing Rules and cannot have Individual Routing rules.

Populating Fields for Incoming Routing Rule

Creating an Incoming Routing Rule Member and Routing Class follows same procedure.

“All Codes for Selected Destination” option allows routing all or selected dialing codes for defined Master Destination in one click. Dialing codes associated with MasterDestination can be viewed or edited under Dialing Codes menu.

Individual Dialing Code option – allows User to route based on Destination National code prefix. This rule is also used for routing all numbers within the country by leaving Destination National field blank.

Destination Country: The Switch Management Interface has a preloaded list of countries and associated country codes. User has to pick a country from the drop-down list.

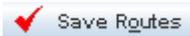
Please note that from Routing Point of view (according to ITU-T) countries in North American Dialing Plan (NANPA) such as Canada, Jamaica, Dominican Republic, Puerto Rico, Guam, etc are all belong to country choice - “USA, Canada and Caribbean”.

Destination National (City Code) - a number that defines a city, region, mobile operator exchange, etc.

Routing Label - defines to which Routing Label the call will be routed.

Incoming Routing Rule uses “longest match” rule, i.e. call will be directed according to a Rule with longest match in Destination National (City Code) field.

Submitting Incoming Routing Rule

By pressing  User submits incoming Routing Rule(s) to the system. New Rule becomes effective immediately.

“Replace Existing Routes” checkbox defines switch behavior in case routing rule for given SwitchMember-Conuntry-DialingCode already exists. When checked – newly entered rule will replace existing one; when unchecked – rule will be skipped and existing rule will remain in effect.

Values of the last submitted Rule are stored in memory. Clicking  in Incoming Routing screen will pop up window with last saved values. This will simplify and speed up Incoming Calls Routing for multiple codes, user will have to change one field only to submit a new rule.

Navigating through existing Incoming Routing Rules

Search and filtering of existing Routing Rules is done through Incoming Routing menu:

The screenshot shows the 'Incoming Routing (Ver 7.1)' window. At the top, there is a 'Route Filter' section with 'Element Type' set to 'Member' and 'Member-Code' set to 'RRTDID-TRA2E'. Below this are input fields for 'Destination Country', 'Country Code: 1', and 'City Code:'. A 'Display Routes' button is to the right. Below the filter is an 'Incoming Element' table with the following data:

Type	Name	Gateway	Destination Country	Country Code	Destination National	Routing Label
Member	RRTDID-TRA2E		USA, Canada and C.	1		BVX

Three callout boxes with arrows point to the following elements:

- Element type and name**: Points to the 'Element Type' dropdown and 'Member-Code' field.
- Country Code and Destination National**: Points to the 'Country Code' and 'Destination Country' fields.
- Search with applied filters**: Points to the 'Display Routes' button.

Route filter shows all routes provisioned in the system for selected Element Type.

Editing existing Incoming Routing Rules

Search for existing Incoming Routing rule. Highlight desired routing rule

Highlight Incoming Routing Rule and click  or double-click on selected Rule.

The screenshot shows the 'Incoming Routing (Ver 7.1)' window with the 'Edit Route' dialog box open. The 'Element Type' is set to 'Member'. The 'Input Data' section contains the following fields:

- Member-Code: RRTDID-TRA2E
- Destination Country: USA, Canada and Caribbean
- Destination National(City Code):
- Routing Label: BVX

Below the input data is an informational message: **INFO: For A-Z routing select <None>.**

At the bottom of the dialog are three buttons:  Save Routes,  Cancel, and  Close.

User can change Routing Label selection or Destination National. To make changes for other criteria – delete and recreate a route. Accepting changes will have an immediate effect.

Routing Examples

A RoutingLabel can be used for a specific destination – it is recommended to name it after that destination to simplify future routing. There can be multiple routing labels for the same destination if the situation requires it.

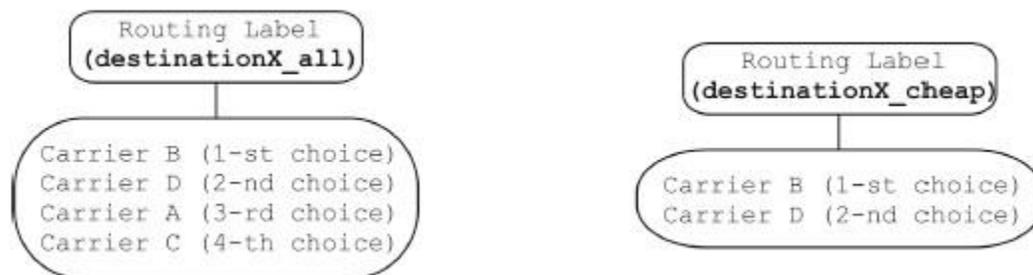
Two Routing Labels for the same destination

We have 3 clients with their rates 'destination X' and 4 carriers with their prices for that destination.

```
Client 1 (6.0 cents)
Client 2 (5.5 cents)
Client 3 (4.3 cents)
```

```
Carrier A (4.5 cents)
Carrier B (3.2 cents)
Carrier C (5.0 cents)
Carrier D ( 4.0 cents)
```

In this case, 2 routing labels(RL) have to be defined for 'destination X', one that contains all carriers (named 'destinationX_all') and the second one with only 2 carriers ('destinationX_cheap').



With the 2 RLs defined, the incoming calls for the 3 clients can be routed in the following manner:



If, for instance, Carrier D lowers its rate for 'destinationX' to 3.0 cents, they should be given the highest priority for the route. This can be accomplished easily by using the routing interface.

Note, that nothing has to be done in the 'incoming calls routing'. This saves time in the case a large number of clients are interested in 'destinationX'.

Grouping Clients for Routing. Routing Class defined.

If more than one Member will use same routing table it's advised to use Routing Class routing. User may assign a Member to Routing Class via Routing -> Assign Routing Class menu.

Populating Routing table for Routing Class is similar to building Standard Routes for a Member .

Testing Routing setup

Users can test Routing setup and outbound routes prior to offering routes for sale. There are multiple ways to test routes:

- R&R Call Testing Facility
- Manually using SIP phone or softphone
- Manually using static IP

R&R Call Testing Facility

Automated Call Testing facility is designed to simplify Carrier route testing, route quality monitoring, FAS detections and to verify correct CLI delivery.

Users can perform various tests using one or multiple suppliers, automate testing scenarios and be informed by email when quality drops or False Answer Supervision (FAS) is detected.

R&R is using advanced voice recognition algorithms to detect the following cases:

- Connect while ringing
- Silence after connect (Dead Air)
- Known IVR patterns
- Lack of audible ringback tone

Call Testing Facility records media, counts media packets exchanged in both directions and calculates Mean Opinion Score for the test call. There's a function to alert on low MOS. User is able to listen to each test call to have own opinion about the quality.

Configure your Sonus partition

Create a Member and a Trunk Group for inbound SIP remote IP 38.125.23.203

Login to Test portal <https://test.r-tele.com>

Login credentials are provided by R&R customer support.

Configure test Profile (one per account).

Destination IP must be our Sonus.

Edit Profile

Profile Name:	<input type="text" value="ProfileName"/>
Profile Type:	<input type="text" value="Voice"/>
Gateway IP:	<input type="text" value="Yous Sonus SIP IP"/>
Gateway Port:	<input type="text" value="5060"/>
Source Number:	<input type="text" value="74957770000"/>
Calltime:	<input type="text" value="30"/> Max call duration, sec
Ringtime:	<input type="text" value="30"/> Max PDD duration, sec

Configure Supplier

Edit Supplier

Supplier Name:

Type:

Prefix (Optional):

Egress TG:

Email (Optional):

Codec:

In Egress TG field user may enter full Outbound TG name; this will force routing out to that TG bypassing Routing Table.

When using EgressTG you must populate egress prefix (if any). Having prefix populated will distort Called number in reports but will send correct number to the Carrier.

If "Egress TG" field is omitted then call will be routed according to Routing Table for the Test Member.

Perform manual testing

Profile:

Gateway:

Supplier Multi-select: (2)

- 211TEST
- ICM

Select Egress Carriers

Test Name:

Numbers:

Define test numbers

Codec:

Test

more can be purchased through K&K.

Profile:

Gateway:

Supplier Multi-select: (2)

- 211TEST
- ICM

Select Country and system will automatically perform testing and compare delivered CLI with the one you used for test.

Standard Advanced / CLI (0)

Select Country:

Review test results

Time Initiated	Destination Number	State	PDD	Ring Duration	Call Duration	RTP Stats	Disconnect Initiator	Final SIP Code	Result	Audio RBT	Log
Jan 19, 12:00:01	211TEST	Complete	0.35 (NA)	0.0	30.0	1506 / 1498 NA	Originator	200 OK	Failure Dead Air	NA	NA

Packet exchange counter

Click to open call log

Schedule automated tests

Schedule Editor
New Schedule

Schedule Type

Standard **Advanced / CLI** (0) **Interconnect** **SMS**

Profile Select **Supplier Select**

SYN.12 211TEST

Details

Test Name: Codec: Prefix:

Number Selection

Manual Number Entry **Number Database (NDB)**

Numbers:

Start Date **Repeat** **End Date**

January 2015 Run this schedule: January 2015

M T W T F S S Peak Repeat Frequency: M T W T F S S

29 30 31 1 2 3 4 Peak / Off Peak Hours: Peak Off Peak 29 30 31 1 2 3 4

5 6 7 8 9 10 11 0 1 Select frequency less than 6 hours for off peak options 22 23 5 6 7 8 9 10 11

12 13 14 15 16 17 18 Timezone: 12 13 14 15 16 17 18

19 20 21 22 23 24 25 Time: 19 20 21 22 23 24 25

26 27 28 29 30 31 1 26 27 28 29 30 31 1

Email Alerts

Send alerts

Alert on FAS

Alert on No RBT

Alert on Dead Air

Alert on Calls Fail greater than %

Alert on Average PDD greater than

Alert on Average MOS less than

Add Schedule

Manual testing using SIP phone via Registrar

Testing from a nomadic device is possible via SIP registrar server in Frankfurt that can accept registration from any public IP and then forwards call to your Sonus system. All you need to do is to add inbound IP **81.2.128.29** to your Test Member and register SIP phone/app to the server.

You can use any SIP phone/app on your PC or smartphone (3CX is a popular free option). Please register your phone to XXX.r-tele.com. Where XXX is your partition abbreviation. Registration user/pw you will receive separately.

Note that you need to correctly enter credentials. In case you try wrong password 3 times your IP will be blocked for 2 minutes. That's done for security reasons.

Example of registration screen for XLite/ EyeBeam

Properties of Account 10

Account | Voicemail | Topology | **Security** | Advanced

User Details

Display Name: Test

User name: 555555

Password: ●●●●●●●●

Authorization user name: 555555

Domain: xxx|r-tele.com

Domain Proxy

Register with domain and receive incoming calls

Send outbound via:

domain

proxy Address: _____

Dialing plan: #0\|a\|a.T;match=1;prestrip=2;

OK | Отмена | Применить

Manually using static IP

1. SIP client - Any VoIP origination device will work: softphones, smartphone SIP client applications, H.323 or SIP phone adapter, IP PBX.

2. Identify your IP address - Most of DSL/Cable providers don't assign static IP but keep it same for long periods of time. To find out your public IP address check www.myipaddress.com

3. Configure VoIP test line –

Configure destination IP address

Disable phone Registration

Use any username/password as authentication is based on IP

Make sure to use UDP for SIP phones

4. Configure your Sonus system - Place provisioning order as usual. Test line will be treated as any other Member in your partition.

General rules for Testing procedure

1. Make sure that both Inbound and Outbound trunk groups are provisioned.
2. Create a new Routing Label that will have only one Trunk Group as an Outbound Element.
3. Create an Incoming Routing Rule for Inbound Trunk Group.
4. Make sure that your test number is valid. Your partition will reject calls that are not compliant with ITU-T specifications for a given country.
5. Place 4-5 calls to the same or different “good” numbers within the destination you’re testing.
6. Wait 2 minutes prior to checking CDRs.
7. If calls weren’t completed, please investigate reason of disconnection by studying CDR records as explained in Troubleshooting Manual.

A-number routing

Routing screen has option to define routing for any set of A-numbers (ANI, caller ID). Internally such routing is called Subscriber Routing where each Subscriber can be defined per SwitchMember and number prefix.

For example all Russia Mobile subscribers can be defined as 79 prefix for one Client and as 790,791 and 792 for other Client.

Field to indicate A-number prefix for which route is created

Master Dialing Code	Status	Error
5281	QUEUED	

INFO: For A-Z routing select <None>.

When call arrives at the switch it first looks up if received ANI matches any defined Subscriber

for the Client sending the call. If Subscriber is defined system will first look up a routing table defined for such Subscriber. If special route exists – this route will be given precedence. If no special route exists system will fallback to the general routing table.

In case more than 1 Subscriber rule exist the longest match will take precedence. If no Subscriber can be matched to received ANI call will use standard routing table.

Intra-EU routing and billing

When A-number not only requires special routing but also calls for a separate rate table, such as in case of intra-EU calls, a new SwitchMember must be defined. Please request R&R support assistance with defining such a Member and provide a list of rules for A-number validation and A-number prefixes that should be treated at a special rate.

A new SwitchMember will receive all calls for routing and billing purposes based on rules defined in previous step. No changes are needed on Client side to have such traffic separated. Routing for intra-EU calls in this scenario will be based only on Destination number knowing that only validated EU-originated calls will take these routes.

1.4. MANAGING TRUNK GROUPS, SWITCHMEMBER TRAFFIC

Modifying Trunk Groups

After TrunkGroups have been initially provisioned it's possible to make additional changes to them like adding or removing IP addresses, changing defined IP Call Limits or changing ingress tech prefixes.

The screenshot shows a web application window titled "Order Form". At the top, there is a "Trunk Groups" section with a "Switch Member" dropdown menu set to "Arbinet-ARB" and a "Refresh" button. Below this is a table with the following columns: TG Name, Protocol, Inbound Prefix, Local IP, Capacity, Direction, Inbound IP/Ne..., Netmask, Outbound IP, and Port. The table contains three rows of data:

TG Name	Protocol	Inbound Prefix	Local IP	Capacity	Direction	Inbound IP/Ne...	Netmask	Outbound IP	Port
TRAARB6B09...	SIP	2565	38.105.229.1...	UNLIMITED	Two-Way				
TRAARB95EA...	H323		38.105.229.1...	UNLIMITED	OutGoing		255.255.255...	95.143.0.36	1720
TRAARB95EA...	H323		38.105.229.1...	UNLIMITED	OutGoing		255.255.255...	100.2.1.2	1720

Below the table is a row of action buttons: "New Trunk Group", "Add IP's", "Delete IP's", "Change Call Limit", and "Show Order History". A red rectangular box highlights the "Add IP's", "Delete IP's", and "Change Call Limit" buttons.

Changes made to Trunk Groups are effective immediately.

Complete history of trunk changes is presented along with a time stamp and requester's ID.

Any Trunk Order that changes allowed IPs will automatically generate an email to all Admin users of the system as an additional security measure.

Enabling/Disabling SwitchMembers

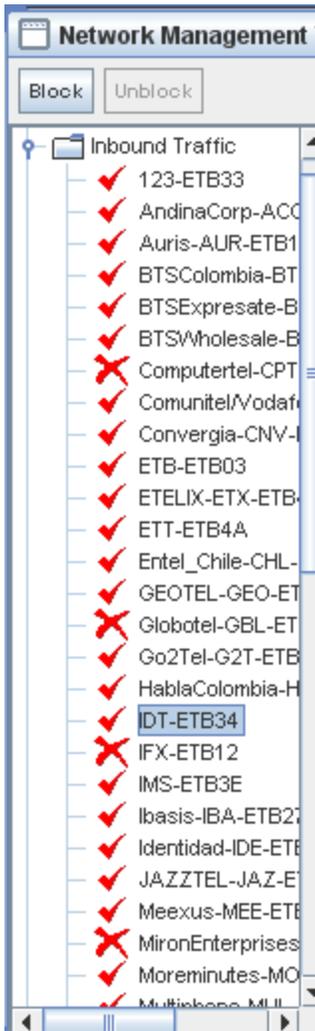
It's possible to Enable/ Disable both VoIP and TDM Trunk Groups. Disabled Trunk Group will not receive or send any traffic and it will be skipped in routing as if it's not present in Routing Table.

To manage Trunk Groups User shall choose menu:

The screenshot shows a menu with the following items:

- Routing (highlighted)
- Routing Label (Ver 7.1)
- Incoming Routing (Ver 7.1)
- Traffic Management (Ver 7.1)
- Assign Routing Class (Ver 7.1)

Traffic can be managed per direction per SwitchMember. Edit your preferences using BLOCK/UNBLOCK buttons on top of the menu.



Note: When System blocks Client based on Financial Alert it blocks it through this menu. To unlock Client you need to re-allow incoming traffic for that Switch Member.

1.5. MANAGING DIALING CODE LISTS

Prerequisites:
None

Dialing Code Lists play very important part as they provide data for matching Dialed Numbers to Countries, Destination and Rates. Therefore, maintaining up-to-date Dialing Code Lists is a prerequisite for correct billing.

There are two types of Dialing Code Lists in the system:
Master Dialing Code List
Carrier Dialing Code Lists

Master Dialing Code List defines Destinations under Master Country list and is used for Client Billing and Reporting purposes. Managing Master Dialing Code List is a first and very important step in preparing Client Billing in the system. Master Destination list is the same for every Client within the Partition.

Your partition has a preloaded set of A-Z List, however it's a responsibility of a User to check and maintain accuracy of such data. For customers migrating to managed service existing business we highly recommend to upload own A-Z list before initiating the service. This will ensure smooth traffic and billing data migration.

System supports multiple **Carrier Dialing Code Lists**: each Carrier has its own Dialing Code structure that can be imported to the system via Carrier Rates Upload (See Clause 1.6.1).

Dialing codes are matched by the rule "Longest Match", which means that if the system has 3 defined Dialing Codes:

India	91
India New Delhi	9111
India New Delhi 2	91112

And Dialed number was **9111255468** that number will be associated with Billing Destination "India New Delhi 2" as it's the longest match for the record.

Preloaded "Master" Country and Destinations list

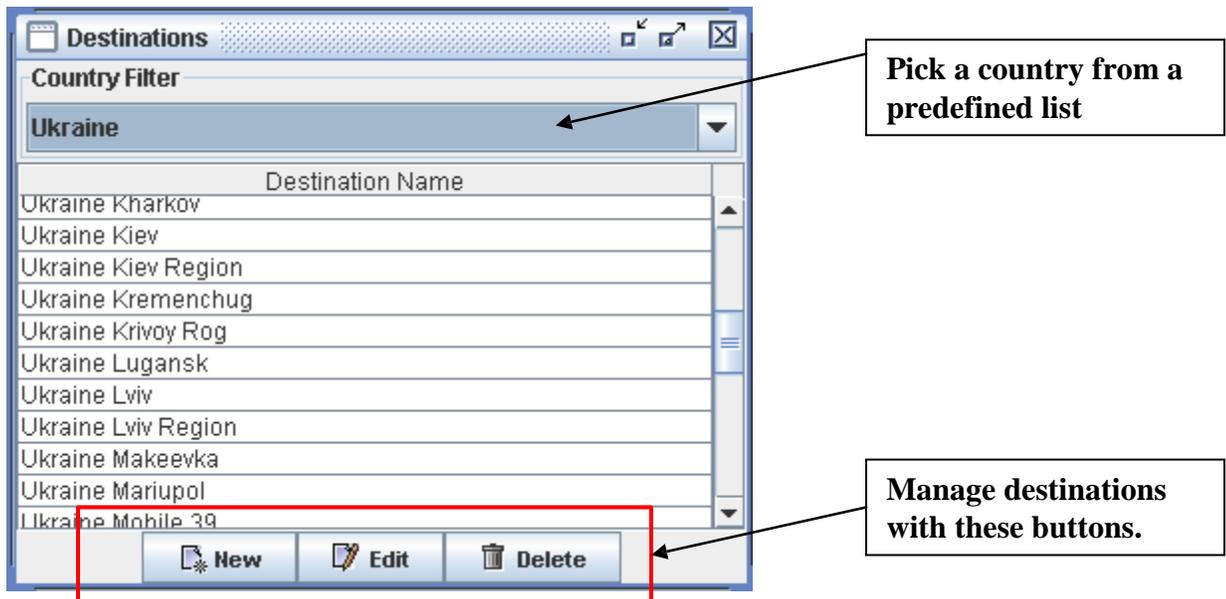
SwitchMembers	Dialing Codes	Billing	Tools	Routing
Minutes	Countries			
	Destinations			
	Dialing Codes			
	Export Dialing Codes			
	Carrier Dialing Codes (New Billing) ▶			

New System comes with a preloaded Countries and Destinations list.

Provisioned Countries are accessible by clicking Countries menu. Country list cannot be modified by User and serves for information purposes only. If you feel that Country shall be added, please request Tech Support.

Note, Countries that use North American Numbering Plan (Dominican Republic, Jamaica, Puerto Rico, etc.) are effectively using 1 as a country code.

Destinations menu shows preloaded Destinations (Breakouts) within the Country. This list is fully manageable by the User.



Manage “Master List” Destinations

Each partition has its own set of Destination Names. It's a responsibility of User to manage “Master Destination List.

We strongly recommend to submit own A-Z destination list if you're managing A-Z traffic. This significantly simplifies initial dialing code management. Be aware that upon A-Z load old traffic data will become not accessible, hence we recommend to upload A-Z list first thing after starting new managed platform.

 **New** Creates new Destination. For consistency new Destination Name should start with a Country Name. User is allowed to use special characters in Destination Name.

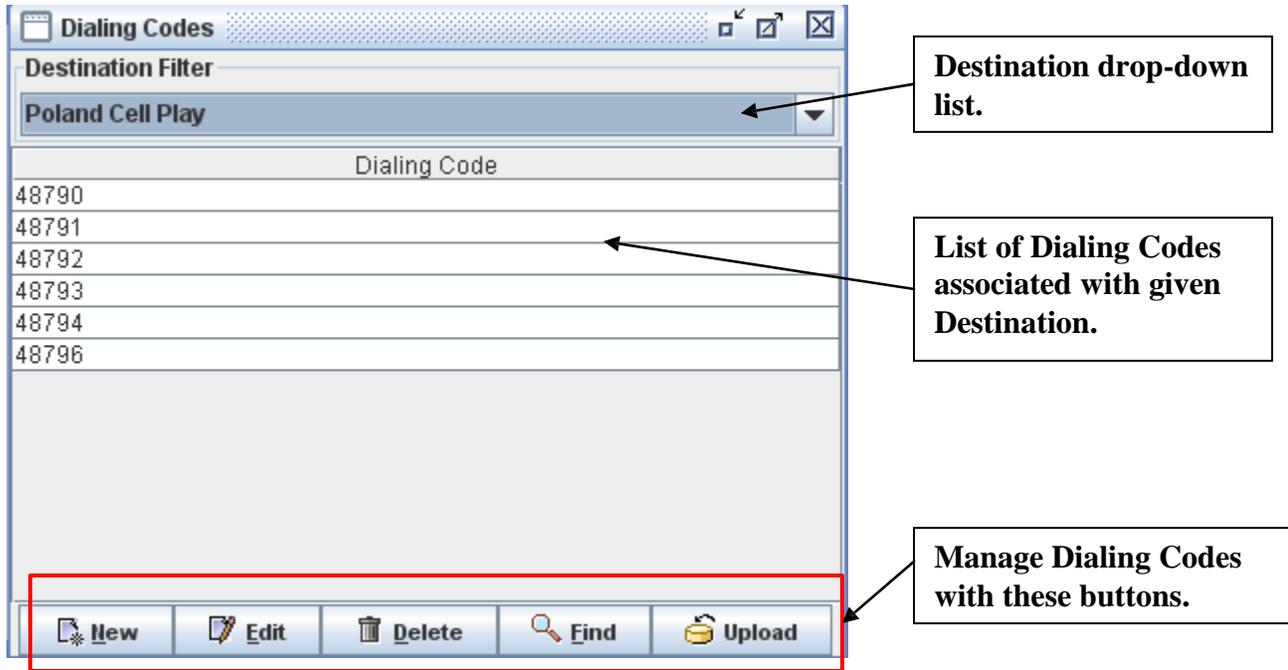
Example:

- India New Delhi (9111)
- Pakistan Karachi
- Bulgaria 35989

User may  destination name at any time, however User is not allowed to  Destination if any traffic passed through that Destination.

Managing Master Dialing Codes

MasterDestination list may be modified according to billing requirements. To do that access Dialing Codes-> Dialing Codes. All changes are taking effect immediately.



Destination drop-down list.

List of Dialing Codes associated with given Destination.

Manage Dialing Codes with these buttons.

Adding a Dialing Code to a “Master List” Destination

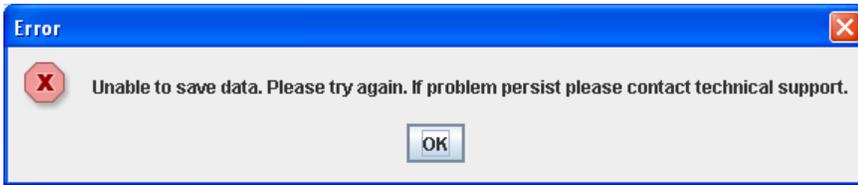
To add a new Dialing Code, click 

A request window will appear:



Enter desired Dialing Codes in E.164 format: Country code + destination national

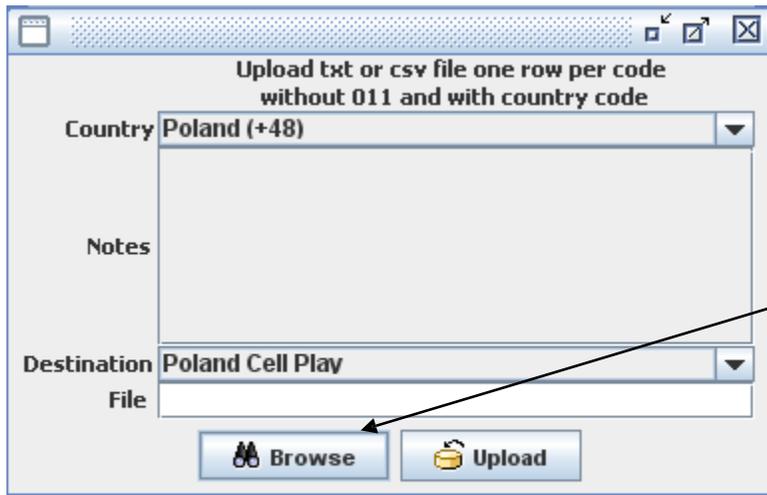
If User enters the code that already exists in the System this will get an error message:



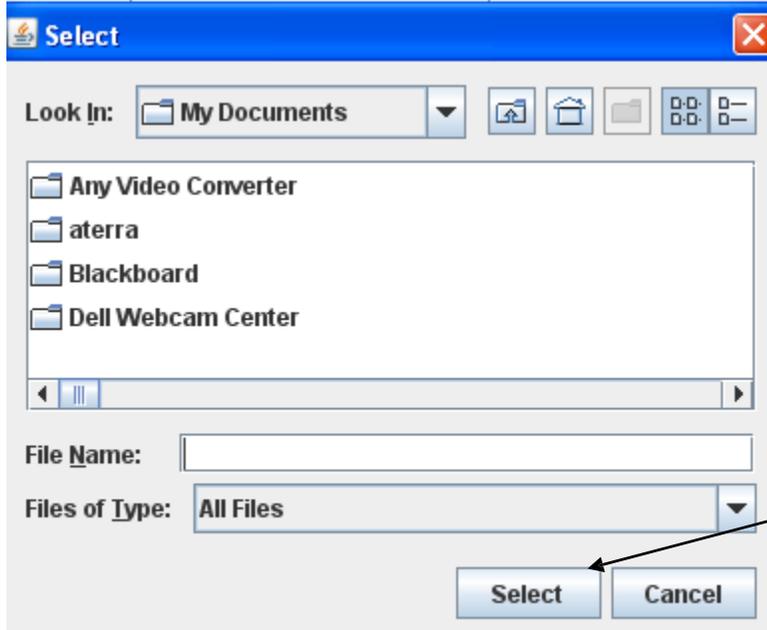
Please check if requested Dialing Code is present in the system by using  button.

Bulk upload of Dialing codes to “Master Table”

It's possible to upload dialing codes into a particular destination via  function. To upload codes User first has to create a text or CSV file with one code per line format in E.164 format. System will upload up to 3000 codes per Destination, should you need to upload larger number please Contact your Customer Representative.



Browse to a TXT or CSV file



Select a file and click Upload

Uploading dialing Codes will overwrite any repetitive codes in the system. Please use with caution as billing uses dialing codes information.

Editing/Deleting a Dialing Code to a Destination

User may also Edit or Delete Dialing Codes at any moment in time. Requested change will be effective immediately. User cannot specify changes in a Dialing Codes at a future or past time. Please create a request through Tech Support Interface if such request is needed.

Carrier-specific Dialing Codes and Destinations

System allows having individual Dialing Codes and Destination tables for each Carrier. This allows flexibility in management of various dialing codes and accuracy in billing reconciliation.

Carrier Codes and Destination assignments can be reviewed using Dialing Codes -> Carrier Dialing Codes menu.

Carrier	Destination	Dialing Code	Effective Date
TPT	AFGHANISTAN	93	11/08/2010
HAS	AFGHANISTAN	93	10/11/2010
TEL	AFGHANISTAN	93	10/01/2010
NMT	AFGHANISTAN	93	11/10/2009
2TL	AFGHANISTAN	93	10/05/2009
COM	AFGHANISTAN	93	05/04/2009
DIG	AFGHANISTAN - NON-MOBILE	93	11/24/2010
DG2	AFGHANISTAN - NON-MOBILE	93	11/24/2010
TTE	AFGHANISTAN - PROPER	93	10/11/2010
TAT	AFGHANISTAN OTHER	93	08/27/2010
VSP	AFGHANISTAN PROPER	93	11/18/2010
WIZ	AFGHANISTAN PROPER	93	05/19/2009
VVA	ESTONIA MOBILE TOPCONNECT 3	93	08/05/2010
DIG	AFGHANISTAN - KANDAHAR (3)	933	11/24/2010
DG2	AFGHANISTAN - KANDAHAR (3)	933	11/24/2010
DIG	AFGHANISTAN - MOBILE (7)	937	11/24/2010
DG2	AFGHANISTAN - MOBILE (7)	937	11/24/2010
VSP	AFGHANISTAN MOBILE OTHER CARRIERS	937	11/18/2010
COM	AFGHANISTAN - CELLULARAR	9377	05/04/2009
COM	AFGHANISTAN - CELLULARAW	9370	05/04/2009
COM	AFGHANISTAN - CELLULARET	9378	05/04/2009
COM	AFGHANISTAN - CELLULARRO	9379	05/04/2009
DIG	AFGHANISTAN - KABUL (20)	9320	11/24/2010
DG2	AFGHANISTAN - KABUL (20)	9320	11/24/2010
TTE	AFGHANISTAN - MOBILE - AREEBA	9377	10/11/2010

There's no option to modify Carrier Codes assignment. All changes can only be done through Carrier Rate upload function under Billing Menu (see 1.6.2)
 System allows User to Export Dialing Codes to an HTML or MS Excel file in two formats:

Rate Format

Destination Name	Dialing Codes
Afghanistan	01193 0119370
Afghanistan Cell Roshan	0119379
Albania	011355
Albania Cell	01135538 01135568 01135569

Table Format

Afghanistan	01193
Afghanistan	0119370
Afghanistan Cell Roshan	0119379
Afghanistan Kabul	011932
Albania	011355

Both formats present the same data and may be used for analysis of current Dialing Codes allocations.

1.6. MANAGING BILLING and RATES

Prerequisites:

- Provisioned Trunk Group
- Correctly set up Dialing Codes

R&R Billing system is designed for intercarrier billing. Billing System allows to automatically generate Billing Reports based on system CDRs, provisioned Carrier rates, Dialing Codes and rounding increments.

Maintaining input parameters up-to-date is critically important to produce correct Billing Reports and Transaction Alerts. Please refer to Upload Carrier Rates and Client Rate.

R&R Billing system is using real-time data feed from Sonus switches. Calls are billed upon end of a call session hence it's recommended to delay billing at least two hours after the end of a billing period to allow active calls to complete and be accounted.

Billing system stores CDRs with rate information, any backdated rate update will result in recalculation of CDRs and summary reports hence postdating is limited to 14 days. Call duration is recorded to the Date and Time when call has started.

Managing Carrier Rates

The first step in preparing Billing System is to load Carrier Rates and Dialing codes into the system. Rate and Dialing Code upload taken from preformatted CSV file which can be created using an Excel macro tool available to clients. Instructions to download, install and use of Reformat Tool were sent to you in a Welcome Kit.

Uploading rates using Rate Reformat tool

For Microsoft Excel 2003

1. Run Microsoft Excel applications
2. Go to Tools Add-Ins and select browse
3. Navigate to the location where the file was saved. Select the ReformatTool.xla file and click OK.
4. You will see "Reformattool2" appeared in the Addin window.
5. Ensure that its checkbox is checked. **Uncheck "Reformatool" - previous release.**
6. Restart Excel software.

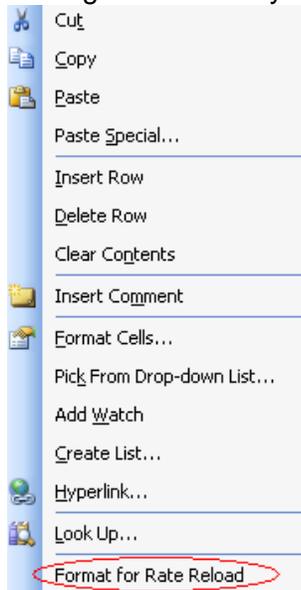
For Microsoft Excel 2007

1. Run Microsoft Excel
2. Click "Office button" and select "Excel Options"

3. Select Addins on the left hand side menu and click “Manage Add-ins” on the right pane. Click “Browse...”
4. Navigate to the location where the file was saved. Select the ReformatTool.xla file and click OK.
5. You will see "Reformattool2" appeared in the Addin window. Ensure that its checkbox is checked. **Uncheck “Reformatool” - previous release.**
6. Restart Excel software.

Usage manual

1. Open worksheet with carrier rates
2. Right click on any cell and notice new option:



Option - V2.3.1B

This tool will convert Spreadsheet data to CSV file ready for upload to Carrier Rates.
 NOTE: Only rows with present "Destination Name", "Rate", "Effective Date" and "Dialing Code" will be processed. If original file is missing those please populate manually before converting.

Select Templates

Selection

General Format

Billing/Duration

Time of Day Rates

Quality

Country name and destination name in same cell

Country name and destination name in different cells

Pricing / Rate

Effective Date

Dialing code

CountryCode merged with National Code

CountryCode NOT merged with National Code

Remove ", " and ";" from destination name

Country code

National code

Source Decimal Format

Source Date Format

Row starts at

When macros starts it attempts to automatically identify column names and parse available data. If successful it creates a CSV file on your desktop with formatted data. It also displays a statistic for performed operations that list number of rows processed, number of rows not processed and final number of rows in resulting CSV file.

If automated process encounters an issue an error screen is shown and User is requested to manually map fields or select a pre-saved Template.

Checking existing rates

All rates that were input into the system are stored with respective Effective Dates. History of all rates may be looked up per one carrier or per all available offers.

Please note that system will only show Rates that were provisioned into the system. Maintaining accurate rate table in the switch is the responsibility of User.

Look up for all available rate offers to a particular destination is effectively showing Least Cost Routing (LCR) option that User may implement in routing. Please note that strictly following (LCR) may not provide the best quality of service.

Looking up historical rates to a single Destination

Carrier Rates

Member Name	<input type="text"/>	Effective Date	02/24/2011
Destination Name	<input type="text"/>	Dialing Code	38066

Refresh

Show LCR

Export

Me...	Destination	Dialing ...	Rate	Effective...	Min. Dura...	Increm...	Hours	Days	Flag
Va...	UKRAINE MOBILE MTS	38066	\$0.0700	05/04/2...	1	1	0-23	Mon-S...	5.0
MAS	UKRAINE MOBILE UMC	38066	\$0.0435	05/13/2...	1	1	0-23	Mon-S...	5.0
G...	UKRAINE (MOB) - MTS	38066	\$0.1190	11/04/2...	1	1	0-23	Mon-S...	5.0
W...	UKRAINE - MOBILE - UMC	38066	\$0.0533	11/01/2...	1	1	0-23	Mon-S...	5.0
SPF	UKRAINE MOBILE JEANS	38066	\$0.0435	05/04/2...	1	1	0-23	Mon-S...	5.0
D...	UKRAINE MOBILE MTS	38066	\$0.0750	11/05/2...	1	1	0-23	Mon-S...	5.0
IB...	UKRAINE MOBILE MTS 66	38066	\$0.0560	04/28/2...	1	1	0-23	Mon-S...	5.0
T...	UKRAINE MOBILE UMC	38066	\$0.0510	11/04/2...	1	1	0-23	Mon-S...	5.0
TEG	UKRAINE MOBILE UMC	38066	\$0.1220	11/04/2...	1	1	0-23	Mon-S...	5.0
So...	UKRAINE MOBILE UMC	38066	\$0.0435	11/01/2...	1	1	0-23	Mon-S...	5.0
L...	UKRAINE UMC MOBILE	38066	\$0.1080	11/05/2...	1	1	0-23	Mon-S...	5.0
DXT	UKRAINE UMC MOBILE	38066	\$0.0500	11/01/2...	1	1	0-23	Mon-S...	5.0
C...	UKRAINE UMC MOBILE	38066	\$0.0650	06/10/2...	1	1	0-23	Mon-S...	5.0
Av...	UKRANIE__MOBILE	38066	\$0.1335	12/01/2...	1	1	0-23	Mon-S...	5.0

Edit

In order to check latest and all preceding rates to single Destination/Carrier pair, populate both Member Name and Destination Name fields.

From this menu User may also modify Quality Flag and change rate for any future date.

Looking up Carrier Rates in LCR style

User may look up currently provisioned Carrier Rates and compare rates offered. Billing->Carrier Rates-> Carrier Rates menu is shown below.

Me...	Destination	Dialing ...	Rate	EffectiveDate	Min. Dur...	Increm...	Hours	Days	Flag
Av...	KAZAKHSTAN_MOBILE	770	\$0.0672	12/01/2010	1	1	0-23	Mon-...	5.0
DXT	KAZAKHSTAN MOBILE 1	7705	\$0.0744	11/01/2009	1	1	0-23	Mon-...	5.0
G...	KAZAKHSTAN (MOB) - KA...	7705	\$0.0810	11/04/2009	1	1	0-23	Mon-...	5.0
L...	KAZAKHSTAN K-MOBILE ...	7705	\$0.0820	11/05/2009	1	1	0-23	Mon-...	5.0
T...	KAZAKHSTAN MOBILE BE...	7705	\$0.0830	11/04/2009	1	1	0-23	Mon-...	5.0
TEG	KAZAKHSTAN MOBILE BE...	7705	\$0.0860	11/04/2009	1	1	0-23	Mon-...	5.0
MAS	KAZAKHSTAN MOBILE KA...	7705	\$0.0890	05/13/2009	1	1	0-23	Mon-...	5.0
IB...	KAZAKHSTAN CELL KART...	7705	\$0.0999	04/28/2009	1	1	0-23	Mon-...	5.0
Va...	KAZAKHSTAN MOBILE B...	7705	\$0.1060	05/04/2009	1	1	0-23	Mon-...	5.0
R...	RUSSIA KAZAKHSTAN MO...	7705	\$0.1110	11/01/2009	1	1	0-23	Mon-...	5.0
W...	KAZAKHSTAN - MOBILE - ...	7705	\$0.1228	11/01/2009	1	1	0-23	Mon-...	5.0
C...	KAZAKHSTAN KARTEL M...	7705	\$0.1230	06/10/2009	1	1	0-23	Mon-...	5.0

For this menu a Dialing Code must be filtered out.

Show LCR will show rate to selected code for all Carriers, regardless if they offer this code explicitly or not.

Exporting LCR table (Target rates)

Users may export LCR table for all destinations to use as a Target List.

Target List takes actual traffic data to compile a list of destinations along with rates and quality parameters.

To produce such report do the following:

1. Define Filter selection on the Main Screen.
2. Run report **Billing->Average Cost by Destination**

Report can be exported to Excel.

Managing Client Rates

Client Rates are rates that your offer to your Originators (Buyers). Rates are assigned per Destination Name from Master Dialing Code list (see Clause 1.5.2). Your billing data for Clients can only be accurate as long as you maintain Master Dialing Code list according to your sales offers.

Client Rate interface provides convenient tools to export rate changes and prepare them for emailing to Clients. Using Client Billing and rate update changes from the system simplifies your routine work and limits possibility of an error.

Client Rates process consists of two steps:

- Creating Client Rate offering (Creating "Draft")
- Effecting Client Rate offering (Approving "Draft")

Draft step is required to distinguish between rates that were approved into production and rates as created by Account Manager and that are still pending approval.

Access Client Rates screen via Billing->Client Rates -> Edit Client Rates menu

The screenshot displays the 'Client Rates' application window. At the top, there is a 'Client' dropdown menu set to 'A1A-test' and a 'Refresh' button. Below this is a table with columns: Status, Created Date, Approved Date, Job Status, Job Start, Job Finished, Reprocess Count, Delete Future Rates, and Acknowledged Date. The first row is highlighted in green, indicating an approved rate. Below this table is a detailed view for a specific rate, with columns: Country, Destination, Rate, CLI, Effective..., Min. Dur..., Inc., Rate Ch..., Code C..., Hours(A..., Days, Effective..., NoLCR, and Comme... The details for the selected rate show 'Afghanistan' for both Country and Destination, a 'Deleted' rate, and an effective date of 11/22/2016. At the bottom of the window, there are buttons for 'Edit', 'Export', 'Approve', and 'Approve and Notify Cli...', along with a 'Show Dialing Codes' checkbox.

History of Client rate changes

Details of each rate change

Status	Created Date	Approved Date	Job Status	Job Start	Job Finished	Reprocess Count	Delete Future Rates	Acknowledged Date
Approved	11/14/2016 11:09:47	11/15/2016 16:51:16	Processed	11/15/2016 16:51:16	11/15/2016 16:51:16	0	0	
Approved	11/14/2016 11:03:04	11/14/2016 11:06:34	Processed	11/14/2016 11:06:34	11/14/2016 11:06:34	0	0	
Approved	11/14/2016 10:55:45	11/14/2016 10:58:43	Processed	11/14/2016 10:58:43	11/14/2016 10:58:43	0	0	
Approved	11/11/2016 12:08:40	11/12/2016 08:33:40	Processed	11/12/2016 08:33:40	11/12/2016 08:33:40	0	0	
Approved	11/07/2016 10:48:49	11/10/2016 13:34:44	Processed	11/10/2016 13:34:44	11/10/2016 13:34:44	0	0	
Approved	11/07/2016 10:12:26	11/07/2016 10:14:41	Processed	11/07/2016 10:30:05	11/07/2016 10:30:05	0	0	
Approved	11/04/2016 23:13:24	11/04/2016 23:17:43	Processed	11/04/2016 23:30:04	11/04/2016 23:30:05	0	0	
Approved	11/04/2016 23:02:07	11/04/2016 23:09:44	Processed	11/04/2016 23:09:44	11/04/2016 23:09:44	0	0	

Country	Destination	Rate	CLI	Effective...	Min. Dur...	Inc.	Rate Ch...	Code C...	Hours(A...	Days	Effective...	NoLCR	Comme...
Afghanistan	Afghanistan	Deleted	<input type="checkbox"/>	11/22/2...	1	1	Deleted		0-23	Mon-Sun		<input type="checkbox"/>	

Creating Client Rate Draft

Select Client, click Refresh to see history of Rate Updates.

Edit button will generate a New Draft, or will start a new one if Client had no previously created Drafts. Clicking Edit while selecting older approved rate update will create a Draft based on destinations in the selected old Offer.

There are two ways to add information to the Draft:

- Manually, using "Change Offered Country List";
- Uploading prepared file.

Manual addition will work best if you add rates to few Destinations.

Copying rates fits when you have multiple Clients sharing identical rate offers.

Uploading file is best for Clients migrating billing information from other systems.

Manually adding Client Rates

Clicking "Change Offered Country List" will bring new window listing all Destinations provisioned in the Master Dialing Code list. User can select destinations and "move" them to list of offered Destinations.

It's highly recommended to offer entire countries to make sure that no breakout left behind, creating a potential risk of becoming a victim of "cherry picking". Under SwitchMember menu it can be prohibited to offer incomplete countries.

Multiple destinations can be selected with CTRL+Click or Hold and Drag mouse operations. Chosen destinations will appear in the Draft window where required rate can be manually entered (double click on Rate and press enter when done)

Destinations offered to Arbinet-ARB

Available Destinations

Destination Name
Afghanistan
Afghanistan Cell Roshan
Albania *355
Albania Cell Other *35568
Albania Cell Vodafone *35569
Albania Tirana *3554
Algeria
Algeria Cellular
American Samoa
Andorra
Angola
Anguilla
Antarctica
Antigua
Argentina
Argentina Buenos Aires

Offered Destinations

Destination Name
Belarus Cell MTS *37529[2;5;7;8]
Belarus Cell Other *375[25;29]
Bosnia and Herzegovina Cellular
Colombia Bogota
Germany Cellular
Italy Cellular
Italy Cellular 1
Russia Cell * 7901
Russia Cell * 7926
Russia Cell * 798
Russia Cell * 799
Russia Cell * HM Region
Russia Cell * Piter Region
Russia Cell Beeline Moscow
Russia Cellular
Russia Cheliabinsk * 3512

Uploading Client Rates

Upload option will process CSV file for selected Client.

To assist in generation of CSV file you can download Template or whole list of Master Dialing List Destinations and use them as basis for file generation.

Note that uploaded CSV file will be checked that DestinationNames completely match DestinationNames provisioned in the system, for this reason it's recommended to use templates.

"Replace entire offer" checkbox signals the system that uploaded file is a complete offer and all destinations not uploaded in this offer but previously active should be marked as deleted.

Sample Client Draft screen:

Indicates CLI guarantee

Automatically sensed rate change type

Country	Destination	Rate	CLI	Old Eff...	New Effective D...	Min. D...	Inc.	Rate ...	Code ...	Hours...	Days	Effecti...	NoLCR	Com...
Armenia	Armenia Yerevan	\$0.01...	<input checked="" type="checkbox"/>	12/02/...		1	1	Same		0-23	Mon-S...		<input checked="" type="checkbox"/>	
Germany	Germany Mobile	\$0.01...	<input type="checkbox"/>	08/09/...		1	1	Same		0-23	Mon-S...		<input type="checkbox"/>	
Germany	Germany Mobile 3G	\$0.01...	<input type="checkbox"/>	08/09/...		1	1	Same		0-23	Mon-S...		<input type="checkbox"/>	
Germany	Germany Mobile E1	\$0.01...	<input type="checkbox"/>	08/09/...		1	1	Same		0-23	Mon-S...		<input type="checkbox"/>	
Germany	Germany Mobile Mobilcom	\$0.02...	<input type="checkbox"/>	08/09/...		1	1	Same		0-23	Mon-S...		<input type="checkbox"/>	
Germany	Germany Mobile O2	\$0.03...	<input type="checkbox"/>	08/09/...		1	1	Same		0-23	Mon-S...		<input type="checkbox"/>	
Germany	Germany Mobile Vodafone	\$0.14...	<input type="checkbox"/>	03/17/...		10	1	Same		0-23	Mon-S...		<input type="checkbox"/>	
Germany	Germany Proper	\$0.07...	<input type="checkbox"/>	03/16/...		1	1	Same		0-23	Mon-S...		<input type="checkbox"/>	
Germany	Germany Tmobile Mobile	\$0.04...	<input type="checkbox"/>	08/09/...		1	1	Same		0-23	Mon-S...		<input type="checkbox"/>	

Flag excludes offered route from LCR automated changes

Regardless of the way Draft was populated:

“Delete all rates changes applied after current effective date” – an optional change that will consider current rate offer as the latest one and will ignore any future changes to same dialing codes that were scheduled prior but did not come into effect yet.

New Effective Date is automatically populated based on determination whether newly offered rate is increase/decrease or new. Default effective dates are shown on top of the page however any line may be manually adjusted,

Billing increments are populated from uploaded file or from default rounding table. They maybe manually modified per line.

Each offer line also has a field for comments to indicate quality parameters or any special information such as “regulated rate”.

Saving draft will check data for correctness and prepare an internal Rate offer that is ready for management approval. Approved Rate drafts are triggering CDR recalculation if there are backdated rates and also there’s an option to create an automated email to Client with a unique verification link to confirm service offer delivery.

Running Billing Reports

Prerequisites:

- CDR in partition
- Correctly set Master Dialing Codes
- Provisioned Client/Carrier Rates

Billing Reports show Usage by Client and/or Carrier for User-defined time period. Billing Reports may also be filtered to show Usage per Specific Country or Destination.

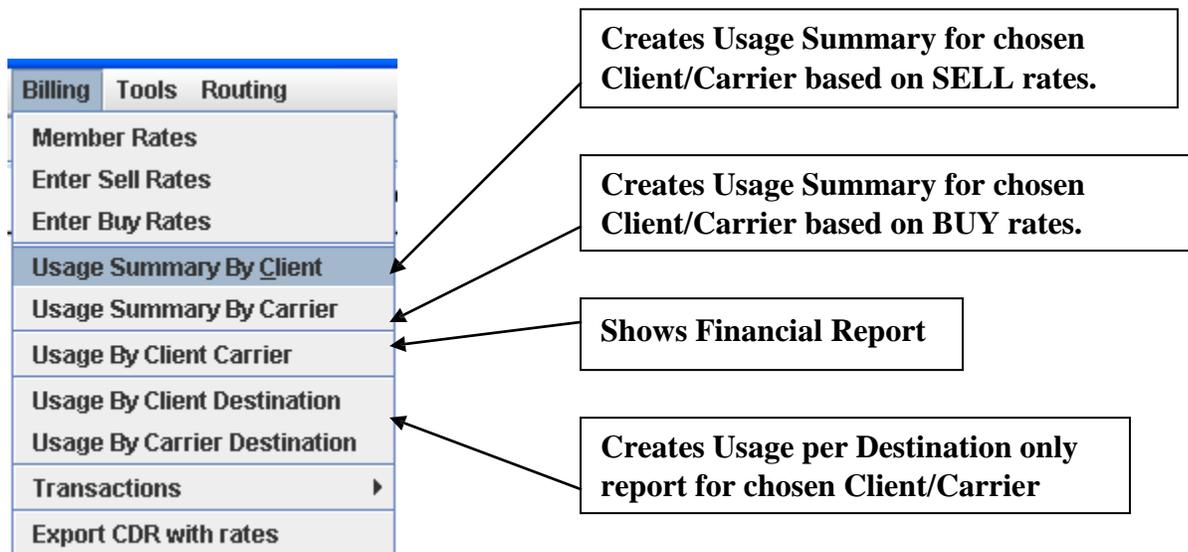
Billing Reports may be generated for any period of time – day, two days, one week, one month, one quarter and so on. User defines Billing Period by filtering applicable Start Date / End Date and Time on the left Pane of the Main Screen. (Read about setting Date and Time)

To run a Billing Report, User shall filter Client/Carrier name on the left pane of Main Screen, define Billing Period in Time filter and indicate Billing option “Use New Billing”.

If User had traffic to Destinations without rate, Billing Report will produce rates equal to \$0.0000 colored in red.

If any traffic passed to a CarrierDestination that was not properly defined Billing Reports will show these calls under Destination “Unknown”. Reviews those records using CDR Search menu and upload missing CarrierDialing codes to correct this issue.

After setting all Filters User shall choose on of the following menus:



Sample Usage Summary Billing Report

Usage Summary By Client

Start Date	07/12/2006 00:00:00	END Date	07/12/2006 23:59:59
Client	MCC	Carrier	
Country		Destination	
In TG		Out TG	
Min Duration	30	Increment	6

Chosen Billing Period in EST

Chosen Client

Usage Summary

Destination	Calls	Minutes	Rate	Amount
Belarus	232	2,096.0	\$0.1780	\$373.0880
Belarus Minsk 175	7	19.1	\$0.1600	\$3.0560
Bulgaria	2	7.1	\$0.0495	\$0.3515
Bulgaria Cell 88	45	177.3	\$0.0000	\$0.0000
Bulgaria Cell 89	25	85.5	\$0.0000	\$0.0000
Georgia	3	15.7	\$0.0360	\$0.5652

Usage sorted by Destination Name

Missing Rate in Billing

Usage Summary by Day of Month

Date	Day Of Month	Calls	Minutes	Rate	Amount
07/12/2006	WEDNESDAY	1,280	13,374.2	\$0.0356	\$476.7469
Total		1,280	13,374.2		\$476.7469

Usage Summary by Trunk Groups

Trunk Group	Calls	Minutes	Rate	Amount
199.11	797	9,520.0	\$0.0043	\$40.9360
199.6	483	3,854.2	\$0.1131	\$435.8109
Total	1,280.0	13,374.2		\$476.7469

Report by Usage Summary shows Usage per Destination and replicates the **Usage By Client Destination** report.

Additionally Usage Summary report shows usage by Day of Month and Usage per Trunk Group.

Financial Status Report

Prerequisites:

- Traffic through partition
- Correctly set Dialing Codes
- Provisioned Billing data

Financial Status shows estimated Revenue and estimated Cost. Financial Status window reports an estimated Gross Profit for the filtered set of data. User defines data filters on the left pane of the Main Screen. (see Clause 1.2.2.) Billing Interface allows User to check Financial Status per Client, Carrier, Country or Destination.

Financial Status window relies on rates provisioned in Billing. The accuracy of Financial Report is dependent on accuracy of provisioned rates. Maintaining correct rates in the system is a responsibility of a User.

Please note that Financial Report may not be 100% correct as it does not account for calls that are still active or had not been processed yet by billing application.

Sample Financial Status Report

Sample Financial Status Report

Country	Destination	Minutes	ClientUs...	Carrier...	ClientUs...	CarrierUs...	Diff.	margin/...
Ukraine	Ukraine Lviv Region	161.3	\$0.0750	\$0.0000	\$12.0975	\$0.0000	\$12.0975	\$0.0750
Ukraine	Ukraine Mobile 39	144.4	\$0.1020	\$0.0950	\$14.7288	\$13.7180	\$1.0108	\$0.0070
Ukraine	Ukraine Mobile 39	7.1	\$0.1020	\$0.0000	\$0.7242	\$0.0000	\$0.7242	\$0.1020
Ukraine	Ukraine Mobile 50	10.4	\$0.0880	\$0.0820	\$0.9152	\$0.8528	\$0.0624	\$0.0060
Ukraine	Ukraine Mobile 50	893.8	\$0.0880	\$0.0800	\$78.6544	\$71.5040	\$7.1504	\$0.0080
Ukraine	Ukraine Mobile 50	894.5	\$0.0880	\$0.0850	\$78.7160	\$76.0325	\$2.6835	\$0.0030
Ukraine	Ukraine Mobile 66	1,537.5	\$0.0830	\$0.0750	\$127.6125	\$115.3125	\$12.3000	\$0.0080
Ukraine	Ukraine Mobile 67	142.9	\$0.0870	\$0.0850	\$12.4323	\$12.1465	\$0.2858	\$0.0020
Ukraine	Ukraine Mobile 67	1,629.8	\$0.0870	\$0.0810	\$141.7926	\$132.0138	\$9.7788	\$0.0060
Ukraine	Ukraine Mobile 95	2,322.2	\$0.0890	\$0.0830	\$206.6758	\$192.7426	\$13.9332	\$0.0060
Ukraine	Ukraine Mobile 96	43.1	\$0.0890	\$0.0850	\$3.8359	\$3.6635	\$0.1724	\$0.0040
Ukraine	Ukraine Mobile 96	160.8	\$0.0890	\$0.0810	\$14.3112	\$13.0248	\$1.2864	\$0.0080
Ukraine	Ukraine Mobile 97	24.7	\$0.0870	\$0.0850	\$2.1489	\$2.0995	\$0.0494	\$0.0020
Ukraine	Ukraine Mobile 97	2,512.9	\$0.0870	\$0.0810	\$218.6223	\$203.5449	\$15.0774	\$0.0060
Ukraine	Ukraine Mobile 97	5,567.8	\$0.0870	\$0.0860	\$484.3812	\$478.8136	\$5.5676	\$0.0010
Ukraine	Ukraine Nicolaev	145.8	\$0.0708	\$0.0710	\$10.3226	\$10.3518	-\$0.0292	-\$0.0002
Ukraine	Ukraine Odessa	0.5	\$0.0600	\$0.0520	\$0.0300	\$0.0260	\$0.0040	\$0.0080
Ukraine	Ukraine Odessa 1	95.8	\$0.0600	\$0.0520	\$5.7480	\$4.9816	\$0.7664	\$0.0080
Ukraine	Ukraine Odessa R...	146.1	\$0.0750	\$0.0710	\$10.9575	\$10.3731	\$0.5844	\$0.0040
Ukraine	Ukraine Rovno 362	667.2	\$0.0750	\$0.0640	\$50.0400	\$42.7008	\$7.3392	\$0.0110
Ukraine	Ukraine Simferopol	439.9	\$0.0750	\$0.0650	\$32.9925	\$28.5935	\$4.3990	\$0.0100
Ukraine	Ukraine Zaporozh ...	79.8	\$0.0750	\$0.0720	\$5.9850	\$5.7456	\$0.2394	\$0.0030
Ukraine	Ukraine Zaporozhie	187.2	\$0.0750	\$0.0720	\$14.0400	\$13.4784	\$0.5616	\$0.0030
Uzbeki...	Uzbekistan Tashk...	186.1	\$0.0520	\$0.0500	\$9.6772	\$9.3050	\$0.3722	\$0.0020
Uzbeki...	Uzbekistan Tashk...	2,170.9	\$0.0520	\$0.0428	\$112.8868	\$92.9145	\$19.9723	\$0.0092
Total		198,0...			7,655,...	6,871,...	\$784.02...	\$0.0040

Missing rates are in blue

Routes with negative margins are in red.

Summary per Destination, Client, Carrier

Summary of Revenue, Cost, Gross Profit and Average Margin per minute.

Financial Report window shall be used for Gross Profit and Margin analysis and to pinpoint routes with negative margins. As shown in example, missing rates and negative margin routes are distinctively colored for convenience.

User may sort columns (ascending/descending) by clicking on column name.

Analyzing QOS and Profit Index

Display ASR,ACD,QOS and Profit Index checkbox allows User to access quality and profitability metrics on every destination.

ASR – average

seizure ratio ACD –

average call duration

QOS – quality of

service index

Profit Index – expected profit in US cents per call attempt

Whereas ASR and ACD are already used in quality analysis, R&R suggests to use QOS and PI to add financial reasoning to the routing decision.

QOS is showing comparable quality per client-destination-carrier. It's useful to compare QOS values for several time periods, for example for last week, this week and today. Consistently higher QOS clearly shows quality advantage of one carrier over the other.

QOS is calculated as $QOS = ASR * ACD * 100$ and shows number of expected completed minutes per call attempt * 100.

Profit Index adds benefit analysis into the routing decision. Profit Index is useful for comparing carrier offers based on both quality of service and margin.

Carrier with consistently higher PI is providing more value per each call attempt.

PI is calculated as $QOS * (Sell Rate - Buy Rate)$ and shows expected profit in US cents per call attempt. Based on PI value partition clients are encouraged to perform routing changes to maximize net benefit.

Example to use QOS and Profit index report

1. Run Financial Report and export data into spreadsheet application.
2. For example the following output is given (some columns are skipped for simplicity)

		Client	Carrier	Sell rate	Buy rate	Margin	ASR	ACD	QOS	Profit Index
Ukraine	Ukraine Mobile MTS 50	CLIENT	CRR1	0.072	0.066	0.006	63%	5.89	369	2.21
Ukraine	Ukraine Mobile MTS 50	CLIENT	CRR2	0.072	0.0645	0.0075	57%	11.78	673	5.05
Ukraine	Ukraine Mobile MTS 50	CLIENT	CRR3	0.072	0.0595	0.0125	30%	8.23	247	3.09

3. Analyze QOS

QOS provides aggregated quality information. Comparing QOS's provides better information rather than comparing ASR and ACD individually.

From Example we clearly see that CRR2 provides most minutes per call attempt, even though it does not have highest ASR. Actually CRR2 provides 82% quality increment over CRR1.

QOS analysis shall be used to eliminate carriers with under par performance. Generally QOS values below 100 for fixed networks and below 50 for mobile networks are considered to be "wholesale" quality.

4. Analyze PI

PI provides another layer of information analysis. From the table CRR3 provides best rate to the destination while others are definitely more expensive. Which one should be used in routing and what routing algorithm must be chosen?

PI shows expected profit per call attempt in US cents to a carrier.

Carriers with higher PI will generate more profit per call attempt. Generally, carriers with higher PI should have higher call percentage allocation or be earlier in the sequence than carriers with lower PI.

Routing prioritization selection depends on many factors and there's no hard and fast rule when to use Sequence, Round Robin or Prioritization. Our advice is to use sequence when one route consistently outperforms others in both QOS and PI. Round Robin is preferable when several routes are performing with similar QOS and PI, and Prioritization should be used in all cases in between.

User may chose update interval from the drop-down list. Please note that closing Financial Report window will cancel auto-update function.

Exporting Financial Report data

 function allows User to export Financial Report data to a Spread Sheet or HTML file for further analysis.

User may also export partial data by selecting desired region in the Financial Report and using Ctrl-C for copy and Ctrl-V for paste function. With this method data can be imported to any application.

Export rated CDRs

Prerequisites:

- Traffic through partition.

- Set Filter on a Left Pane of the Main Screen. See

- Provisioned Billing data

Billing interface allows User to export rated CDRs for further analysis in third-party software modules.

Export will be saved as Comma Value Separated (*.CSV) file that may be opened in Spread Sheet or other software.

In order to export rated CDRs User has to set filters on the Left Pane of the Main Screen, as described in Clause 1.2.2.

Structure of rated CDRs is different from Export CDR function in CDR menu (see Clause 1.7.8.)

ClientName	CarrierName	InTG	OutTG	Start DateTime	Dialed Number	Country Code	City	Country- CityName	BUY rate	Cost	SELL rate	Revenue	Duration (Sec.)
------------	-------------	------	-------	-------------------	------------------	-----------------	------	----------------------	-------------	------	--------------	---------	--------------------

Client Name – abbreviated name of Originating Party

Carrier Name - abbreviated name of Terminating Party

InTG – IP address or Trunk Group name of Origination party.

OutTG – IP address and Trunk Group name of terminations party.

StartDateTime – date & time when call reached partition in EST.

DialedNumber – destination number without tech prefixes. Apostrophe (') sign will be in front of each number to correctly show dialed number in spreadsheet software.

Country Code – country code stripped from Dialed number

City – Destination National code stripped from Dialed number

Country-CityName – Destination Name

BUY rate, Cost – financial reporting for termination party

SELL rate, Cost – financial reporting for origination party

Revenue – total amount of revenue per call

Duration – 1/1 duration in seconds.

1.7. TRANSACTIONS ACCOUNTING

Prerequisites:

Provisioned Trunk Group

Transaction accounting module allows User to keep track of issued invoices, received payments and account balances.

Managing transactions accounting

Switch Interface allows for an easy way to record Client's and Carrier's transactions. Usage amounts for Buy and Sell sides are automatically populated into the table as long as Auto-Billing is activated for a specific Member. It's possible to edit created entries or to create adjustment entries. For manual entries Users need to select type of entry and enter amount.

Available transaction options

Adjustment	For miscellaneous purposes: dispute adjustments, bill corrections, etc.	Both positive and negative
Bill received	Billed amount received from Client. Cut- off date is the date of last day in the billing cycle.	Increases Balance
Invoiced Amount	Invoiced amount to Client. Cut-off date is the date of last day in the	Decreases Balance
Payment sent	Amount paid to Client.	Decreases Balance
Payment received	Cleared amount received from Client.	Increases Balance
Service Credit Limit	Service credit for postpaid clients.	Increases Balance

Date	Member	Type	Description	Amount
02/19/2017	Harmony-Telecom	Invoiced Amount (-)	RRT auto billing entry 02/13/20...	\$609.04
02/19/2017	Harmony-Telecom	Bill Received (+)	RRT auto billing entry 02/13/20...	\$0.00
02/12/2017	Harmony-Telecom	Invoiced Amount (-)	RRT auto billing entry 02/06/20...	\$109.14
02/12/2017	Harmony-Telecom	Bill Received (+)	RRT auto billing entry 02/06/20...	\$0.00
02/05/2017	Harmony-Telecom	Bill Received (+)	RRT auto billing entry 01/30/20...	\$0.00
02/05/2017	Harmony-Telecom	Invoiced Amount (-)	RRT auto billing entry 01/30/20...	\$1,739.13
01/29/2017	Harmony-Telecom	Bill Received (+)	RRT auto billing entry 01/23/20...	\$0.00
01/29/2017	Harmony-Telecom	Invoiced Amount (-)	RRT auto billing entry 01/23/20...	\$0.00
01/22/2017	Harmony-Telecom	Bill Received (+)	RRT auto billing entry 01/16/20...	\$0.00
01/22/2017	Harmony-Telecom	Invoiced Amount (-)	RRT auto billing entry 01/16/20...	\$0.00

Total Balance: -2457.2778

Buttons: New, Edit, Delete, Transaction Summary

Example of automatically populated transaction data

Current balance (excluding usage up to date)

Manual Transaction entry example

1. Enter transactions

The image shows a software dialog box titled "New Transaction for IRG". It contains the following fields and values:

Field	Value
Date	05/01/2008
Check/Invoice No.	0
Type	Service Credit Limit (+)
Amount	5000
Description	Agreed Credit Limit

At the bottom of the dialog, there are two buttons: "OK" and "Cancel".

Financial & fraud prevention alerts

Financial Alerts are recurring processes that compare current usage by Clients with allowed credit and existing balances. Financial Alerts can be created for individual SwitchMember or for a several selected SwitchMembers for cases when one partner has several Service Levels.

All Financial Alerts automatically consider value of services consumed from a SwitchMember(s) and balance it out. All Financial Alerts are calculated in the main currency of the system.

To create a new Financial Alert go to Billing->Transactions-> Transaction Alerts

To create an Alert for specific SwitchMember select this Member in dropdown and Click New Alert. To create Alert that tracks multiple Members do not select a Member and after clicking New Alert a new window will be shown allowing to Ctrl-select multiple Members.

There are 3 types of Financial Alerts :

Manual – which tracks usage from the StartDate till now and compares it with provided Credit Limit. This is the most basic of alerts that can be useful for new accounts and trial Clients.

Recurring – a type of Manual alert that is self-resets every billing cycle. This is useful to monitor Clients that are using postpaid terms and is used for alerting when usage patterns are higher than the expected.

Transactional – this is Alert that takes into account prior Transaction history. This Alert is the optimal choice however it does require User to maintain Transaction History, including populating bank transaction information into the system.

Manual alert example

New Transaction Alert for RTCarrier-IN

Start Date: 02/22/2017 00:00:00 Use Transactions Enabled

Prepaid Amount: 2000 Restart each billing cycle

First Alert Alerts Sent 0

Threshold: 90 %
Max Alerts: 1
Email: me@myemail.com
Subject: 90% used RT

Last Alert Alerts Sent 0

Threshold: 99 %
Max Alerts: 1
Email: me@myemail.com; client@email.com
Subject: all used. BLOCK.

Block Inbound Voip Trunk Groups

OK Cancel

Fixed credit value

Blocking option activated

Recurring Alert uses same principle but checkbox “Restart Each Billing Cycle” must be checked.

Transactional Alert must have “Use Transactions” checkbox checked.

In Transactional Alert Prepaid Amount and Start Date fields are greyed out as this data is pulled from Member Transaction menu and cannot be manually edited within Alert.

Start Date is set as date after last billing period and Prepaid Amount is current Balance value.

Blocking inbound traffic

User may create a financial alert that will send a notification or automatically block inbound traffic per client when certain alert criteria is met. Please note that R&R Telecom offers “best effort” guarantee for this service and waives all liabilities in case alerts were not processed correctly or timely. Please understand all risks related to delays and interruptions in the email communications.

Please note:

1. Blocking of inbound traffic from the Client will disallow new calls to enter the system, however all calls in progress will not be disconnected and will be allowed to finish.
2. System periodically but not continuously calculates used traffic amount and compares it to the threshold values. Since process is only close to the real-time, delays in alarm generation may occur. It’s advised that clients use conservative threshold values to avoid exceeding specified “Prepaid amount”.

Unblocking inbound traffic

There are two ways to unblock traffic from Client:

- Manually via Routing->Traffic Management menu
- By adding funds to Client via Transaction Menu

1.8. CDR MENU AND TROUBLESHOOTING

CDR Menu is used for looking up CDR Records, Exporting CDRs for billing purposes and find calls with specific characteristics.

1.8.1. Using CDR Search menu

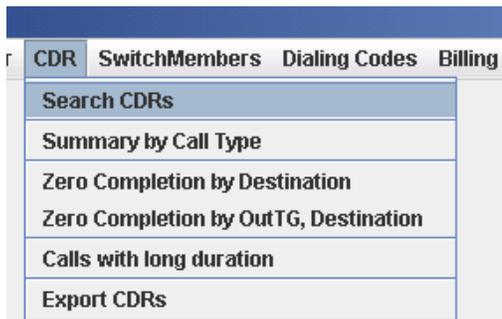
Prerequisites:

- Inbound Trunk Group
- Outbound Trunk Group
- Call attempts / Completed calls

CDR Search menu allows User to lookup records of call attempts and completed calls that reached User partition. Unlike Billing menu, CDR Search will show both completed and non-completed records along with technical information that may be used for troubleshooting.

CDR Search function should not be used for CDR export, but only for lookup. Please use CDR – Export CDRs menu to export rates for billing purposes.

Please note that CDRs are updated every 1-5 minutes so please allow reasonable time before searching CDRs for recently placed call attempts.



The image shows a screenshot of a web application interface. At the top, there is a navigation bar with four tabs: "CDR", "SwitchMembers", "Dialing Codes", and "Billing". The "CDR" tab is currently selected and highlighted. Below the navigation bar, a dropdown menu is open, displaying several options: "Search CDRs", "Summary by Call Type", "Zero Completion by Destination", "Zero Completion by OutTG, Destination", "Calls with long duration", and "Export CDRs".

CDR	SwitchMembers	Dialing Codes	Billing
Search CDRs			
Summary by Call Type			
Zero Completion by Destination			
Zero Completion by OutTG, Destination			
Calls with long duration			
Export CDRs			

CDR Search Filters

The CDR search window is composed of two parts:

The upper part of the window is Filter menu to narrow down CDR Search,

The lower part shows call attempts details.

CDR Search filters are independent from those on the Main Screen.

Filter Menu includes the following filters:

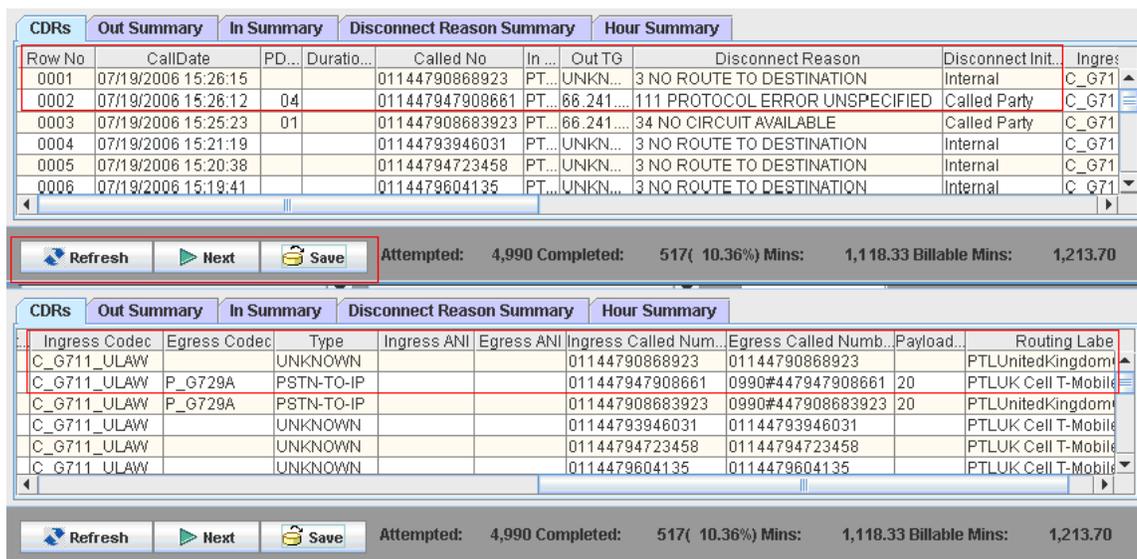
Filter name	Description
Client	Originating Client. (buyer)
Carrier	Terminating Carrier (seller). Use UNKNOWN to filter traffic that has missing incoming routing rule. See 1.3.3.
Disconnect reason	Status of terminated calls and short description according to ITU-T. Please see Troubleshooting Guide for detailed explanations of this field.
Country	Country of traffic destination. This field filters only country code.
Destination	Terminating destination for specific city within a country. User shall setup Destinations in Dialing Code menu. See 1.4.2.
Call type	IP-IP - traffic originated and terminated VoIP only. IP-PSTN - traffic originated VoIP and terminated via TDM connection. PSTN -IP - traffic originated via TDM connection and terminated on VoIP. PSTN-PSTN traffic originated via TDM connection and terminated by another TDM connection.
Duration	Filters calls with duration lower or higher than indicated in filter.
In TG	Indicates the Originating party. Provisioned inbound prefix follows IP address.
Out TG	Terminating Client identifies by its unique IP in a TG
Called number	This feature enables a search conducted by specific called number or part of the number.

Looking up CDR values

The lower part of the CDR search window shows call attempts that satisfy filter values on the top of the screen. User has to click  after changing Filter values to retrieve records. Records are retrieved in groups of 20 for faster response.  will retrieve 20 preceding values according to the filters.

CDR are written to User database every 1-3 minutes. Please allow reasonable time after completing a call before searching for a CDR.

By default records are displayed according to time of call attempt, starting from the latest. Please note that calls in progress will not be seen in CDR Search menu. Only calls that were disconnected will be shown.



Row No	CallDate	PD...	Duratio...	Called No	In ...	Out TG	Disconnect Reason	Disconnect Init...	Ingres
0001	07/19/2006 15:26:15			01144790868923	PT...	UNKN...	3 NO ROUTE TO DESTINATION	Internal	C_G71
0002	07/19/2006 15:26:12	04		011447947908661	PT...	66.241...	111 PROTOCOL ERROR UNSPECIFIED	Called Party	C_G71
0003	07/19/2006 15:25:23	01		011447908683923	PT...	66.241...	34 NO CIRCUIT AVAILABLE	Called Party	C_G71
0004	07/19/2006 15:21:19			01144793946031	PT...	UNKN...	3 NO ROUTE TO DESTINATION	Internal	C_G71
0005	07/19/2006 15:20:38			01144794723458	PT...	UNKN...	3 NO ROUTE TO DESTINATION	Internal	C_G71
0006	07/19/2006 15:19:41			0114479604135	PT...	UNKN...	3 NO ROUTE TO DESTINATION	Internal	C_G71

Ingress Codec	Egress Codec	Type	Ingress ANI	Egress ANI	Ingress Called Num...	Egress Called Numb...	Payload...	Routing Label
C_G711_ULAW		UNKNOWN			01144790868923	01144790868923		PTLUnitedKingdom
C_G711_ULAW	P_G729A	PSTN-TO-IP			011447947908661	0990#447947908661	20	PTLUK Cell T-Mobile
C_G711_ULAW	P_G729A	PSTN-TO-IP			011447908683923	0990#447908683923	20	PTLUnitedKingdom
C_G711_ULAW		UNKNOWN			01144793946031	01144793946031		PTLUK Cell T-Mobile
C_G711_ULAW		UNKNOWN			01144794723458	01144794723458		PTLUK Cell T-Mobile
C_G711_ULAW		UNKNOWN			0114479604135	0114479604135		PTLUK Cell T-Mobile

For a better viewing we have split the image into two parts to better show all the columns in the CDR Search window. To be able to view all of the pertaining columns on your billing CDR screen, scroll left to right, with the space bar at the bottom of the Search CDR window.



The save button will export retrieved CDRs in CSV format for editing and a more convenient viewing. To retrieve large set of call attempts User have to use Next button several times.

Note: CDR Search window results are not suitable for Billing purposes. Use CDR Export function.

Description of retrieved data in CDR Search menu

Below is detailed explanation of what each row from the CDR Search represents. For any troubleshooting please refer to this table to better understand the data presented.

Row Number	Indicates the calls as they were received indicating last finished call as 1st.
Call Date	Indicates the date and time when the call was initiated.
PDD(Sec)	Post dial delay - the time from when the last digit is dialed to the moment the phone rings at the receiving location.
Duration(mins)	Indicates the duration of the call.
Called Number	Indicated the product of a called number after it was received by the switch and stripped of any tech prefix.
In TG	Indicates the Originating party. Provisioned inbound prefix follows IP address.
Out TG	Indicates the Terminating party Trunk Group name and IP address for VoIP Trunk Groups.
Disconnect Reason	Status of terminated calls and short description according to ITU-T. Please see Troubleshooting Guide for detailed explanations of this field.
Disconnect Initiator	Indicates who disconnects the call: Called party, Receiving party or Internal. Please see Troubleshooting Guide for detailed explanations of this field.
Ingress Codec	It indicates the originating audio capability, transfer of a call, codec. Ex. G729A; G723
Egress Codec	It indicates the terminating audio capability, transfer of a call.
Type	IP-IP - traffic originated and terminated VoIP only. IP-PSTN - traffic originated VoIP and terminated via TDM connection. PSTN -IP - traffic originated via TDM connection and terminated on VoIP. PSTN-PSTN traffic originated via TDM connection and terminated by another TDM connection.
Ingress ANI	Calling number (ANI / CLI) as received from originating Gateway.
Egress ANI	Calling number (ANI / CLI) as sent to the originating Gateway.
Ingress Called Number	Shows the called number as it is received from the originating party including any tech prefix. Ex. Tech prefix + country code+ destination national+ the number.
Egress Called Number	Shows the actual called number as it is sent to the terminating party including any tech prefix. Ex. Tech prefix + country code +destination national + number.
Payload	Number of audio frames per voice packet. Please refer to Troubleshooting Guide for detailed explanation and to VoIP Settings for list of available payload sizes and codecs in the

Routing Label	It identifies the specific route as created in Routing →Sonus Routing →Routing Labels
----------------------	---

CDR Search → In/Out Summary

In / Out TG	Originating / terminating party IP address + corresponding TG name. Provisioned inbound prefix follows IP address.
Attempts	Number of call attempts that reached the switch and were authenticated.
Completed	The number of calls were completed
ASR %	Ratio of calls completed to call attempts.
Duration(Min)	Total of minutes completed.

CDR Search → Disconnect Reason Summary

Calls	The number of attempts that received a particular disconnect reason.
Percentage	The number of attempts in percentage to the total number.

Disconnect Reason	Status of terminated calls and short description according to ITU-T. Please see Troubleshooting Guide for detailed explanations of this field.
Disconnect Initiator	Indicates who disconnects the call: Called party, Receiving party or Internal. Please see Troubleshooting Guide for detailed explanations of this field.
Hour	Time of day (EST) when the calls were attempted.
Attempts	Number of call attempts that reached the switch and were authenticated.
Completed	Number of calls with non-zero duration.
ASR %	Ratio of calls completed to call attempts.
Duration(Min)	Total of minutes completed.
Average Duration	Averaged length of time the calls lasted per hour.
Average PDD	Post Dial Delay - the time from when the last digit is dialed to the moment the phone rings at the receiving location. Average PDD averages PDD for respective records.

Summary by Call Type report

Prerequisites:

Traffic through partition.
Set Filter on a Left Pane of the Main Screen. See 1.2.2.

Summary by Call Type shows number of minutes per Call Type based on filtered

values: IP-IP - traffic originated and terminated VoIP only.
IP-PSTN - traffic originated VoIP and terminated via TDM connection.
PSTN -IP - traffic originated via TDM connection and terminated on VoIP.
PSTN-PSTN traffic originated via TDM connection and terminated by another TDM connection.

Similar report User will see in R&R monthly invoice.

Zero completion by Destination report

Prerequisites:
Traffic through partition.
Set Filter on a Left Pane of the Main Screen. See 1.2.2.

Shows destinations with zero completion rate (0% ASR) sorted by the number of call attempts.

Sample report Zero completion by Destination

Destination	# of Calls			
	Total	Completed	Completion	Total Min.
Brazil Cellular 1	824	0	0%	.0
Brazil Cellular	625	0	0%	.0
Netherlands Cellular 316	622	0	0%	.0
Brazil Sao Paulo Cellular	52	0	0%	.0

Zero Completion by OutTG, Destination report

Prerequisites:
Traffic through partition.
Set Filter on a Left Pane of the Main Screen. See 1.2.2.

Shows destinations with zero completion rate (0% ASR) per Outbound Trunk Group sorted by the Destination name.

Calls with long duration report

Prerequisites:

Traffic through partition.
Set Filter on a Left Pane of the Main Screen. See 1.2.2.

Report shows call statistics for calls longer than User-defined duration. This tool is useful for finding excessively long calls.

Export CDRs

Prerequisites:
Traffic through partition.
Set Filter on a Left Pane of the Main Screen. See 1.2.2.

Export CDRs menu exports CDRs that satisfy filtered values on the Left Pane to file in CSV format.

Please note that Microsoft Excel will not open CSV file with more than 65535 lines. User may choose to export data for shorter time period or opening data in Database software.

Structure of Exported CDR

Client Name	Carrier Name	InTG	OutTG	Start DateTime	Connect DateTime	End DateTime	Dialed Number	Billable Duration(Min.)	Duration (Sec.)
BBB	AAA	XXXXXX	XXXXXX	2006-06-15 09:46:02.0	2006-06-15 09:46:20.0	2006-06-15 09:46:40.0	'0114072402 2228	0.5	20

Client Name – abbreviated name of Originating Party
Carrier Name - abbreviated name of Terminating Party
InTG – IP address or Trunk Group name of Origination party.
OutTG – IP address and Trunk Group name of terminations party.
StartDateTime – date & time when call reached partition in EST.
ConnectDateTime – date & time when call was connected and started to bill.
EndDateTime - date & time when call was disconnected and stopped billing.
DialedNumber – destination number without tech prefixes. Apostrophe (') sign will be in front of each number to correctly show dialed number in spreadsheet software.
BillableDuration – 30/6 billing values in minutes
Duration – 1/1 duration in seconds.

We advice User to delete proprietary columns from exported CDRs. For instance if User sends CDRs to Originating party columns CarrierName and OutTG shall be deleted for business security.

Please mind that call records are written into CDR database upon completion. Hence it's recommended to delay billing at least 1 hour after actual end of billing period to allow all calls to be properly recorded.

1.9. TRAFFIC REPORT MENUS

Prerequisites:

CDRs in the partition

Traffic report menus provide statistical information for continuous quality analysis.

Menu names are self explanatory.

1.9.1. List of available report screens

Date	Country	Destination	Trunk Group	Client & Carrier	CDR	MCC Reports	SwitchMembers	Dialing Codes	Billing	Tools	Routing
Filters							Completion	Minutes			

Date

Summary By Date
Days of the Week

Country

Summary By Country
Summary By Country, Destination
Summary By Country, Carrier
Summary By Country, Client
Summary By Country, Carrier, Date
Summary By Country, Client, Date
Summary By Country, Carrier, Client

Destination

Summary By Destination
Summary By Destination, Date
Summary By Destination, Carrier
Summary By Destination, Client
Summary By Destination, Carrier, Date
Summary By Destination, Client, Date
Summary By Destination, InTG, OutTG
Summary By Destination, Carrier, Client

Trunk Group

Summary By InTG
Summary By InTG, Country
Summary By InTG, Destination
Summary By InTG, Destination, Date
Summary By InTG, OutTG
Summary By InTG, OutTG, Destination
Summary By OutTG, Date
Summary By OutTG, Country
Summary By OutTG, Destination
Summary By OutTG, Destination, Date

Client & Carrier

Summary By Client
Summary By Client, Country
Summary By Client, Destination
Summary By Client, Destination, Date
Summary By Carrier
Summary By Carrier, Country
Summary By Carrier, Destination
Summary By Carrier, Destination, Date
Summary By Carrier, Client, Destination

1.10. ALARM INTERFACE

Prerequisites:

- Inbound Trunk Group
- Outbound Trunk Group
- Live traffic

R&R service has 2 types of alarms:

- Built-in alarms in GUI
- External alarming interface based on 5G reporting software

5G offers rich real-time reporting and alerting capabilities but is offered at additional cost. If you chose to have 5G module for your system please refer to %G manual for more details.

Following paragraph will be discussing only built-in reporting functionality. Alerts can be set via Tools → Quality Alert menu

Alarm Interface allows User to define threshold values for quality parameters, such as ASR, PDD and Average Call Duration. The system automatically monitors these quality parameters and will generate an email when one of the thresholds reached.

Types of available Alarms

Aler...	ALERTNAME	Acti...	Client	Carrier	Country	Type	Values	Last Triggered
42	Anton-2	Y		Anton-320		ASR , ACD	30,0	
41	Test2	N				ASR , ACD	30,3	12/19/2016 10:20:03
40	test new alert	Y				ASR , ACD	30,3	02/23/2017 15:50:02
39	Test_320_1	N	Anton-320		Poland	ASR , ACD	30,3	
38	Test AF	N	Andrey-Test		Afghanistan	ASR , ACD	30,3	
37	test	N	Andrey-Test			ASR , ACD	80,10	12/15/2016 10:20:03
25	Test2	N	Andrey-Test			ASR , ACD	50,0	12/13/2016 21:20:02

ASR (Average Seizure Ratio) Alarm – uses specified Value as minimum. ASR defined as ratio of call attempts to completed calls.

Average PDD (Post Dial Delay) – uses specified Value as maximum. PDD defined as a delay between last digit dialed and hearing a dialtone from calling party.

Average Duration (ACD) – uses specified Value as minimum. ACD defined as total number of minutes divided to number of completed calls.

Quality Alerts screen uses logical OR function for ASR and ACD alerts, meaning that either of criteria will trigger the alert.

Alarm screen interface uses own filters for simplicity of creating and managing alerts. Destinations listed are taken from the Master List (Sell side) and quality from Carrier will match against dialing codes as sold, rather than against those as offered.

Multiple destinations can be selected using Ctrl-Click.

Alerts have a selector for active time, daily. Alert is inactive outside of selected hours. There is no limit how many alerts are created per system or per Member.

Alerts are creating an email with detailed description and history of quality prior to triggering event for comparison purposes. Once Alert is triggered it gets automatic suspension from sending new emails for next 4 hours.

Email Alert will have a subject line indicating name of the Alert triggered.

Sample alert:

Alarm generated by R&R Telecom switch for TRA Demo System

Date	StartTime	EndTime	ASR	ACD	Attempts
2017-02-22	13:00:00	13:59:59	39%	2.55	1515
2017-02-22	14:00:00	14:59:59	47.0%	2.26	992
2017-02-22	15:00:00	15:28:50	49%	1.85	326

2. MOST COMMONLY USED TERMS / DEFINITIONS.

ANI	Automatic number identification. Also see Calling number and CLI.
Carrier	A carrier is a telecom service providing organization. In this Manual Carrier always refers to Terminating (receiving) party.
Codec	Short for compressor/de-compressor, a codec is any technology for compressing and decompressing data (typically audio or video).
Egress Called number	The number as it comes in the switch without being striped of any codec and or tech prefix.
Client	A carrier is a telecom service providing organization. In this Manual Client always refers to Originating (sending) party.
Billing Period	Defined by Start Date/Time and End Date/Time. System default is EST time Zone.
ASR	Average Seizure Ratio. Ration of all call attempts to completed calls. Values over 50% considered to be of high quality.
Calling number	An International term for what the Americans call "ANI - or automatic number identification. The calling number tells the number of calling party. Please also se ANI and CLI.
CDR	Call detail record. Information gathered during the call. CDR includes information about originating and terminating parties; billing data; dialed number, etc.
Disconnect initiator	The party that initiated disconnect of the call.
Disconnect reason	Status of terminated calls and short description according to ITU-T. Please see Troubleshooting Guide for detailed explanations of this field.
DM Rule	Digit Manipulation Rule: Applies a technical prefix (digits followed or not by the # sign) to the outbound called number. The technical prefix on outbound is generally requested by the Carrier. The outbound called number for a call it is the value of column "Egress Called Number" in CDR Search for respective call.
E1	The European equivalent to the North American T1, except that E1 carries information at the rate of 2.048 million bits per second. E1: 30 channels, 2.048 Mbps
E.164	The ITU-T recommendation for GSTN (Global Switched Telephone Network) numbering, E.164 is a 16 digit numbering scheme that provides a unique telephone number for every subscriber in the world.
FastStart	
GK: gatekeeper	A device that manages an IP network, supporting all gateways, user profiles, and authentication. A gatekeeper is defined by the H.323 standard
GW: voip media gateway	VoIP device that can interconnect networks with different, incompatible communications protocols. The gateway performs a layer-7 protocol-conversion to translate one set of protocols to another. A gateway operates at OSI layers up though the session layer.
H.323 Gateway	Gateways bridge H.323 conferences to other networks, communications protocols, and multi media formats.

IP signaling

Internet Protocol

The IP part of the TCP/IP communications protocol. IP implements the network layer (Layer3) of the protocol, which contains a network address and is used to route a message to a different network or subnetwork. IP accepts "packets" from the Layer4 transport protocol (TCP or UDP), adds its own header to it and

	delivers a "datagram" to the Layer2 data link protocol. It may also break the packet into fragments to support the maximum transmission unit (MTU) of the network.
Main Screen	Start-up screen of Switch Management Interface. See Clause 1.2.
IP-Tunneling	IP Tunneling means carrying a foreign protocol with a TCP/ IP packet. For example, IPX can be encapsulated and transmitted via TCP/IP.
ISDN: integrated services digital network	International telecommunication standard for sending analog and digital data together over telephone copper wire or other media.
Latency	Minimal signal propagation delay
LCR	Least-Cost-Routing. Routing mechanism that carries traffic over the cheapest rate first, disregarding quality parameters.
Payload	
PSTN: public switched telephone network	The worldwide system of interconnected telephone networks and services. Also called POTS (plain old telephone service)
RTCP	Real Time Conferencing Protocol. Support real time conferencing for large groups on the internet. It has source identification and support for audio and video bridges/gateways. Supports multicast to unicast translators.
RTP	Real-time Transport Protocol
SIP: session initiation protocol	An IETF standard protocol for IP telephony services that supports interactive user sessions and multimedia transmission.
SMTP: simple mail transfer protocol	The standard TCP/IP protocol used to send and receive email on the Internet.
Signaling	Is the process of generating and exchanging information between components of a telecommunications system to establish, monitor, or release connections (call handling functions) and to control related network and system operations (other functions).
SS7	The system used in the public switched telephone system for setting up and managing telephone calls and providing services. SS7 uses a separate channel to send signaling information, making call processing more efficient and secure.
T1	A 1.544 Mbps point-to-point dedicated, digital circuit provided by the telephone companies (North American). See E1 and J1 for European and Japanese counterparts.
TCP	Transmission Control Protocol. TCP is a transport layer, connection-oriented, end to end protocol. It provides reliable, sequenced, and unduplicated delivery of bytes to a remote or local user.
TCP/IP	The basic communication language of the Internet and the global standard for communications. The TCP protocol assembles and disassembles messages into information packets and ensures that the same quantity of bytes sent is also received. The Internet protocol (IP) reads the address of each packet and routes it to the correct destination.
Tech Prefix	Sequence of numbers and pound signs that goes in front of both egress and ingress called numbers. R&R Rules require tech prefix for User's Client traffic (inbound calls)
TDM signaling	Time division multiplexing: Time Division Multiplexing is a transmission facility shared in time (rather than frequency), i.e., signals from several sources share a single channel or bus by using the channel or bus in

**TGD- Trunk
Group domain
TDM Trunk
Group**

successive time slots. A discrete time slot or interval is assigned to each signal source.

A cluster of Trunk Groups. The Incoming Routing Rule created for a Trunk Group Domain (TGD) will be applied to each Trunk Group belonging to that TGD.

A Trunk Group of one or multiple T1/E1. Trunk Group maybe inbound or outbound.

**VoIP Trunk
Group**

A Trunk Group that is defined by one public and static IP address. Trunk Group maybe inbound or outbound.