

**Porta  Switch<sup>®</sup>**



**Handbook:**

Wholesale and Traffic Exchange Services  
Maintenance Release 23

## Copyright Notice & Disclaimers

**Copyright © 2000-2011 PortaOne, Inc. All rights reserved**

**PortaSwitch® Handbook: Wholesale Services, May 2011  
Maintenance Release 23  
V1.23.7**

Please address your comments and suggestions to: Sales Department,  
PortaOne, Inc. Suite #408, 2963 Glen Drive, Coquitlam, BC, V3B 2P7  
Canada.

Changes may be made periodically to the information in this publication. The changes will be incorporated in new editions of the guide. The software described in this document is furnished under a license agreement, and may be used or copied only in accordance with the terms thereof. It is against the law to copy the software on any other medium, except as specifically provided in the license agreement. The licensee may make one copy of the software for backup purposes. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopied, recorded or otherwise, without the prior written permission of PortaOne Inc.

The software license and limited warranty for the accompanying products are set forth in the information packet supplied with the product, and are incorporated herein by this reference. If you cannot locate the software license, contact your PortaOne representative for a copy.

All product names mentioned in this manual are for identification purposes only, and are either trademarks or registered trademarks of their respective owners.

Table of Contents

Preface ..... 5

**1. Setting up a Wholesale Traffic Exchange .....6**

    Checklist..... 7

    Initial Configuration of PortaSwitch® ..... 8

    Create Destinations ..... 8

    Create PortaSIP Node ..... 10

    Create a Vendor Tariff..... 11

    Enter Rates in Tariffs with Routing Extensions ..... 12

    Create Vendors..... 14

    Define Connections..... 15

    Create Route Categories ..... 16

    Create Customer Tariffs..... 17

    Enter Rates ..... 19

    Create a Routing Plan ..... 19

    Create a Product..... 21

    Create a Customer Class ..... 24

    Create a Customer ..... 25

    Create Accounts..... 29

    Set up Dialing Rules for a Customer (Optional)..... 32

    Test Routing with Test Dialplan..... 32

    Test the Whole System ..... 33

    Check Log Files with SIP Log Viewer ..... 33

    Check Call History ..... 34

**2. Routing Info - LCR Blending..... 36**

    Create a Report..... 37

    Behind the Web Interface ..... 41

    How to Manage LCR Blending Reports..... 41

    When & How to Use ..... 43

**3. Rate Import ..... 48**

    Upload Rate Data Into a Tariff..... 49

    Start the Import..... 49

    Review File Parsing..... 51

    Review Data Fields Definition ..... 53

    Review Rate Information..... 57

    Managing New Prefixes..... 58

    Summary ..... 66

**4. Wholesale Termination via a Gateway ..... 68**

    Typical Business Case..... 69

    Setting up Your Network Components..... 70

    Checklist..... 73

    PortaSwitch® Configuration ..... 74

    Initial Configuration of PortaBilling ..... 74

    Create Destinations ..... 74

    Create Nodes ..... 75

	Create a Vendor Tariff.....	77
	Enter Rates.....	78
	Create Vendors.....	79
	Define Connections.....	81
	Create a Customer Tariff.....	82
	Enter Rates.....	84
	Create a Product.....	85
	Create a Customer Class.....	87
	Create a Customer.....	88
	Create Accounts.....	92
<b>5.</b>	<b>Adaptive Routing and Quality of Service .....</b>	<b>94</b>
	Setting up Adaptive Routing.....	95
	Add / Edit Routing Criteria.....	95
	Define Routing Criteria for Individual Destination Groups.....	96
	Define Routing Criteria for Specific Connection.....	97
	Tracking Connection Status.....	98
<b>6.</b>	<b>Configuration Examples for Cisco Gateways .....</b>	<b>100</b>
	Bill Customers Who Are Connected via T1 / E1 Directly to a Port on Your Gateway.....	101
	Implement Authentication for Incoming VoIP Calls.....	102
	Authenticate and Bill Customers by the IP Address of their Gateway.....	104
	Handle Technical Prefixes and Numbering Formats.....	105
	Configure an Outgoing Connection to a Vendor, matched by Tech- prefix instead of by remote IP address.....	106

## Preface

This document provides PortaBilling® users with step-by-step instructions and examples for setting up wholesale services on a VoIP network.

### Where to get the latest version of this guide

The hard copy of this guide is updated at major releases only, and does not always contain the latest material on enhancements occurring between minor releases. The online copy of this guide is always up to date, and integrates the latest changes to the product. You can access the latest copy of this guide at: [www.portaone.com/support/documentation/](http://www.portaone.com/support/documentation/)

## Conventions

This publication uses the following conventions:

- Commands and keywords are given in **boldface**
- Terminal sessions, console screens, or system file names are displayed in fixed width font



The **exclamation mark** draws your attention to important information or actions.

**NOTE:** Notes contain helpful suggestions about or references to materials not contained in this manual.



**Timesaver** means that you can save time by taking the action described in the paragraph.



**Tips** provide information that might help you solve a problem.

## Trademarks and Copyrights

PortaBilling®, PortaSIP®, PortaUM® and PortaSwitch® are registered trademarks of PortaOne, Inc.

# 1 . Setting up a Wholesale Traffic Exchange

This chapter will demonstrate how to set up a wholesale exchange platform, when you will be accepting calls from your customers (a customer in this context is a carrier, which terminates calls to your network) and sending these calls to the actual carriers, thus earning your profit margin on each call.

Please refer to the [PortaBilling Web Reference Guide](#) PDF file for detailed instructions on how to navigate and operate the web interface, as well as detailed explanations of particular fields.

## Checklist

Print the following page and use it to check off the operations you have completed while performing system setup according to the instructions in this chapter. Please be sure to perform all of the operations (all of the boxes must be checked), otherwise the service will not work.

Operation	Done
<b>General configuration</b>	
Enter company data in My Company.	[ ]
Specify a base currency.	[ ]
For any other currency you plan to use, specify the exchange rate source and define exchange rates.	[ ]
Create all the required destinations you plan to serve.	[ ]
<b>Network configuration</b>	
Create a node for PortaSIP.	[ ]
<b>Rating configuration (Vendor)</b>	
Create a tariff A, which describes your termination costs and routing for the first vendor (make sure it has the <b>Routing</b> type!).	[ ]
Enter rates in tariff A for destinations you plan to terminate to this vendor.	[ ]
Create an off-net calls vendor A.	[ ]
Create a connection for this vendor using tariff A.	[ ]
Create any other vendors required.	[ ]
<b>Rating configuration (Customer)</b>	
Create route categories.	[ ]
Create a tariff B, which contains your selling rates to customers.	[ ]
Enter rates in tariff B for the destinations your customers will call.	[ ]
Create a routing plan which will be applied to your customers.	[ ]
Create a wholesale exchange product.	[ ]
Create rating entry for this product, using the PortaSIP node and tariff B.	[ ]
<b>Account provisioning</b>	
Create a customer class for your traffic exchange customers.	[ ]
Create a retail customer who will use the traffic exchange service.	[ ]
Create an account to authorize this customer.	[ ]
<b>Testing</b>	
Check the routing by using the <b>Test Dialplan</b> feature.	[ ]
Make a test call.	[ ]

# Initial Configuration of PortaSwitch®

The following steps are normally performed only once, after the system is installed. Proceed as follows:



Visit **My Company** on the main menu. Enter information about your company and set up your base currency. Naturally, this does not limit your operations to this currency only. However, on cost / revenue reports and the like different currencies will be converted to the one you specify here.

**NOTE:** Once you set up a base currency it cannot be changed. If you make a mistake, you will have to start with a new PortaBilling® environment.

From the main menu, choose **Users** and create login entries for users who will be working with the system. It is not recommended that the default PortaBilling® root user (pb-root) be used for any operations other than initial setup. Make sure you are able to login as the newly-created user, and change the password for the pb-root user.

If you plan to do billing in multiple currencies, define them and specify exchange rates in **Currencies** section.

Edit	ISO 4217	Name	Dec. digits	Major	Minor	Exchange Rate Source *	Payment System	Payment Method	Minimum Payment	Delete
	alpha	num								
	CAD	124	CAD - Canadian Dollar	2	dollar	cent	Manual	AuthorizeNet	20.00000	
	USD	840	USD - US Dollar	2	dollar	cent	XE.com	AuthorizeNet	100.00000	

## Create Destinations

This step is only required if you have not previously defined the necessary destinations. There are two ways to insert a new destination into the system:

- One-by-one, using the **Add** functionality on the web interface.
- A bulk update, by uploading destinations from a file.

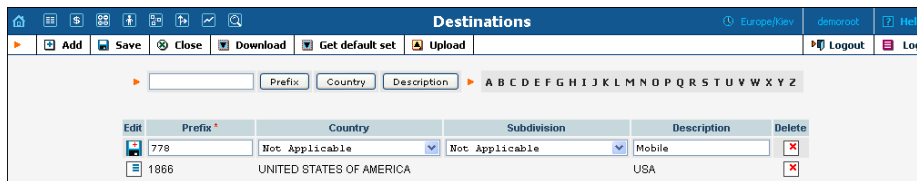
**NOTE:** PortaBilling® supplies a file with a set default destination, which you can download and then upload to the server. However, it is possible that your business requires different types of prefixes, so please check the data in the file before uploading.

### Creating Destinations "One-by-One"

1. In the **Rating** section of Admin-Index, choose **Destinations**.



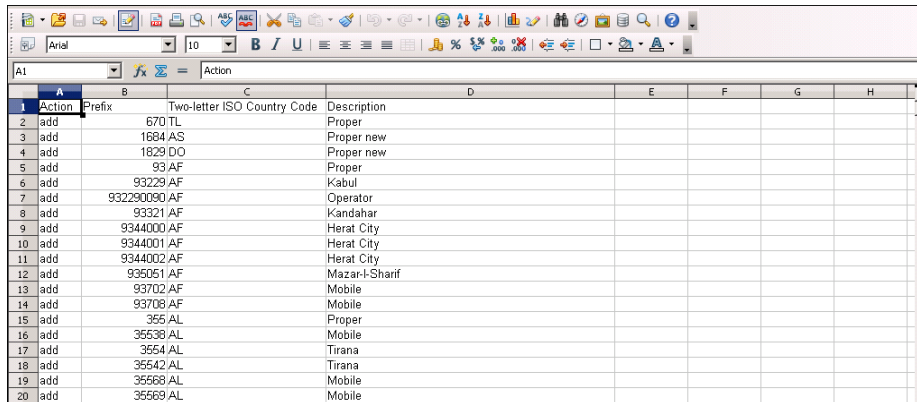
2. Click on the **Add** button.
3. Fill in the required information. This includes the phone prefix and country name. The country subdivision is optional. You can use the **Description** column to store extra information about the destination (for example, if it is a mobile or fixed number).



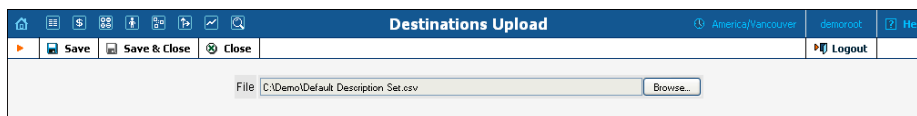
4. Click **Save**.
5. Repeat these steps for any additional destinations you would like to add.

### Uploading a Set of Destinations from a File

1. In the **Rating** section of Admin-Index, choose **Destinations**.
2. Click on **Get default set** to download a set of destinations as a CSV (Comma-Separated Values) file.



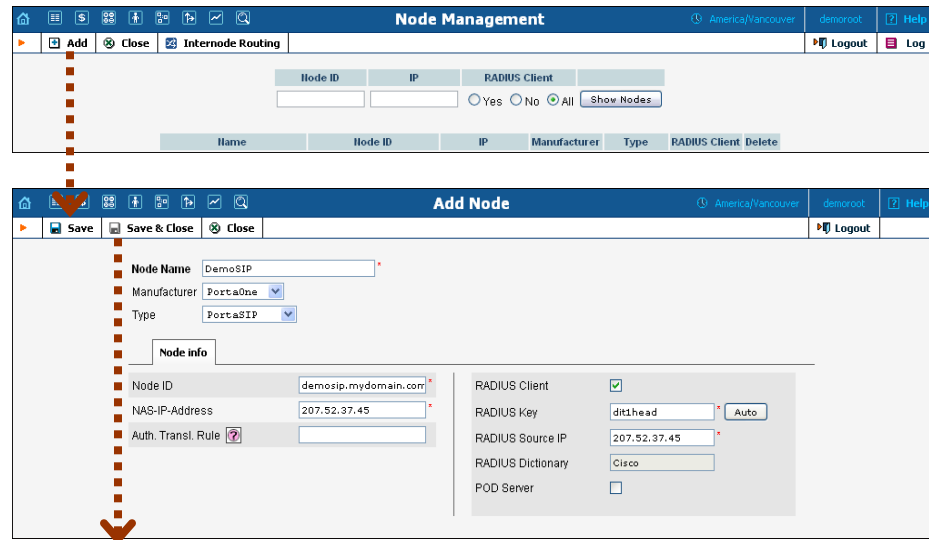
3. Open this file in Microsoft Excel or any other suitable program. Edit the data if necessary.
4. Save the file and close it in Excel.
5. Switch back to the PortaBilling® web interface, and click **Upload** on the Destinations screen.



6. Type in the filename for the file you have edited, or click on the **Browse...** button and select the file.
7. Click **Save&Close**.

## Create PortaSIP Node

Now you have to enter your SIP server and, optionally, other gateways as nodes. PortaBilling® requires some key information about your network equipment, such as the IP address, Node ID, Radius shared secret, and so on.

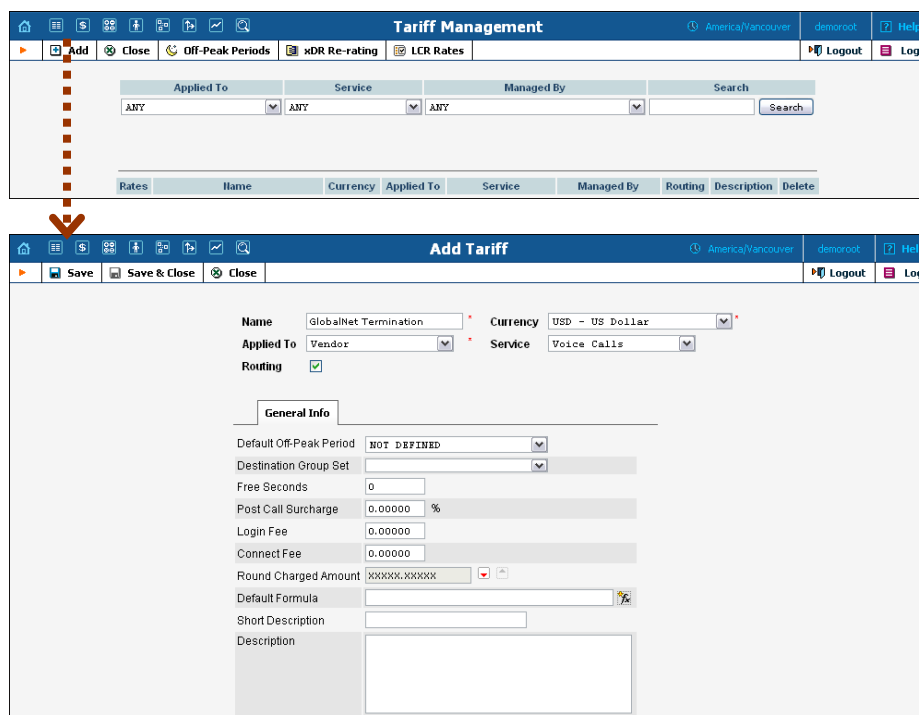


1. In the **Networking** section of the Admin-Index page, choose **Nodes**.
2. In the Node management window, click the **Add** icon.
3. Fill in the New Node form:
  - **Node name** – a short descriptive name for your SIP server (this will be used in the select menus).
  - **Manufacturer** – select **PortaOne**.
  - **Type** – VoIP node type; select **PortaSIP**.
  - **Node ID** – PortaSIP® server’s hostname (recommended: hostname.domainname).
  - **NAS-IP-Address** – the IP address of the PortaSIP® server.
  - **Auth. Translation rule** – leave this blank (you can use customer-based translation rules later to allow your customers to dial a number in their own numbering format).
  - **Radius Client** – Make sure this check-box is enabled, since the gateway (node) must be able to communicate with PortaBilling via RADIUS.
  - **Radius Key** – Enter the RADIUS secret key you have specified in the configuration of the gateway.

- **Radius Source IP** – See the **Node ID, NAS IP address and Radius source IP** section in the **PortaBilling Administrator Guide** for more information. Unless your PortaSIP® server uses multiple network interfaces, the value here should be the same as the NAS-IP-Address.
  - **POD Server** – This checkbox relates to ISP billing. Leave it unchecked for now.
4. Click **Save&Close**.

## Create a Vendor Tariff


The tariff is a price list for calling services or for your termination costs.



1. In the **Rating** section of the Admin-Index page, choose **Tariffs**.
2. On the Tariff Management page, choose **Add**.
3. Fill in the **Add Tariff** form:
  - **Name** – A short name for the tariff object; this is the name you will then see in the select menus.
  - **Currency** – Indicates the currency, in which the vendor charges you.

**NOTE:** The currency for the tariff may be chosen only once, and cannot be changed later.

- **Applied To** – Choose **Vendor**, as this tariff describes your vendor’s termination costs.

- **Routing** – Leave the box **Routing** checked, as this tariff will be used not only to calculate termination costs, but also to route SIP calls.
  - **Service** – Choose **Voice Calls** here.
  - **Short Description** – A short tariff description.
  - **Description** – An extended tariff description.
4. Click  **Save**.



## Enter Rates in Tariffs with Routing Extensions

Rates define how a call to a specific destination will be charged (e.g. what the price per minute is, how to round off the total call duration, etc.). Please refer to the *Call Billing Parameters* section in the **PortaBilling Administrator Guide** for more details on available parameters for rating voice calls.

### Managing Rates Online

Managing rates online is very convenient for maintaining existing rate tables, as well as for reference purposes. For new price lists or for major updates, importing the rates from a file is better.


Edit	Destination	Country	Description	Peak-Off-Peak	Routing			Interval, second		Price, USD/minute		Effective From	Actions
					Route Category	Preference	Hintstop	First *	Next *	First *	Next *		
				NOT DEFINED	Default	5							
<input type="checkbox"/>	420	CZECH REPUBLIC		Peak Off-Peak: NOT DEFINED	High quality	6		1	1	0.13000	0.13000	2011-01-24 15:3143	
<input type="checkbox"/>	1886	UNITED STATES OF AMERICA		Peak Off-Peak: NOT DEFINED	Default	5		1	1	0.10000	0.10000	2011-01-24 15:3201	

1. On the Tariff Management page you will see a list of the available tariffs. Click the  **Rates** icon before the name of the tariff. When you are in Tariff Management for a particular tariff, click on **Rates** in the toolbar.
2. On the **Edit Rates** screen, click  **Add**.
3. Fill in the required information:
  - **Destination** – A destination prefix may be entered directly, e.g. **420** for Czech Republic, or you can access the destinations directory by clicking the **Destination** link (in the column header). Here you can find the desired prefix by country name.



**NOTE:** The phone prefix you are trying to create a rate for must already exist in Destinations.

- **Route category** – You can split your available routes into several categories, such as “High quality”, “Premium”, and so on, and then create routing plans for your customers. Choose one of the previously created route categories applicable to this particular route.
- **Preference** – Routing priority for the specific destination. 10 is the highest priority, 0 is the lowest (i.e. do not use destination for routing at all). For now, you can just set all of your vendor rates at preference 5, and the system will organize available routes according to cost (LCR).
- **Huntstop** – Do not try any routes with a lower preference.
- **Interval First** – first billing unit in seconds
- **Interval Next** – next billing unit in seconds
- **Price First** – per minute price for first interval
- **Price Next** – per minute price for next interval
- **Off-peak Interval First**– first billing unit in seconds for off-peak time
- **Off-peak Interval Next** – next billing unit in seconds for off-peak time
- **Off-peak Price First** – per minute price for first interval for off-peak time
- **Off-peak Price Next** – per minute price for next interval for off-peak time

**NOTE:** Off-peak fields appear only if an **off-peak period** has been defined for the tariff.

- **Rate Formula Wizard**  – Launches the wizard for creating a custom rating formula
- **Effective from** – If you want this rate to take effect sometime in the future, you can either type in a date manually, or use the calendar (click on the DD-MM-YYYY link).

**NOTE:** When using the calendar, you can specify that the date you are entering is in a different time zone than your present one. PortaBilling® will then automatically adjust the time.

- The **Payback Rate**, **Hidden**, **Forbidden** or **Discontinued** flags are optional.
4. Click the  **Save** button in the toolbar, or the  icon on the left side of the row.
  5. Repeat these steps if you need to enter more rates.

## Importing Rates from a File

Please see the next section on how you can import rates from a .CSV or .XLS file for complete details.



Perform the *Create Tariff* and *Enter Rates* steps described above until you have created a tariff with the termination costs for each termination partner you have; these tariffs are created as “Applied to: Vendor”.

## Create Vendors

Vendors are your termination partners, i.e. companies you send calls to.

1. In the **Participants** section of the admin interface, choose **Vendors**.
2. On the Vendor Management page, choose **+ Add**.

3. Fill in the **Add Vendor** form. Please note that there are three tabs available on the screen. The most important fields are:

### Main form (top)



- **Vendor name** – short name for the Vendor object; this will be used on the web interface.
- **Currency** – the currency in which this vendor charges you.

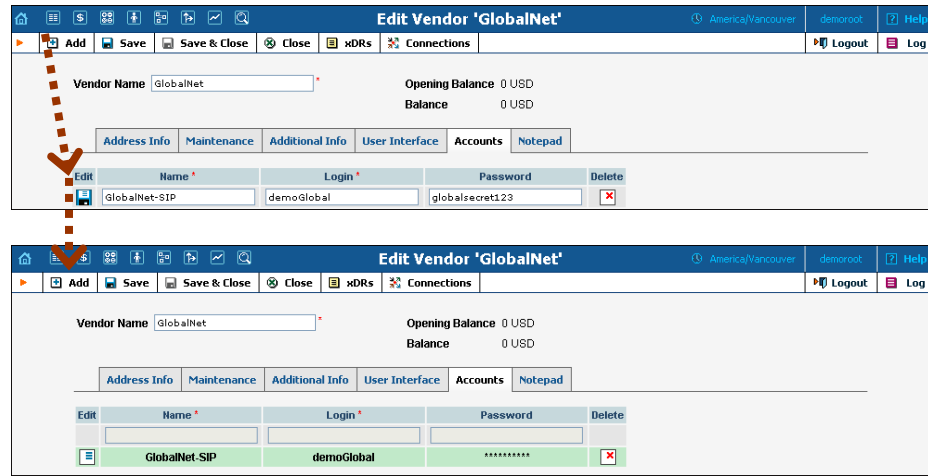
- **Opening balance** – starting balance for the vendor; the default is zero.

Additional info:

- **Billing period** – split period for vendor statistics.

User Interface:

- **Time zone** – the time zone that the vendor uses for his billing period (when sending you an invoice). Statistics will be split into periods in this time zone, so your statistics will match the vendor's.
4. Click  **Save**.
  5. Three more tabs now appear on the screen. If you plan to terminate your calls to the vendor's SIP server, typically he will provide you with a username / password authorizing you to send calls to his server. Click the **Accounts** tab, then click  **Add** and enter this information.

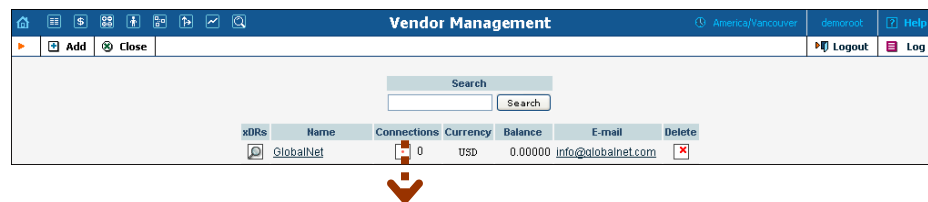


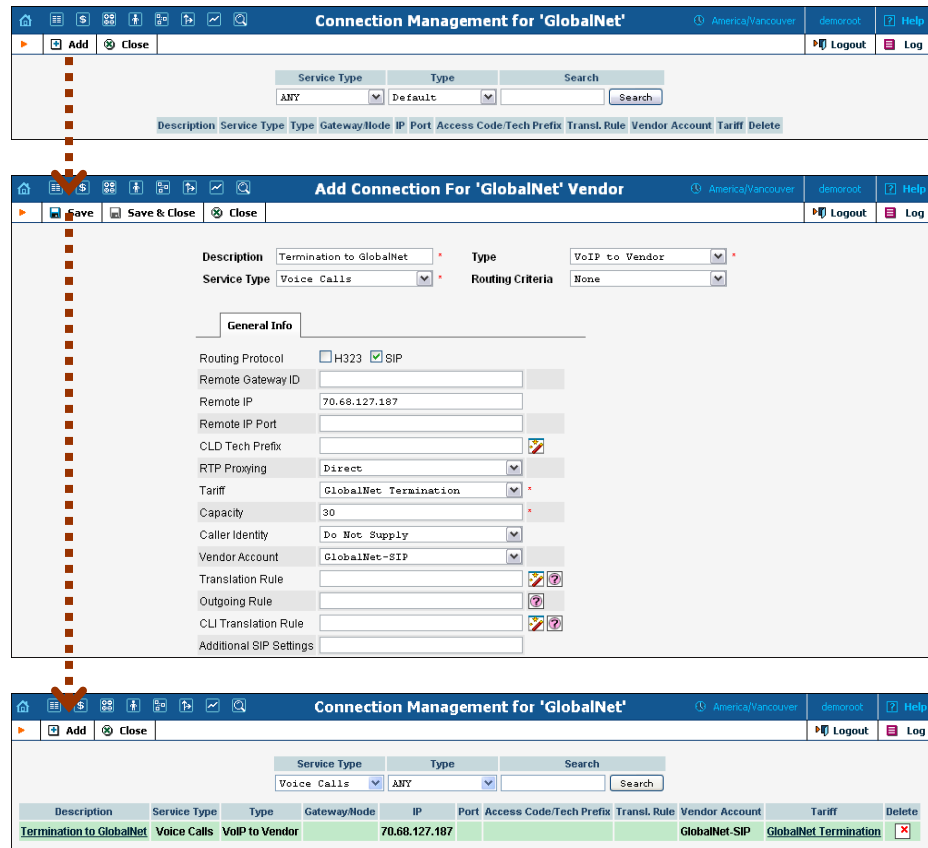
6. Click **Close** in order to return to the **Vendors** admin page.
7. Repeat steps 2-6 to add all of your vendors.



## Define Connections

Connections are points at which calls leave or enter a network and are directed to or from vendors, whereby costing occurs.

1. In the **Participants** section of the admin interface, choose **Vendors**.
2. Click on the **Connections** icon next to the vendor name.





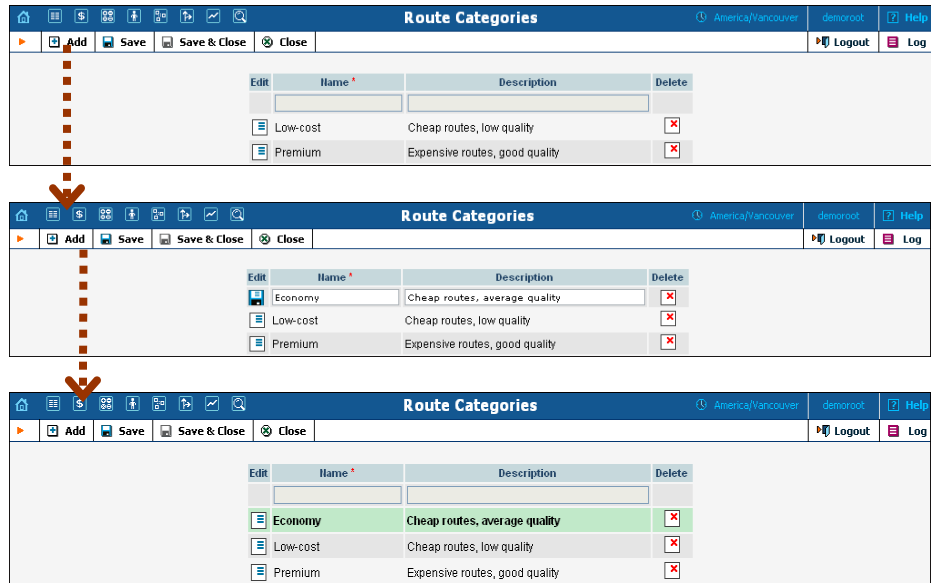
3. Press  **Add** to add a new connection.
4. Fill in the connection information. Choose the type of connection (for a wholesale exchange platform, usually **VoIP to Vendor**) and enter the remote IP address (address of the vendor’s gateway or SIP server). Choose the tariff which defines your termination costs for this connection / vendor. **Description** and **Capacity** are mandatory for all connection types. For VoIP connections where you have been assigned a login name and password, choose the corresponding vendor account.
5. Click  **Save&Close**.
6. Repeat steps 3-5 to add more connections to the same vendor, then click **Close** to exit to the **Vendor Management** screen.
7. Repeat steps 2-6 to add connections for other vendors.




## Create Route Categories

Route categories are tags (e.g. Cheap or Premium) which you use to designate specific routes, so that later you can organize individual routing plans for your customers. It is possible to have a separate route category for every termination carrier, although this is not advisable, as it would make maintenance of routing plans quite complicated due to the large

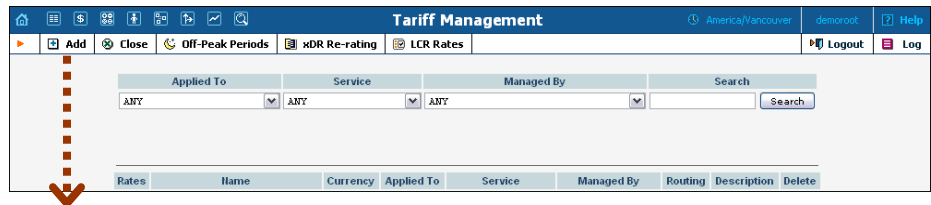


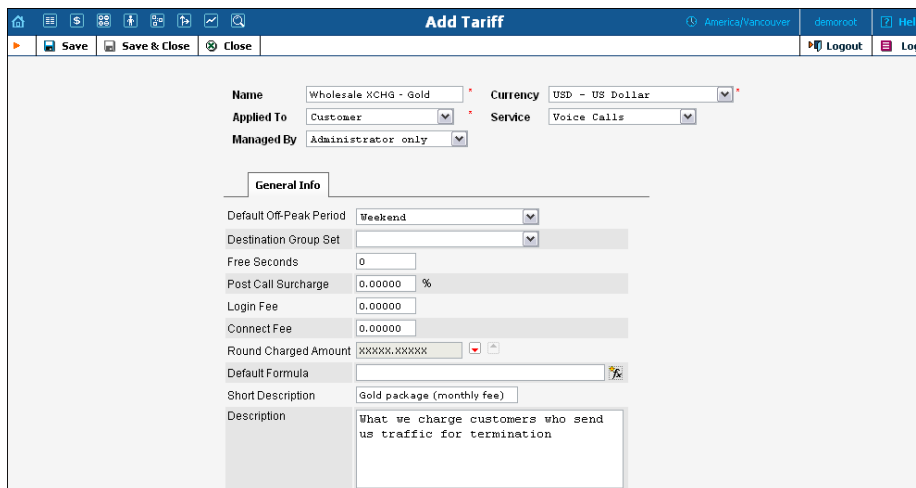
number of categories in each. The recommended method is to create several route categories (Low-cost, Normal, Expensive, etc.) and then assign each route to one of them.



1. In the **Routing** section of the Admin-Index page, choose **Route Categories**.
2. On the Route Categories Management page, choose  **Add**.
3. Enter the route category name and description.
4. Click the  **Save** button in the toolbar, or the  icon on the left end of the row.
5. Repeat steps 2-4 if you need to create more route categories.

## Create Customer Tariffs






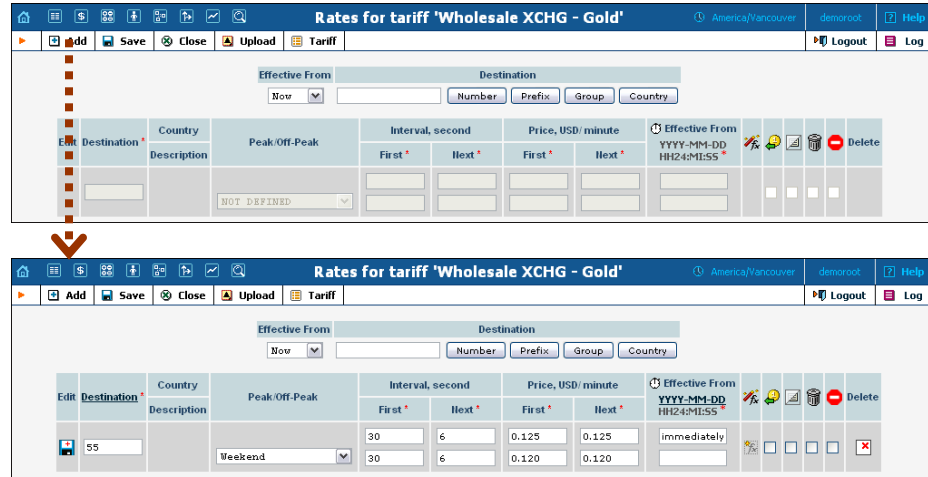
1. In the **Rating** section of the Admin-Index page, choose **Tariffs**.
2. On the Tariff Management page, choose **Add**.
3. Fill in the **Add Tariff** form:
  - **Name** – A short name for the tariff object; this is the name you will then see in the select menus.
  - **Currency** – Indicates the currency in which you charge your traffic exchange customers.

**NOTE:** The currency for the tariff may be chosen only once, and cannot be changed later.





- **Applied To** – Choose “**Customer**” in the **Applied To** field.
- **Managed By** – Choose “**Administrator Only**” here (this option is only visible after you select **Applied to: Customer** above).
- **Service** – Choose **Voice Calls** here.
- **Default Off-peak Period** – If you do not differentiate between peak and off-peak rates, just choose **Not defined**; otherwise, select one of the previously defined off-peak periods.
- **Destination Group Set** – If you wish to enter rates in the tariff not for every individual prefix, but for a whole group of prefixes at once, you should create a destination group set and destination groups beforehand. Leave this select menu empty for now.
- **Round Charged Amount** – Instead of calculating xDRs with a 5-decimal-place precision, round up xDR amount values (e.g. to cents, so that 1.16730 becomes 1.17). Set the rounding pattern to XXXX.XX000 (as shown on the picture) so every call will be rounded to the equal cent amount.
- **Default Formula** – Default rating formula, which will be applied to every rate created in the tariff. If you leave this empty, the “old-style” rating will be used.
- **Short Description** – A short tariff description. This will be shown in the rate lookup on the admin interface and the self-care pages for your accounts and customers.

- **Description** – An extended tariff description.
4. Click  **Save**.

## Enter Rates



The interface shows a table for entering rates. The table has the following columns: Destination, Country, Description, Peak/Off-Peak, Interval, second (First, Next), Price, USD/minute (First, Next), and Effective From (YYYY-MM-DD HH24:MI:SS). The 'Add' button is highlighted in blue in the second screenshot, and a new row is added to the table with the following values: Destination: 55, Country: (empty), Description: (empty), Peak/Off-Peak: Weekend, Interval, second: First=30, Next=6, Price, USD/minute: First=0.125, Next=0.125, Effective From: immediately.

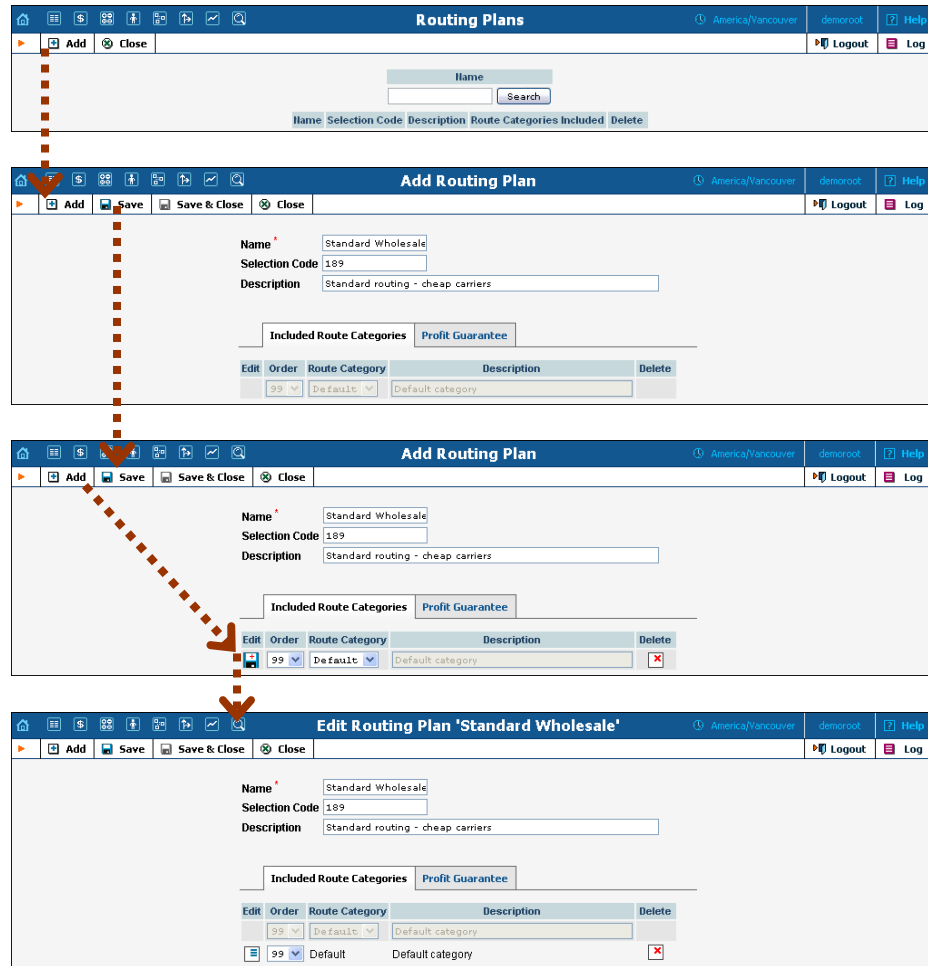
1. On the Tariff Management page you will see a list of the available tariffs. Click the  **Rates** icon before the name of the tariff. When you are in Tariff Management for a particular tariff, click on **Rates** in the toolbar.
2. On the **Edit Rates** screen, click  **Add**.
3. Fill in the required information (please refer to the *Enter Rates in Tariffs with Routing Extensions* section above for the detailed description of the available rate attributes).
4. Click the  **Save** button in the toolbar, or the  icon on the left side of the row.
5. Repeat these steps if you need to enter more rates.





Perform the *Create Tariff* and *Enter Rates* steps described above until you have created a tariff for each billing scheme for your clients; these tariffs are created as “Applied to: Customer”. For example, if you plan to have two types of clients (e.g. Silver and Gold) with different rates, you will need two separate tariffs.

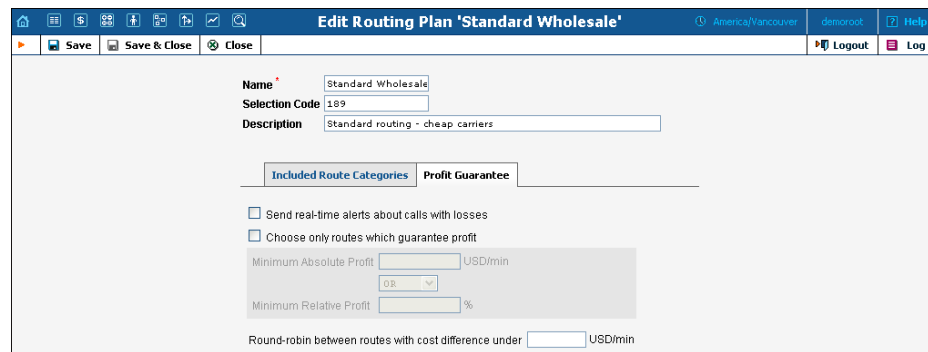
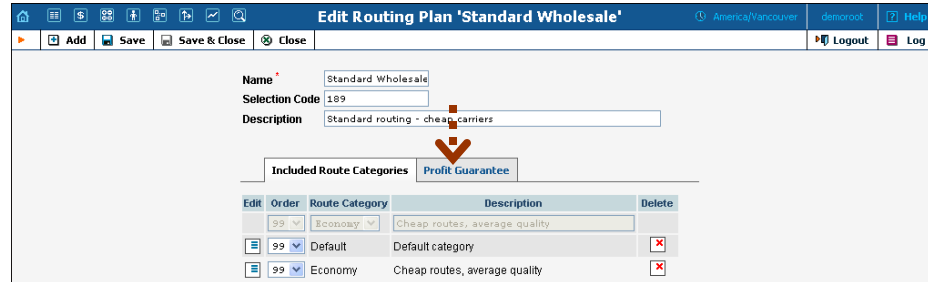
## Create a Routing Plan

A routing plan allows you to apply individual routing methods to certain customers, i.e. blocking them from using certain carriers for termination, or, conversely, only allowing them to use certain carriers in a specific order. If you do not define any custom routing plans, the system default routing plan will be used, allowing access to all available carriers.



1. In the **Routing** section of the Admin-Index page, choose **Routing Plans**.
2. On the Routing Plans Management page, choose **Add**.
3. Fill in the “Add Routing Plan” form:
  - o **Name** – The name of the routing plan.
  - o **Selection Code** – The code your customers will dial before the destination number to select this routing plan.
  - o **Description** – Your designation of the intended purpose of this routing plan.
4. Click **Save**.
5. Define which route categories will be included in this routing plan:
  1. Click the **Add** icon on the **Included Route Categories** tab.
  2. Choose a route category from the list and define its order in the routing list. Higher numbers will be at the top of the routing list. It is possible to include two or more categories with the same order number; in this case, PortaSwitch® simply sorts the routes according to preference and cost. If you do not include a certain route category in the list, customers will not have access to any routes in that category.

3. Click the  **Save** button in the toolbar, or the  icon on the left end of the row.
4. Repeat steps 1-3 if you need to include more route categories.
6. Click the **Profit Guarantee** tab and define your settings:



**Choose only routes which guarantee profit** – If this checkbox is selected, vendors whose price per minute is higher than the selling price to the customer will be automatically removed from the routing list. It is highly recommended that you use this option for wholesale traffic exchange, as it may protect you from financial losses in the case of routing problems.

7. Click  **Save**.

## Create a Product

Accounts for accessing your SIP services will be issued for a specific product. Products are a powerful feature that defines different ways to bill an account. Product definition is always done in two steps: product definition and creation of rating list.



The top screenshot shows the 'Add Product' form. The 'Product Name' is 'Wholesale XCHG - Gold' and the 'Currency' is 'USD - US Dollar'. The 'Managed By' is 'Administrator only'. The 'General Info' tab is active, showing fields for 'Breakage', 'Overdraft Protection' (set to 'Debit accounts only'), 'Account Default ACL' (set to 'Account self-care'), 'Default Discount Plan' (set to 'None'), 'Info URL', and 'Description'.

The bottom screenshot shows the 'Edit Product' page for 'Wholesale XCHG - Gold'. The 'Product Name' is 'Wholesale XCHG - Gold' and the 'Currency' is 'USD'. The 'Managed By' is 'Administrator only'. The 'Services and Rating' tab is active, showing a red message: 'Please define at least one Services and Rating entry'.

1. In the **Rating** section of the Admin-Index page, choose **Products**.
2. On the Product Management page, click the **Add** icon.
3. Fill in the “Add product” form:
  - **Product name** – Product object name.
  - **Currency** – Product currency; only tariffs which have the same currency will be permitted in the rating list.
  - **Managed by** – If you want this product to be used for your reseller’s accounts, so the reseller himself can change the parameters of this tariff and create new accounts using this product, choose a customer name from the menu. Otherwise, choose **Administrator only** here.
  - **Breakage** – This parameter is typically used only for prepaid accounts, so leave it empty.
  - **Account Default ACL** – The access level assigned by default to new accounts created with this product. The ACL determines which operations may be performed by accounts on the self-care pages. The default value is “Account self-care” (pre-defined ACL), which allows all possible operations.
  - **Default Discount Plan** – Leave **None** as the selected entry if you do not plan to offer any discounted rates based on call volume.
  - **Info URL** – If you have an external server with a description of product features, enter the URL here (e.g. <http://www.myproduct.com>). Your customers will be able to go there from their self-care page.
  - **Description** – your comments about the intended use of this product.
4. Click **Save**.
5. On the **Services and Rating** tab, edit this product’s rating list.

## Enter Node and Tariff in the Product's Rating List

The rating list has two functions: it defines permitted access points (nodes and access numbers) and specifies which tariff should be used for billing in each of these points.

**Edit Product 'Wholesale XCHG - Gold'**

Product Name: Wholesale XCHG - Gold    Currency: USD  
 Managed By: Administrator only

General Info   Maintenance   Online Signup   **Services and Rating**   Subscriptions   Service Features   Notepad

Please define at least one Services and Rating entry

**Add Services and Rating to Product 'Wholesale XCHG - Gold'**

Product Name: Wholesale XCHG - Gold    Product Currency: USD  
 Service: Voice Calls

General   **Overdraft Protection**

Node: DemoSIP    Access Code:   
 Tariff: Wholesale XCHG - Gold    Info Digits: ANY

**Add Services and Rating to Product 'Wholesale XCHG - Gold'**

Product Name: Wholesale XCHG - Gold    Product Currency: USD  
 Service: Voice Calls

General   **Overdraft Protection**

Check Minimum Funds: Do not check  
 Min. Session Deposit: 0.00000 USD  
 Max. Session Deposit:  USD  
 Max. Authorization Chunk:  USD  
 Overuse Notification:

**Edit Product 'Wholesale XCHG - Gold'**

Product Name: Wholesale XCHG - Gold    Currency: USD  
 Managed By: Administrator only


General Info   Maintenance   Online Signup   **Services and Rating**   Subscriptions   Service Features   Notepad

Voice Calls

Edit	Node	Access Code	Info Digits	Routing Rating	Delete
	DemoSIP	Any code	ANY	ANY - Wholesale XCHG - Gold	X


1. When the **Services and Rating** tab is selected, click on the **Add** icon.
2. Choose **Voice Calls** in the **Service** select menu.
3. In the **Add Services and Rating** window, select the PortaSIP® node and choose the appropriate tariff which applies to your customers when they make outgoing calls.
4. The **Access code** or **Info Digits** fields only make sense when a call originates from your customer in a public telephony network. Therefore, just leave this empty for the SIP service.
5. Configure overdraft protection for this product on the **Overdraft Protection** tab. (Please consult the *Rating* section in the [PortaBilling](#)

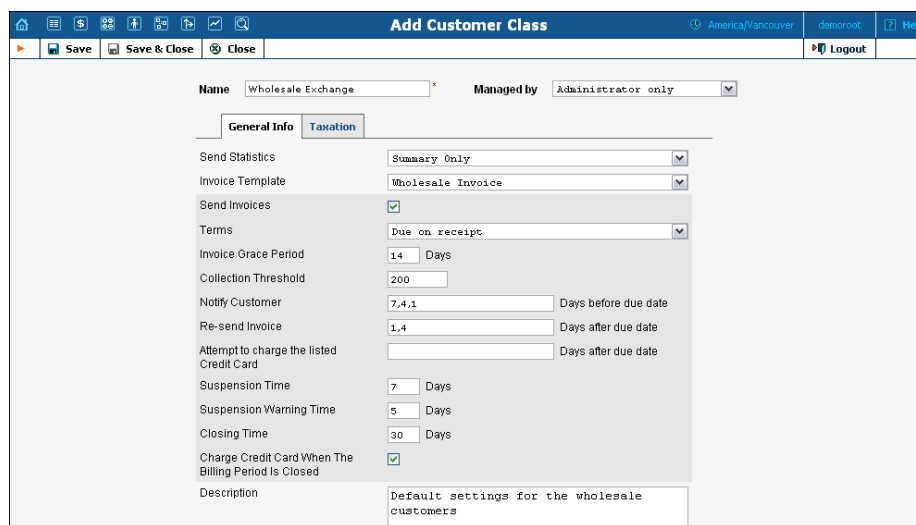
[Web Reference Guide](#) for a description of parameters available here.)

- Click  **Save** to save this rating entry.

## Create a Customer Class

Customer class provides the ability to define a group of parameters in a centralized way, then apply those parameters to many customers at once. (If you have already created a customer class that you can use for prepaid card distributors, skip this step and go to the next one.)

- In the **Billing** section of the Admin interface, choose **Customer Classes**.
- On the Customer Class Management page, choose  **Add**.



- Fill in the customer class parameters:
  - Name** – Short name for this customer class.
  - Send Statistics** – Select whether you want to send statistics to a customer.
  - Invoice Template** – Select the appropriate template which will be used to create a PDF file with the invoice for your SIP customers. If you have not created a template yet, simply leave **Do not create invoice** for now. Later you can create an invoice template and assign it here.
  - Terms** – Choose the appropriate description for the invoice payment terms.
  - Send Invoices** – Check the box to automatically send an invoice to a customer at the end of the billing period.
  - Please consult the [PortaBilling Web Reference Guide](#) for a description of other parameters available here. For now you may leave these empty. If you change them later, these



changes will automatically affect all customers who are already assigned to this customer class.


- **Description** – Your comments about the intended use of this customer class.

4. Click  **Save&Close**.

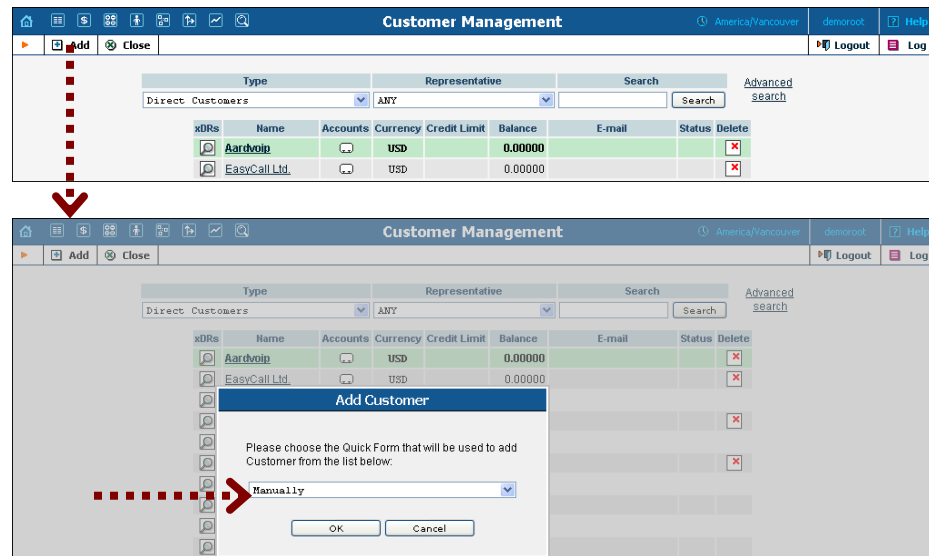
## Create a Customer

A customer is a company which sends you traffic for termination and pays you according to the amount of traffic sent. The customer’s contact information is used to distribute account usage information, call statistics, invoices, and so on.

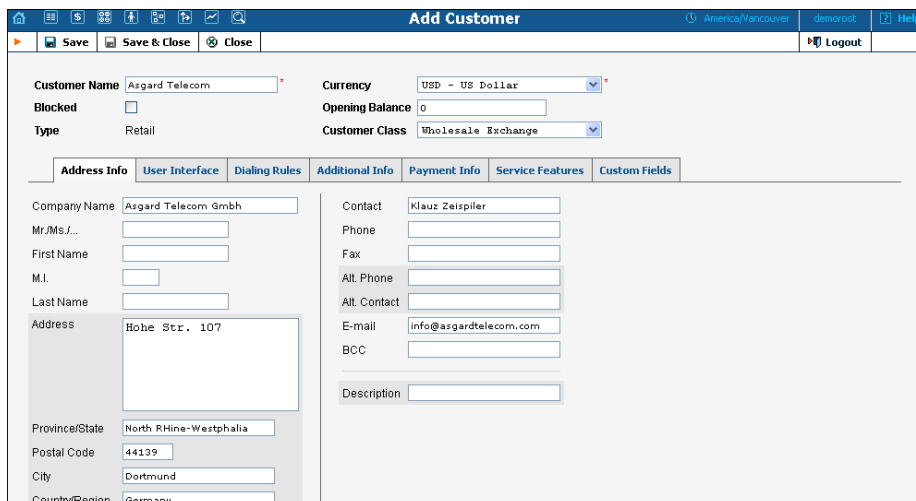
In this example we will describe how to create a new customer manually, without using a Quick Form.

1. In the **Participants** section of the Admin-Index page, choose **Customers**.
2. On the Customer Management page, click  **Add Customer** and choose **Manually**.

**NOTE:** If no Quick Forms have been created, you will go directly to the **Add Customer** page.



3. Fill in the **New Customer** form. Please note that there are several tabs with extra information available on the screen.



The most important fields are:

### Main form (top)

- **Customer Name** – short name for the customer object; this will be used on the web interface.
- **Currency** – the currency in which this customer will be billed.
- **Opening balance** – a starting balance for the customer; the default is zero.
- **Type** – Since your normal wholesale traffic exchange clients send you calls and pay for them, they are your **Retail** customers. Even if they resell the traffic to somebody else, they are not resellers in PortaBilling®, since they do not manage their subscribers in your system.
- **Customer Class** – Choose the customer class you created in the previous step.

### Address info tab

- **E-mail** – An email address for the distribution of accounting information. After the billing period is over, a list of xDRs and other statistics will be sent to this address
- **Bcc** – Blind carbon copy in email; may be used for debug and archiving purposes.

### Additional info tab

- **Billing Period** – Frequency of invoice generation. For more details about the different available billing periods, see the [PortaBilling Administrator Guide](#).
- **Send Statistics** – If you choose “Summary only”, the statistics email will include only a brief call summary, without an attached details file; for most customers, the xDR file will be too large to send via email.

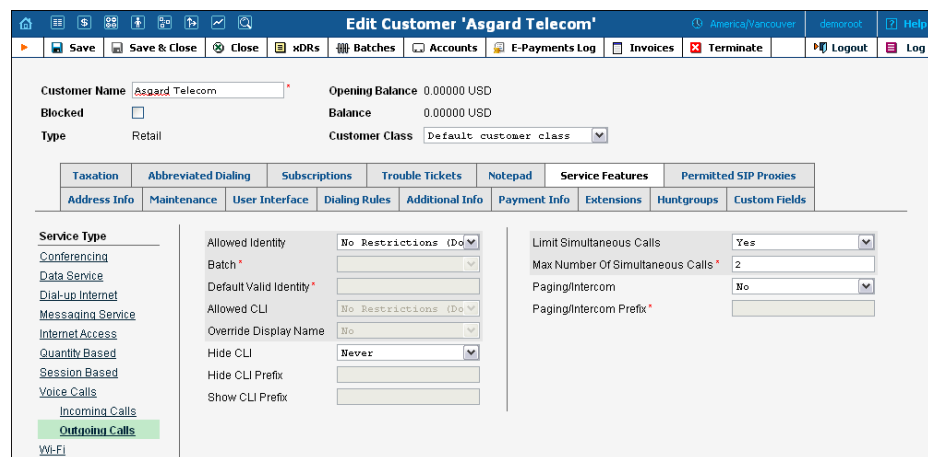
### Payment info tab

- **Credit Limit** – For prepaid traffic exchange, enter 0 in this field, so that the customer can only send you calls after he makes a payment (deposit).
- **Balance Warning Threshold** – The customer can be notified by email when his balance is dangerously close to the credit limit and service will soon be blocked. Here you can enter the value for such a warning threshold. This can be entered:
  - as a percentage (e.g. 90%). The warning will be sent when the customer's balance exceeds that percentage of his credit limit. So, if the credit limit is USD 1000.00 and the threshold is 90%, a warning will be sent as soon as the balance exceeds USD 900.00. This is only applicable when the customer has a positive credit limit.
  - as an absolute value. The warning will be sent as soon as the balance goes over the specified value. For prepaid traffic exchange, where the credit limit is zero, you can enter 100.00 here.

### User Interface tab

- **Time Zone** – The time zone in which customer will see his xDRs and also that which defines his billing period. For example, if you choose **America / New\_York** here and the billing period is **Monthly**, it means the billing period will start on the first day of the month, 00:00 New York time.
- **Web Interface Language** – language to be used on the customer self-care web interface.

### Service Features tab



This tab allows you to define global call parameters for this customer's environment. Most of these are related to the IP Centrex

service and are not used for wholesale traffic exchange, but there is one important:

- o **Limit simultaneous calls** – This allows you to limit the number of concurrent calls for accounts of this customer. This may be useful in preventing service abuse. If selected **Yes** for this feature you will also have to specify the maximum number of simultaneous calls.

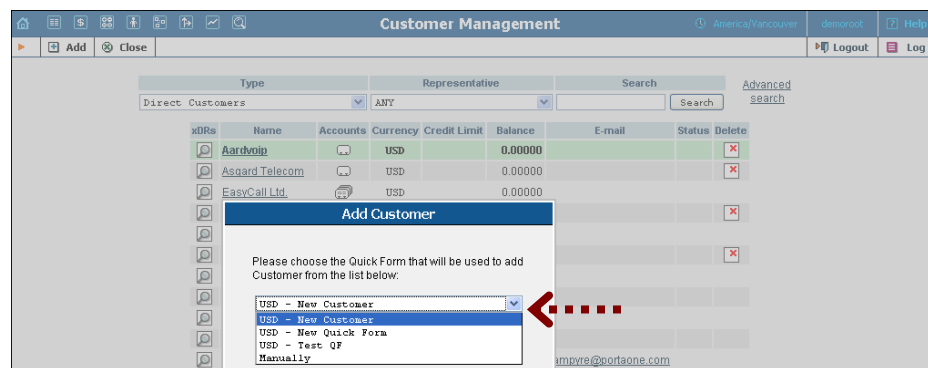
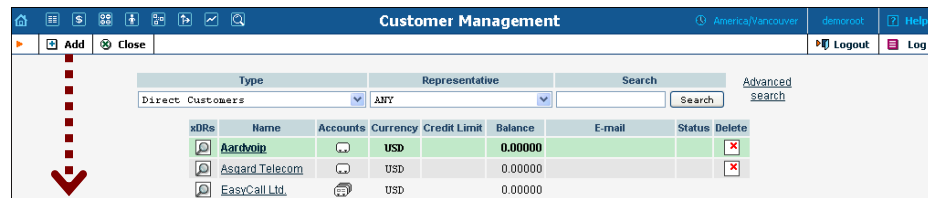
### Dialing Rules tab

Here you should specify how the customer will be dialing phone numbers; you may also use one of the pre-defined examples. For instance, if your customer wishes to use a tech-prefix when sending calls to your network, you may describe this in the dialing rules. PortaSwitch® will then automatically strip this tech-prefix from all incoming calls from this customer.

4. Click **Save&Close**.

### Creating a new Customer using a Quick Form:

1. In the **Participants** section of the Admin-Index page, choose **Customers**.
2. On the Customer Management page, click **Add Customer** and choose one of the available Quick Forms.
3. Fill in the **Add Customer** form.



**Add Customer / Quick Form 'New Customer'**

Customer Info

Customer Name \*

Company Name \*

First Name \*

Last Name \*

New Accounts

Account ID \*

## Create Accounts

Accounts enable authorization of the customer’s actual end-points. There are two main types of applicable authorizations:

- via SIP digest (the most robust and secure method)
- via remote gateway (or proxy) IP address



In the following examples, we assume that you are using the SIP digest method. In the case of IP authentication, the only difference is that the account ID must be identical to the signaling IP address of the remote gateway / proxy, and the password must be `cisco`.

1. Go to the **Customers** screen (the one containing the list of customers). It should resemble the screenshot below.

**Customer Management**

Type: Direct Customers Representative: ANY

xDRs	Name	Accounts	Currency	Credit Limit	Balance	E-mail	Status	Delete
	Aardvoip		USD		0.00000			
	Asgard Telecom		USD		0.00000			
	EasyCall Ltd.		USD		0.00000			

2. Next to the customer name, click on the  icon (the one in the **Accounts** column) to go to the account management for that customer.
3. Click on  **Add**.
4. In this example, we assume that you are creating the account manually, so choose **Manually** from the drop-down menu (do not use any of the Quick Form options).

**Accounts of Retail Customer 'Asgard Telecom'**

**Add** Account Generator

Account ID  Batch: ANY  Ctrl #  SIP Status: ANY

Accounts of Retail Customer 'Asgard Telecom'

Account ID Batch Ctrl # SIP Status Show Accounts

AMTY

Advanced search

**Add Account**

Please choose the Quick Form that will be used to add Account(s) from the list below:

QForm A  
QForm A  
Quick Form for EasyCall  
2207 QFI  
**Manually**

Add Account for Retail Customer 'Asgard Telecom'

Save Save & Close Close

Account ID: 75.124.67.98 Product: USD - Wholesale XCHG - Go

Blocked:  Opening Balance: 0

Account Info User Interface Subscriber Additional Info Life Cycle Service Features Custom Fields

Type:  Debit  Credit  Voucher

Credit Limit:

Service Password: cisco Auto

E-mail:

Batch:  None


5. Fill in the “Add Account” form:
  - **Account ID** – SIP ID which will be used to authorize calls coming from the customer’s SIP proxy or gateway, or the IP address for the customer’s SIP proxy or gateway.
  - **Product** – Choose the previously created wholesale exchange product.
  - **Blocked** – You may create your account as blocked, although this is rarely done with SIP service accounts.
  - **Opening balance** – The initial balance on the account.

#### Account Info tab



- **Type** – Select credit (yes, in general credit accounts are used for a post-paid service, but since credit limit is controlled on the customer level – you can set it up in such a way that customer will be working in the pre-paid mode).
- **Credit Limit** – For wholesale services you would normally assign a credit limit on the customer level (to be applied to all of the customer’s accounts), so you may leave the credit limit empty for individual accounts.
- **Service Password** – The account ID and this password will be used to authenticate SIP server login. Make sure you choose a password which is difficult to guess or crack. Use the **Auto** button next to the **Password** field to generate a secure password.
- **E-mail** – Enter the account owner’s e-mail address here. If he ever forgets his password for the web self-care pages, he will be able to reset it, and a new password will be sent to this email address. You can also just leave this field empty.

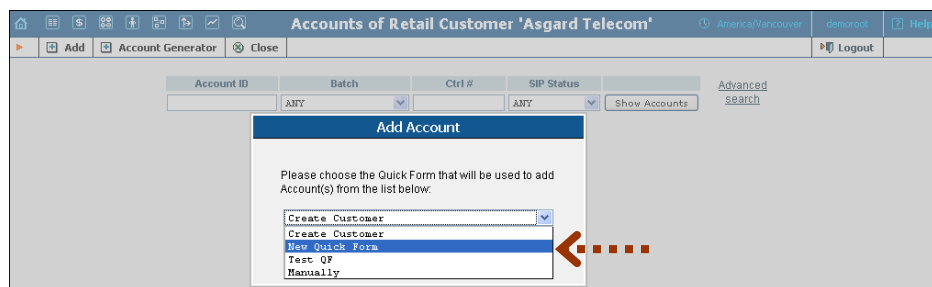
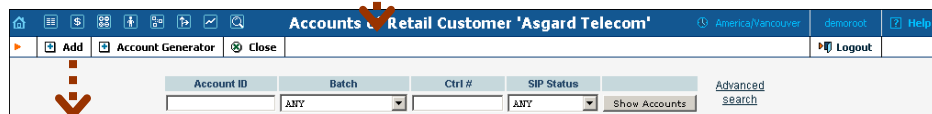
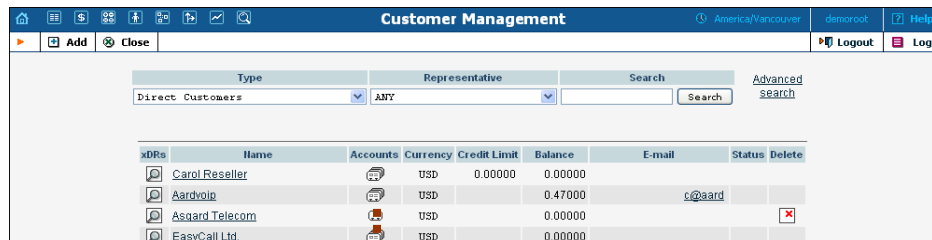
- **Batch** – You normally don't need a batch for your wholesale customer (since there will only be a few of them) so you may leave that space empty.

Life Cycle tab

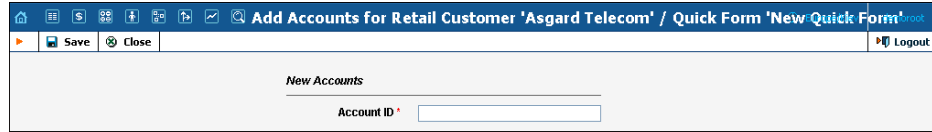
- **Activation date** – Account activation date.
  - **Expiration date** – Account expiration date; since we are setting up a postpaid service, which should function for a long time, leave this field blank.
  - **Life Time** – Relative expiration date; since we are setting up a postpaid service, which should function for a long time, leave this field blank.
6. After clicking  **Save&Close**, you will see a confirmation screen announcing that a new account has been created.
  7. Repeat steps 3-6 if the customer has more than one phone line (extension).

Creating a new Account using a Quick Form:

1. Go to the **Customers** screen (the one containing the list of customers).
2. Next to the customer name, click on the  icon (the one in the **Accounts** column) to go to account management for that customer.
3. Click on  **Add** and choose one of the available Quick Forms.



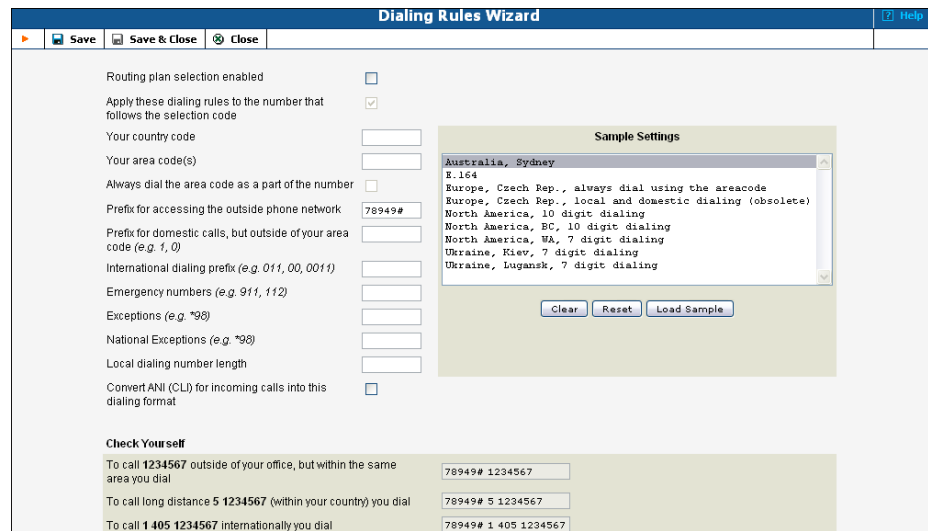
- Fill in the “Add Account” form.



## Set up Dialing Rules for a Customer (Optional)

Your customer may wish to use a custom numbering format, e.g. if his VoIP system requires a tech-prefix for routing or adds an international dialing prefix to a number.

- On the Customer Information screen, select the **Dialing Rules** tab.
- Select **Enable Dialing Rules** from drop-down menu.
- Click on the **Dialing rules wizard** button.



- Click **Save&Close** to exit the wizard screen.
- Now the new dialing rules are created and displayed on the screen, but are not yet stored in the database. Click **Save&Close** in the toolbar to save the new customer information.

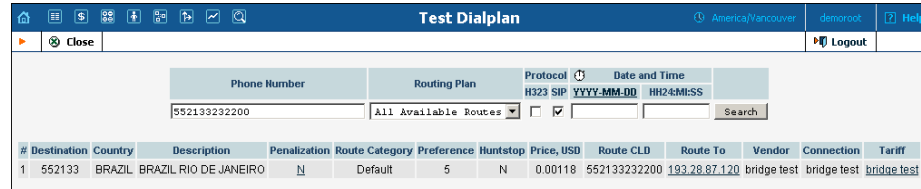


## Test Routing with Test Dialplan

You may check the routing in your system prior to actually making a phone call. This significantly simplifies troubleshooting, especially when test calls are to be performed by the customer, who may be not be available at the moment.



1. In the **Routing** section of the Admin-Index page, choose **Test Dialplan**.
2. Enter the destination phone number and choose a specific routing plan.
3. Click **Search** to display a list of applicable routes.



## Test the Whole System

Make sure that the PortaBilling® Radius and PortaSIP® servers are running.

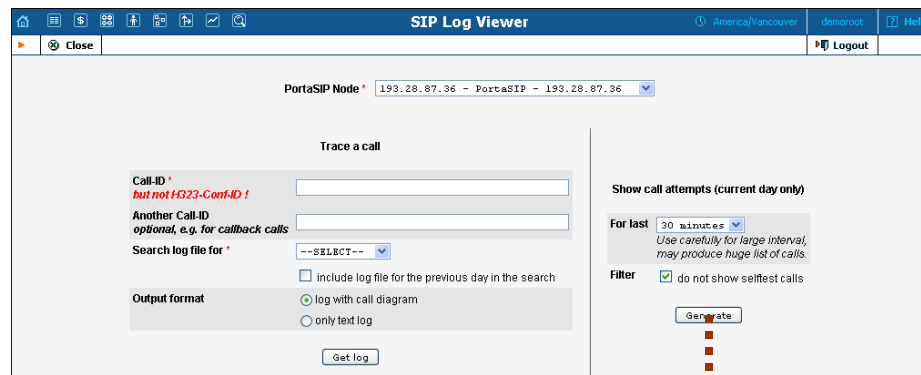
Configure the remote gateway or SIP proxy to send calls to your PortaSIP® server (make sure the authorization username and password are also configured on the remote side). Initiate a call and monitor the results in PortaBilling®.

## Check Log Files with SIP Log Viewer



You can browse the SIP log file from the PortaBilling® web interface using a SIP log viewer, which offers added convenience: for instance, automatically drawing call flow diagrams for you.

1. Choose the **SIP Log Viewer** item from the main menu.
2. Choose your PortaSIP® node in the **PortaSIP node** select menu and select the time interval on the right side of the screen. Now you will see all call attempts in that interval. Press the **Generate** button to produce a call attempts list.



SIP Log Viewer

Close Logout

List of call attempts in current sip log file on 193.28.87.36 PortaSIP node since 11/1/2010 15:03:35 UTC (UTC +0000) from log server 193.28.87.36:

Setup Time (in SIP server TZ)	Caller's IP:Port	CLI	CLD	Call-ID	Caller's User Agent
11 Jan 15:04:42.370	91.212.34.242:53062	999100	*20	dc4a318f-38d30381@10.254.254.56	Linksys/SPA941-5.1.8

Send log(s) to PortaOne support/ticketing system. Trouble ticket:  Send

PortaSIP node: 193.28.87.36  
 Call-ID: dc4a318f-38d30381@10.254.254.56  
 H323-Conf-ID: 14F15EDC FEB211DE 942D0030 4858DEBC

PortaSIP server	ID	proxy	b2bua	AAA	UA
Linksys/SPA941-5.1.8	11 Jan	193.28.87.36	193.28.87.36	PortaSIP	193.28.87.37
Linksys/SPA941-5.1.8	11 Jan	PortaSIP	PortaSIP	PortaSIP	Asterisk PEX

```

15:04:42.370 0-> (A? 101/I) j INVITE ----->
15:04:42.398 |<- (A? 101/I) 100 Trying -----|
15:04:42.405 | | | | |
15:04:42.405 |<- (A? 101/I) 401 Unauthorized --> |<- (A? 101/I) 401 Unauthorized -->
15:04:42.428 0-> (A? 101/A) ACK ----->|
15:04:42.444 0-> (A? 102/I) j INVITE ----->|
15:04:42.462 |<- (A? 102/I) 100 Trying -----|
15:04:42.462 | | | | |
15:04:42.469 | | | | |
15:04:42.470 |<- (A? 102/I) 100 Trying -----|
15:04:42.629 | | | | |
15:04:42.634 rtproxy[29675]: new session on a port 35008 created, user a:253369472
15:04:42.634 rtproxy[29675]: pre-filling caller's address with 91.212.34.242:16422
15:04:42.638 | | | | |
15:04:42.644 | | | | |
15:04:42.654 |<- (B? 141/I) 100 Trying -----|
15:04:42.656 |<- (Ba 141/I) j 200 OK ----->|
15:04:42.656 |<- (B? 141/I) 100 Trying -----|
15:04:42.656 |<- (Ba 141/I) j 200 OK ----->|
15:04:42.656 |<- (B? 141/I) 100 Trying -----|
15:04:42.656 |<- (Ba 141/I) j 200 OK ----->|
15:04:42.656 |<- (B? 141/I) 100 Trying -----|
15:04:42.656 |<- (Ba 141/I) j 200 OK ----->|
SUGGESTION: No audio in both directions!
11 Jan 15:04:42.370/GLOBAL/proxy[29693]: RECEIVED message from 91.212.34.242:53062:
INVITE sip:*208193.28.87.36 SIP/2.0
Via: SIP/2.0/UDP 10.254.254.56:5062;branch=shG4bK-3427a965
From: <sip:999100@193.28.87.36>;tag=d52e0a381c85aedc2
To: <sip:*208193.28.87.36>
Call-ID: dc4a318f-38d30381@10.254.254.56
CSeq: 101 INVITE
Max-Forwards: 70
Contact: <sip:999100@10.254.254.56:5062>;+sip.instance**00000000-0000-0000-0000-000R0SDA0867*
Expires: 240
User-Agent: Linksys/SPA941-5.1.8
Content-Length: 399
    
```

- To obtain a detailed log view, click on the call-id for the call you are interested in. In the lower frame you will see a detailed copy of all SIP messages in this call. The upper frame provides a call-flow diagram, representing the main participating entities (SIP phone, SIP proxy, B2BUA, remote SIP UA, etc.). If you click on a particular dialogue element here, the lower frame scrolls automatically to display the corresponding SIP message.

### Check Call History

If you want to see a list of all calls going through the system, or perhaps only ones for a particular destination, use the **Trace Session** function.

Trace Session
Logout Help

% 

Any service

2010-07-15  HH:MM:SS  
 2010-08-15  HH:MM:SS

Server Time Zone (UTC)

**Voice Calls**

View	Error Report	CLID(n)	CLID(dia)	Country	Description	Connect Time	Disconnect Time	Duration, min:sec	Amount	Account/Alias	Customer	Vendor	Disconnect Reason
		123000	123002			2010-08-10 19:45:20	2010-08-10 19:45:21	0:01	0	123000	SIP Accounts	INTERNAL	Normal call clearing
		123000	123002			2010-08-10 19:45:20	2010-08-10 19:45:21	0:01	0	123002	SIP Accounts	INTERNAL	Normal call clearing
		900	999000100			2010-07-26 15:55:08	2010-07-26 16:00:08	5:00	0	999000100	redRat	INTERNAL	Normal, unspecified
		900	999000100			2010-07-26 15:55:08	2010-07-26 16:00:09	5:00	0	900	SIP Accounts	INTERNAL	Normal call clearing
		900	999000100			2010-07-26 15:55:08	2010-07-26 15:55:08	0:00	0	999000100	redRat	INTERNAL	Destination out of order
		900	999000100			2010-07-26 15:43:57	2010-07-26 15:47:44	3:47	0	999000100	redRat	INTERNAL	Normal call clearing
		900	999000100			2010-07-26 15:43:57	2010-07-26 15:43:57	0:00	0	999000100	redRat	INTERNAL	Destination out of order
		900	999000100			2010-07-26 15:43:57	2010-07-26 15:47:44	3:47	0	900	SIP Accounts	INTERNAL	Normal call clearing
		900	999000100			2010-07-26 15:42:06	2010-07-26 15:43:36	1:30	0	900	SIP Accounts	INTERNAL	Normal call clearing
		900	999000100			2010-07-26 15:42:06	2010-07-26 15:42:06	0:00	0	999000100	redRat	INTERNAL	Destination out of order
		900	999000100			2010-07-26 15:42:06	2010-07-26 15:43:36	1:30	0	999000100	redRat	INTERNAL	Normal call clearing
		900	999000100			2010-07-26 15:41:52	2010-07-26 15:42:03	0:11	0	999000100	redRat	INTERNAL	Destination out of order
		900	999000100			2010-07-26 15:41:52	2010-07-26 15:42:03	0:11	0	900	SIP Accounts	INTERNAL	Normal call clearing
		900	999000100			2010-07-26 15:41:52	2010-07-26 15:41:52	0:00	0	999000100	redRat	INTERNAL	Destination out of order
		900	999000100			2010-07-26 13:33:20	2010-07-26 13:33:23	0:03	0	900	SIP Accounts	INTERNAL	Normal call clearing
		900	999000100			2010-07-26 13:33:20	2010-07-26 13:33:23	0:03	0	999000100	redRat	INTERNAL	Normal call clearing
		900	999000100			2010-07-26 13:33:20	2010-07-26 13:33:20	0:00	0	999000100	redRat	INTERNAL	Destination out of order

**List of possible Disconnect reasons:**

- Normal completed call
- Normal uncompleted call
- Call progress code
- Calling side error
- Called side error
- Network error

- In the Helpdesk section of Admin-Index choose **Trace Session**.
- Fill in the check phone number form:
  - **h323-conf-id** – if you need to trace a specific call, enter h323-conf-id here; otherwise leave this empty.
  - **Rate Pattern** – the phone number you are looking for or a destination pattern (first digits and a percent sign, for example **380%**).
  - **From, To Date** – the date range. Click on the “10 min.” icon to limit the time interval to the last 10 minutes only.
- Click **Search Session**.

For the administrator’s convenience, account xDRs may also be accessed from the Account Management window by clicking the **xDR** icon for the account.

© 2000-2011 PortaOne, Inc. All rights Reserved. www.portaone.com

35

## 2. Routing Info - LCR Blending

In a multi-carrier environment where every termination partner offers different prices to the same destinations, it can be a challenging task to come up with a proper (profitable) price list for your resellers and customers. This is because you have to consider the price of every carrier while making decisions on how exactly to charge end customers. Further, you might use different routing plans for different products, which requires precise pricing in order to avoid losses on cheap calls via expensive premium vendors. So it all seems like a not so easily manageable task. PortaBilling®, however, incorporates an LCR blending report tool, which is just what you need to deal with these issues.

**NOTE:** This type of report is available for root and admin users only.

## The Goal

The ultimate goal is to analyze the available routes, calculate the average termination price for each destination, and then use this as a basis for computing the rate for a given customer. The most important step is to “blend” the prices of different vendors according to a realistic scenario. For example, if there are three available carriers for destination 4471, with rates of \$0.12, \$0.18 and \$0.30 per minute, calculating just a plain average  $(0.12 + 0.18 + 0.30) / 3 = 0.20$  would be incorrect, since it assumes that each of these carriers gets an equal share of traffic. Since you are using a real-time routing engine in PortaBilling®, you will be utilizing least-cost routing and other features so that the cheaper carrier will get more calls, thus increasing your revenue. As a result, the cheaper carrier’s rate will have a bigger effect on the average termination price. Therefore, routes are assigned “weight” parameters, where the weight reflects the share of calls going to this route compared to the other routes. In our example above, we may assign a weight of 80 to the first route, 15 to the second one, and 5 to the third (thus assuming that calls are distributed 80% / 15% / 5% between the three vendors). As a result, the average termination price will be \$0.138 per minute.

## Create a Report

You can easily access this type of report from the main page of the web interface – just follow the Custom Report link:

1. On the **Custom Reports** management page, click **Add**.
2. Select the “Routing info – LCR blending” report type, then click **Save**.

The screenshot shows the 'Add Query' interface in a web browser. The title bar includes 'Add Query', 'Europa/Kiev', 'demoroot', and 'Help'. Below the title bar, there are 'Save' and 'Close' buttons. The main content area contains a form with the following fields:

- Type:** Routing info - LCR blending
- As copy of:** DEFAULT QUERY
- Description:** This report shows routing options for every destination and comes up with a suggested selling price.
- Input Parameters:** Routing Plan, Destination, Date, Number of Routes, Weight of every route, Protocol, Currency, Selling Rate Markup, Tariff
- Output Fields:** Destination, Country, Description, For every route: Destination, Vendor, Price, %, Aggregated Price, Suggested Sale Price, Tariff Destination, Tariff Price, Tariff Difference.
- Default ordering:** Country(asc), Destination(asc)

3. Once the report type is saved, new configuration options are available – “Input Parameters” and “Output Data”:

**Add Query** Europe/ Kiev demoroot Help

Name: Routing info & LCR blending \* Timezone: Europe/London

Report Type: Routing info - LCR blending

Query Info | **Input Parameters** | Output Data

Routing Plan: All Available Routes

Use Only Destination Prefixes:  Matching the Pattern  From a Destination Group Set  From an Existing Tariff

Date: YYYY-MM-DD Now HH24.MI:SS

Number of Routes: 3

Weight of Route №1: 80

Weight of Route №2: 15

Weight of Route №3: 5

Protocol: SIP

Currency: USD - US Dollar

Selling Rate Markup, %: 0

Compare with Tariff: Test Research

**Add Query** Europe/ Kiev demoroot Help

Name: Routing info & LCR blending \* Timezone: Europe/London

Report Type: Routing info - LCR blending

Query Info | **Input Parameters** | **Output Data**

Output Format				Data Sorting		
Column	Visible	Format	Post Processing Rule	Suppress Dup	Column	Sort Up/Dn
Destination	<input checked="" type="checkbox"/>	E.164		<input type="checkbox"/>	Country	<input checked="" type="checkbox"/>
Country	<input checked="" type="checkbox"/>	Text		<input checked="" type="checkbox"/>	Destination	<input checked="" type="checkbox"/>
Description	<input checked="" type="checkbox"/>	Text		<input type="checkbox"/>	Description	<input type="checkbox"/>
Route N Vendor	<input checked="" type="checkbox"/>	Text		<input type="checkbox"/>		
Route N Destination	<input type="checkbox"/>	E.164		<input type="checkbox"/>		
Route N Price	<input checked="" type="checkbox"/>	1234.123		<input type="checkbox"/>		
Route N, %	<input checked="" type="checkbox"/>	1234		<input type="checkbox"/>		
Aggregated Price	<input checked="" type="checkbox"/>	1234.123		<input type="checkbox"/>		
Suggested Sale Price	<input checked="" type="checkbox"/>	1234.123		<input type="checkbox"/>		
Tariff Destination	<input checked="" type="checkbox"/>	E.164		<input type="checkbox"/>		
Tariff Price	<input checked="" type="checkbox"/>	1234.123		<input type="checkbox"/>		
Tariff Difference	<input checked="" type="checkbox"/>	1234.123		<input type="checkbox"/>		

Let's have a closer look at the input & output parameters we can configure:

List of Input Values:

Name	Mandatory	Range of values	Description
Routing plan	Y	Available routing plans; "All available routes" by default	Produce a routing list according to the specified routing plan.

Use only Destination Prefixes	Y	Destination pattern	<p>The available options are:</p> <ul style="list-style-type: none"> <li>• <b>Matching the Pattern</b> – Produces a routing list only for a specific destination, e.g. 49%. To produce a list of all available destinations, use %.</li> <li>• <b>From a Destination Group Set</b> - Produces a routing list only for destinations available in the specified destination group set (which can be selected from the drop-down list).</li> <li>• <b>From an Existing Tariff</b> – The report will only include destinations present in the specified tariff. The tariff can be chosen from the drop-down list.</li> </ul>
Date	N	Date + time; by default – empty	Calculate routing at a specified time (if empty, use the current time at report generation).
Number of routes	Y	Numeric up to 10; default – 3	How many routes (from all available routes) should be displayed for each destination.
1st route weight	Y	Numeric	<p>How often this route is used; e.g. if the first route has a weight of 80 and the second, 20 – this means that we assume that, on average, 80% of calls go via the first route.</p> <p>Note: weight is not a percentage; rather, it is the number of calls which go via this route during the sampling interval. So, if you enter 7 for the first route, and 3 for the second, it means that, on average, for every 10 calls 7 calls will go</p>

			via the first route and 3 will go via the second (or 70 / 30% split). Of course, you can enter the actual percent values here; e.g. in this example, you can achieve the same result by entering 70 and 30.
<b>Nth route weight</b>	Y	Numeric	Same as above, for <b>1st route weight</b> field.
<b>Currency</b>	Y	List of “available” currencies (base + ones with a defined exchange rate)	By default the base currency should be selected.
<b>Selling rate markup, %</b>	N	Numeric, can be negative; by default, empty (0)	Percentage to be added to the average vendor destination price as your profit.
<b>Compare with Tariff</b>	N	List of available tariffs; by default, empty	The list produced and its price will be compared with the selected tariff (use only if you need to compare the result with some existing tariff; if not, leave this blank).

List of Output Fields:

Column	Description
<b>Destination</b>	Phone number prefix of the destination.
<b>Country</b>	Country corresponding to the current destination.
<b>Description</b>	A short description of the specified destination.
<b>Route N vendor</b>	
<b>Route N price</b>	
<b>Route N, %</b>	
<b>Aggregated Price</b>	Average price to the specified destination.
<b>Suggested Sale Price</b>	Suggested price calculated in accordance with the selling rate markup.
<b>Tariff Destination</b>	The destination in the tariff that was chosen for comparison.
<b>Tariff X price</b>	The price for this destination in the specified tariff.
<b>Tariff &lt;X&gt;</b>	Difference between “Tariff_x_price” and the



difference	suggested sale price.
------------	-----------------------

## Behind the Web Interface

How are all the things mentioned above compiled into a human-readable report? Let's assume we are generating an LCR blending report for all available routes where the "Destination pattern" is 44 (Great Britain), "Number of routes" is 2, and "1st route weight" is 80% (or just 80) while "2nd route weight" is 20%.

When the Execute button is pressed, the system finds all vendors who can terminate a call to the destination defined in the report parameters. Prices from all matched vendors' tariffs with a destination like 44% are fetched and processed in accordance with the defined "route weights" for each available vendor.

**NOTE:** If you set "Number of routes" to 2, all other routes available for that routing plan will be ignored. So the best way to get a clear and correct report is to set the "Number of routes" parameter equal to the number of routing categories included in that particular routing plan.

The next step is to calculate the average price for all the vendors involved. In our example, 8 out of 10 calls will go to the 1st route (we set its "weight" at 80%). Then all the gathered data is analyzed and the average price is calculated. The 1st vendor's price will have the highest "priority" in the calculations, to reflect the fact that it will be the most used.

**NOTE:** When calculating the aggregated price only vendors are taken into account, not connections. This helps to prevent a situation when one single vendor with 5 gateways (5 different connections – same price) occupies a whole list of routes where we have specified displaying only 2 routes. In such a case, the "aggregated price" will be equal to this vendor's price, which is not correct.

Additionally, the percentage defined as "selling rate markup" is added to the average destination price calculated during the previous step to form the recommended selling prices for each destination matching the 44% pattern.

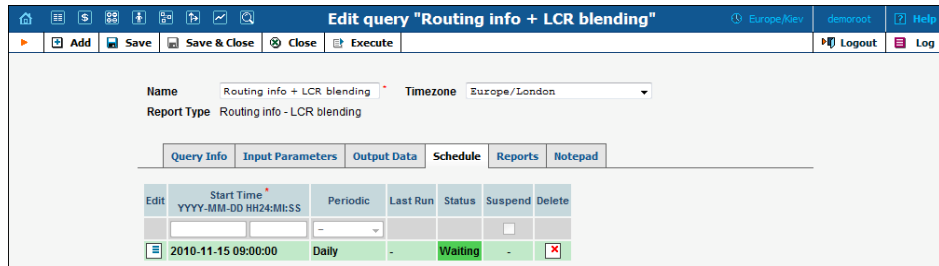
The final step is to display the prices of an existing tariff next to the new ones produced by the LCR blending report (if you have specified a tariff for comparison when configuring the report).

## How to Manage LCR Blending Reports

When a report has been configured and saved, two additional tabs appear. These tabs are related to effective management of this specific report.

### Schedule tab

This allows you to run a report in “unattended” mode, and may be configured to run this report at any time on any date. Additionally, this can be done as a periodical task with daily, weekly and monthly intervals. You can schedule this report to run on a weekly basis at 1:00 pm on Fridays, so that by the time your weekly meeting is over, the report will be compiled and ready for review:



To create a new periodical task, click **Add**.

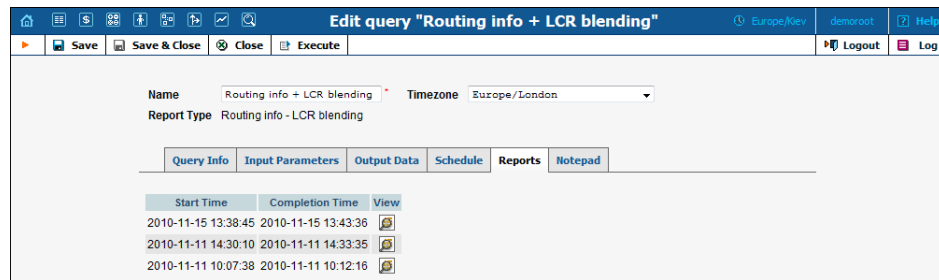
- Start time.** Date and time when the report should be produced. You may use the **YYY-MM-DD HH24:MI:SS** link (in the column header) to easily access the calendar and assign a start date.
- Periodic.** Specifies whether the report should be produced only once, or generated every day, week, or month. Use the drop-down menu to select the desired interval. Add an interval if you want this report to be periodic. The possible values are: daily, weekly, monthly.
- Last run.** The date when the report was last executed (if applicable).
- Status.** Current status of the report. **Waiting** - Report execution has not started yet, and is scheduled for the future. **Completed** - The report was to be executed only once, and this has already been done. **Running** - The report is currently being produced.
- Suspend.** Allows you to temporarily disable report execution (but not delete the entry from the report schedule). This may be convenient if you are leaving for vacation and would like to avoid having reports pile up in your inbox during your absence.
- Click the **Save** button.

**NOTE:** Start time specifies only the preferred start time for the report. Report execution will not start earlier than the specified time, but it may start later if there are some other conflicting tasks at that time. For instance, if two reports are scheduled to be executed at 6:00 am, only one of them will start at that time, while the other will start after the first one has finished.

### Reports tab

This tab allows you to browse results for up to ten previous report executions stored in CSV format. Thus you do not have to run the reports

again if you did not save the original result. Click on the icon to see the corresponding file.



## When & How to Use

### New routing plan created

One example of cases in which this report is applicable is a situation where you have created a new routing plan for premium customers, and need to generate a price list to bill calls accordingly. For providing services to the most demanding premium customers, you will most likely be using a special routing plan like “Premium”. This will definitely include the most expensive and most reliable vendors with the highest ASR and sound quality. When the new routing plan is ready to use, you will need to have an appropriate tariff & product to make use of it. Please refer to the Voice Services section in the [PortaBilling Administrator Guide](#) for more details on how to configure routing parameters and routing plans.

It is then time to start using LCR blending reports. They can save you a lot of time, since recommended prices are generated automatically according to route analysis and routing cost. Open the Report template and enter the appropriate data in all the necessary fields on the Input Parameters tab and, if needed, the Output Data tab as well. See the *List of Input and Output Values* above for a detailed description of all the available fields. As you are not comparing any tariffs, in this case you may leave the **Compare with Tariff** field blank. This report will use the following input parameters:

- **Routing plan** - Premium
- **Use only Destination Prefixes** – Matching the Pattern “%” (meaning every available destination)
- **Number of routes** – 3 (there are 3 vendors in the routing plan)
- **Weight of route 1** – 80% (you assume 80% of calls will go to this vendor)
- **Weight of route 2** – 15% (you assume 15% of calls will go to this vendor)
- **Weight of route 3** – 5% (you assume 5% of calls will go to this vendor)
- **Selling Rate Markup** – 8% (expected profit margin)

- **Currency** – US Dollar
- **Compare with Tariff** – skipped for now

**NOTE:** You need to select a newly created routing plan in the “Routing plan” field in order to have the correct results, since by default the “All available routes” option is selected.

Press Execute in the upper toolbar when you are ready. This is a rather large report, so it can take a while to produce the result, which will open in a new window:

Report results for "Routing info + LCR blending", "2010-11-15 14:09:23"

Close Download

Report: Routing info - LCR blending  
 Type: Europe/London  
 Timezone: Europe/London  
 Input Values: Routing Plan: Premium, Destination: 1%, Date: 2010-11-15 14:09:23, Number of Routes: 3, Weight of Route: 1- 80; 2 - 15; 3 - 5, Protocol: SIP, Currency: USD, Selling Rate Markup, %: 8, Tariff: -5

Description: This report shows routing options for eve with a suggested selling price.  
 Input Parameters: Routing Plan, Destination, Date, Number of route, Protocol, Currency, Selling Rate Ma  
 Output Fields: Destination, Country, Description, For eve Price, %, Aggregated Price, Suggested Sa  
 Tariff Price, Tariff Difference.  
 Default ordering: Country(asc), Destination(asc)

Destination	Country	Description	Route 1 Destination	Route 1 Price	Route 1, %	Route 2 Destination	Route 2 Price	Route 2, %	Route 3 Destination	Route 3 Price	Route 3, %	Aggregated Price	Suggested Sale Price
12	AFGHANISTAN		1	1.00000	80	1	1.00000	15	1	1.00000	5	1.00000	1.08000
1242		Bahamas	1	1.00000	80	1	1.00000	15	1	1.00000	5	1.00000	1.08000
1242357		Bahamas - Mobile	1	1.00000	80	1	1.00000	15	1	1.00000	5	1.00000	1.08000
1242359		Bahamas - Mobile	1	1.00000	80	1	1.00000	15	1	1.00000	5	1.00000	1.08000
1242375		Bahamas - Mobile	1	1.00000	80	1	1.00000	15	1	1.00000	5	1.00000	1.08000
1242376		Bahamas - Mobile	1	1.00000	80	1	1.00000	15	1	1.00000	5	1.00000	1.08000
1242395		Bahamas - Mobile	1	1.00000	80	1	1.00000	15	1	1.00000	5	1.00000	1.08000
1242422		Bahamas - Mobile	1	1.00000	80	1	1.00000	15	1	1.00000	5	1.00000	1.08000

### How to read it

When you created the “Premium” routing plan you included 3 vendors in it. All of them have a different priority, so that the first one will handle the vast majority of calls (since it is first on the list, with the highest priority), while other vendors will have the opportunity to terminate a call in case the first one fails to do so for some reason. This first vendor’s info is shown as Route 1 and as Route 1 Price on the LCR blending report results page. The Route 1 price will be the basis for the suggested sale price, since you will be sending about 80% of calls to it. In spite of possible differences in prices, the Route 2 and Route 3 prices will have less influence on the resulting sale price, since you will be using those vendors mostly as a failover solution.

The results page provides you with a routing and price data overview for each of the 3 vendors. The most important columns are:

- **Destination** – destination phone prefix.
- **Route 1 %** – you assume that on average 80% of calls go via the first route.
- **Route N %** – you assume that on average x% of calls go via the N<sup>th</sup> route.
- **Route 1 Price** – the price vendor 1 charges you for calls to that destination.

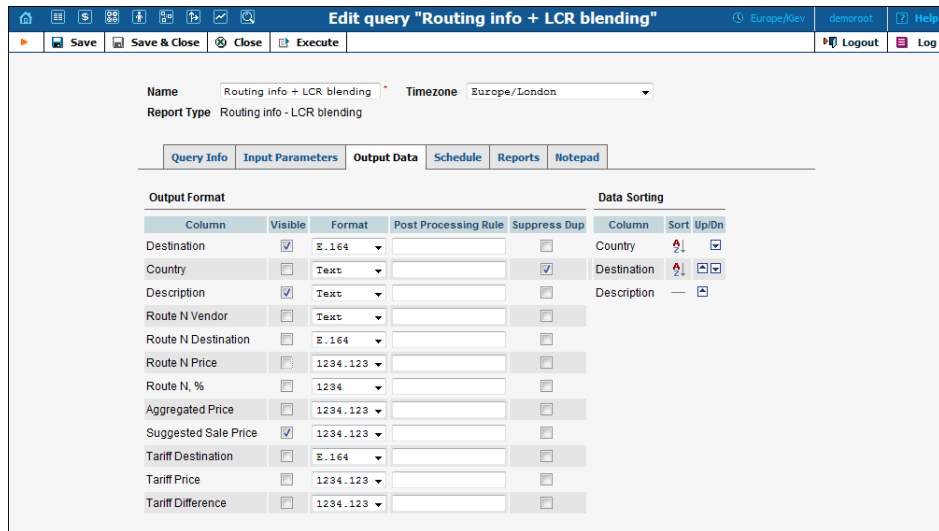
- **Route N Price** – the price vendor N charges you for calls to that destination.
- **Aggregated Price** – the average price of all vendors combined, with each route's weight taken into consideration.
- **Suggested Sale Price** – the aggregated price + 8% (which you have defined as the selling rate markup).

### Modifying the report format

As the only intention is to generate a profitable price list, and no routing analysis is needed in this case, you can hide some unnecessary data.

In the Visible column, un-tick the checkboxes next to the unneeded elements to prevent them from showing up on the results page (in this example, only “Destination”, “Description”, “Suggested sale price” are left).

There is also a post-processing rule. Here you can define a Perl regular expression which will accordingly rewrite the original values.



The report results page will look like this (no extra data, just destination and price):

Report results for "Routing info + LCR blending", "2010-11-15 13:55:05"																																							
Report Type: Routing info - LCR blending										Description																													
Timezone: Europe/London										This report shows routing options for every destination and comes up with a suggested selling price.																													
Input Values:										Input Parameters:																													
Routing Plan	Destination	Date	Number of Routes	Weight of Route	Protocol	Currency	Selling Rate Markup, %	Tariff	Routing Plan, Destination, Date, Number of Routes, Weight of every route, Protocol, Currency, Selling Rate Markup, Tariff																														
premium	1%	2010-11-15 13:55:05	3	1 - 80; 2 - 15; 3 - 5;	SIP	USD	8		Output Fields: Destination, Country, Description, For every route: Destination, Vendor, Price, %, Aggregated Price, Suggested Sale Price, Tariff Destination, Tariff Price, Tariff Difference. Default ordering: Country(asc), Destination(asc)																														
<table border="1"> <thead> <tr> <th>Destination</th> <th>Description</th> <th>Suggested Sale Price</th> </tr> </thead> <tbody> <tr><td>12</td><td></td><td>1.08000</td></tr> <tr><td>1242</td><td>Bahamas</td><td>1.08000</td></tr> <tr><td>1242357</td><td>Bahamas - Mobile</td><td>1.08000</td></tr> <tr><td>1242359</td><td>Bahamas - Mobile</td><td>1.08000</td></tr> <tr><td>1242375</td><td>Bahamas - Mobile</td><td>1.08000</td></tr> <tr><td>1242376</td><td>Bahamas - Mobile</td><td>1.08000</td></tr> <tr><td>1242395</td><td>Bahamas - Mobile</td><td>1.08000</td></tr> <tr><td>1242422</td><td>Bahamas - Mobile</td><td>1.08000</td></tr> <tr><td>1242423</td><td>Bahamas - Mobile</td><td>1.08000</td></tr> </tbody> </table>										Destination	Description	Suggested Sale Price	12		1.08000	1242	Bahamas	1.08000	1242357	Bahamas - Mobile	1.08000	1242359	Bahamas - Mobile	1.08000	1242375	Bahamas - Mobile	1.08000	1242376	Bahamas - Mobile	1.08000	1242395	Bahamas - Mobile	1.08000	1242422	Bahamas - Mobile	1.08000	1242423	Bahamas - Mobile	1.08000
Destination	Description	Suggested Sale Price																																					
12		1.08000																																					
1242	Bahamas	1.08000																																					
1242357	Bahamas - Mobile	1.08000																																					
1242359	Bahamas - Mobile	1.08000																																					
1242375	Bahamas - Mobile	1.08000																																					
1242376	Bahamas - Mobile	1.08000																																					
1242395	Bahamas - Mobile	1.08000																																					
1242422	Bahamas - Mobile	1.08000																																					
1242423	Bahamas - Mobile	1.08000																																					

After successful completion, the system will email the report to the addresses defined on the **Query Info** tab, and you can also download it from the results page. Click Download on the upper menu bar and choose the location where you want to save it. Now, having the LCR blending report in a CSV file, it is a matter of just a couple mouse clicks to convert it into a profitable price list.

### Quick way to check and redesign existing tariffs

In addition to the information about routes and the suggested price list for the selected routing plan, an LCR blending report can compare its suggested price with a specified existing tariff. It may be helpful to compare your current prices for different end-user groups with those computed with the help of the LCR blending report, and to modify the existing tariffs, if needed.

Before starting report compilation, simply define the tariff you wish to compare the report's results to on the Input Parameters tab, and then execute the report:

Destination	Description	Aggregated Price	Suggested Sale Price	Tariff Destination	Tariff Price	Tariff Difference
12		0.00000	0.00000	12	0.00000	0.00000
1242	Bahamas	1.00000	1.08000	12	0.00000	-1.08000
1242357	Bahamas - Mobile	1.00000	1.08000	12	0.00000	-1.08000
1242359	Bahamas - Mobile	1.00000	1.08000	12	0.00000	-1.08000
1242375	Bahamas - Mobile	1.00000	1.08000	12	0.00000	-1.08000
1242376	Bahamas - Mobile	1.00000	1.08000	12	0.00000	-1.08000
1242395	Bahamas - Mobile	1.00000	1.08000	12	0.00000	-1.08000
1242422	Bahamas - Mobile	1.00000	1.08000	12	0.00000	-1.08000
1242423	Bahamas - Mobile	1.00000	1.08000	12	0.00000	-1.08000
1242424	Bahamas - Mobile	1.00000	1.08000	12	0.00000	-1.08000
1242425	Bahamas - Mobile	1.00000	1.08000	12	0.00000	-1.08000
1242426	Bahamas - Mobile	1.00000	1.08000	12	0.00000	-1.08000
1242427	Bahamas - Mobile	1.00000	1.08000	12	0.00000	-1.08000
1242428	Bahamas - Mobile	1.00000	1.08000	12	0.00000	-1.08000
1242429	Bahamas - Mobile	1.00000	1.08000	12	0.00000	-1.08000
1242431	Bahamas - Mobile	1.00000	1.08000	12	0.00000	-1.08000

With a tariff defined, the results page will have several new columns:

- **Tariff Destination** – the corresponding destination in the tariff that was chosen for comparison.
- **Tariff Price** – the price to make calls to this destination within the defined tariff.
- **Tariff Difference** – the difference between the recommended sale price and the current price in the tariff.

Fields like “Route N Price” and “Route N %” have been excluded from this report to give you a clearer view of the new columns on the results page.

### Tariff upload

Uploading vendors’ tariffs is not a problem, since vendors themselves provide you with a file containing all the destinations and prices. In case this is your own tariff, you will need to create such a file yourself. If the suggested sale price suits you, you can create a new tariff and easily upload rates for it, using a CSV file with report results as a template. Refer to the “Rate Import” chapter of this guide for more information about uploading rates.

**NOTE:** You must have at least the **Destination** and **Suggested Sale Price** data fields visible to be able to use a CSV file for tariff upload.

### Summary

The LCR blending report is a tool primarily designed to display routing options for each destination and produce a suggested selling price. It creates a list of available routes for every destination and presents them in a form that allows easy calculation of “blended” route pricing.

# 3. Rate Import

When operating as a VoIP service provider, you will routinely receive rate updates from your partners. Each carrier may send you updates as frequently as several times per week, so you can expect to need to work on uploading new rates daily in order to keep your rating and routing consistent. Obviously, you want to be able to upload the files you receive and let the system process them automatically, instead of entering each rate manually.



## Upload Rate Data Into a Tariff


Unfortunately, each carrier uses a different format for rate presentation: some use CSV files, while others use Microsoft Excel format; the layout of columns in these files usually varies; some carriers will provide phone numbers in E.164 format, while others will provide them in the local dialing format. If you were to process the data in each file individually so as to convert it into a format acceptable to your system, it would require a fair amount of manual processing each day, and might result in data errors.

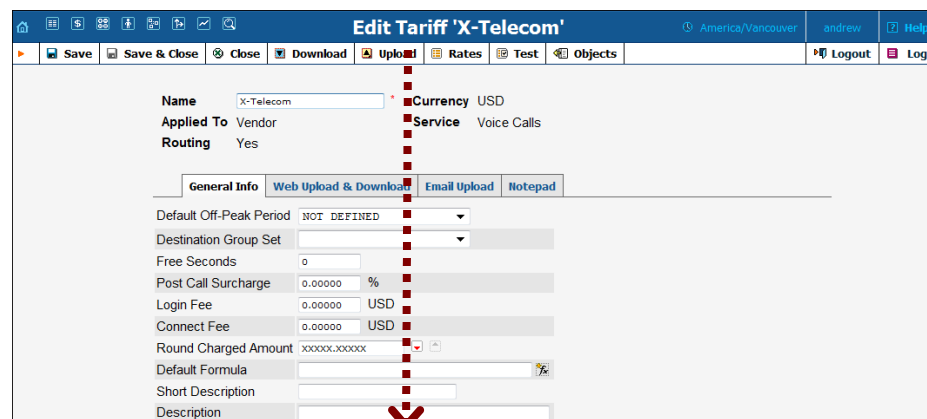
PortaBilling® offers the ability to program data processing rules (called templates) for each type of rate file you receive, so that you can eliminate the need for any manual data conversion and save yourself a lot of time. Also, the rate upload process is interactive and provides a comparison between new rates and existing ones, so that you can review the rates being uploaded for validity and accuracy.

Let's have a look at how a rate import is performed. We will perform the rate upload for the "X-Telecom" termination tariff, proceeding step by step. You can then use this as a model for uploading any other tariffs.

**NOTE:** In PortaBilling®, the proper name for the initial portion of the phone number (used to determine which location or type of phone network this number belongs to) is **destination** (e.g. 44 for the United Kingdom and 442 for London, United Kingdom). In the VoIP business the same entity is frequently called **prefix** – so we will use these terms interchangeably.

## Start the Import

1. On the Tariff Management page, click on the tariff name.
2. In the Edit Tariff window, click the  **Upload** button. You will see a screen like the one below:



Rate Upload for Tariff 'X-Telecom'

File C:\Temp\rates.csv

Add rates from the file to the existing rates  
 Replace all of the existing rates with the rates from the file

Rates with 'effective from' date in the past should be uploaded as effective immediately  
 Skip rates with the same data

Template Create New Template  
Timezone Current settings, America/Vancouver

Let's now discuss the available options and their effect.

### Add or replace rates

This radio button controls behavior in respect to rates which were already defined in the tariff at the time of import. The default is to **add** new rates into the tariff. So when the new rates appear, and there is an existing rate for a certain prefix, the new rate will simply overwrite the old one. If a rate for a certain prefix is in the tariff but is not given in the file you received from the carrier, it will stay unchanged. This mode is frequently used, since most of the time your partners will send you rate updates only, i.e. the file will contain only a small subset of prefixes for which the price has changed.

In some cases, however, you need to ensure following import that the tariff structure matches the provided file exactly, so that there are no “old” rates remaining. This is normally done when your carrier changes the structure of the prefixes and sends you a “replacement” rate update. In this case, you will want to use **replace** mode, which uploads all the new rates and then marks rates for all prefixes not present in the uploaded file as discontinued.

**NOTE:** To prevent a situation where some rates would be discontinued erroneously because a new rate was not uploaded due to a data error (e.g. a typo in the price column), discontinuation of rates will take place only if there were no errors in uploading the new rates.

In our example, we assume that a normal, “incremental” rate import is being used; thus we will be **adding** rates.

### Effective from

PortaBilling® allows each rate to be assigned an “effective from” date, so that an automated rate change can be easily scheduled for the future. Thus if your carrier sends you a file which indicates the date when a specific rate becomes effective, this can be extracted from the file and added to the rate information in PortaBilling®. Sometimes it may happen, though, that you receive the file later than expected, when the moment at which

the rate was supposed to become effective has already passed. In order to protect data integrity, it is impossible to upload the rate and assign an “effective from” date in the past, since CDRs for calls previously made will have already been rated according to the old rate and stored in the database (see the xDR rerating topic for more information about how this situation can be resolved). By default, a rate entry effective from a date in the past will be rejected and not inserted into the tariff. Alternatively, you may choose to insert these rates into the tariff, but effective from the current moment; to do so, please tick the appropriate check-box.

### Skip duplicate rates

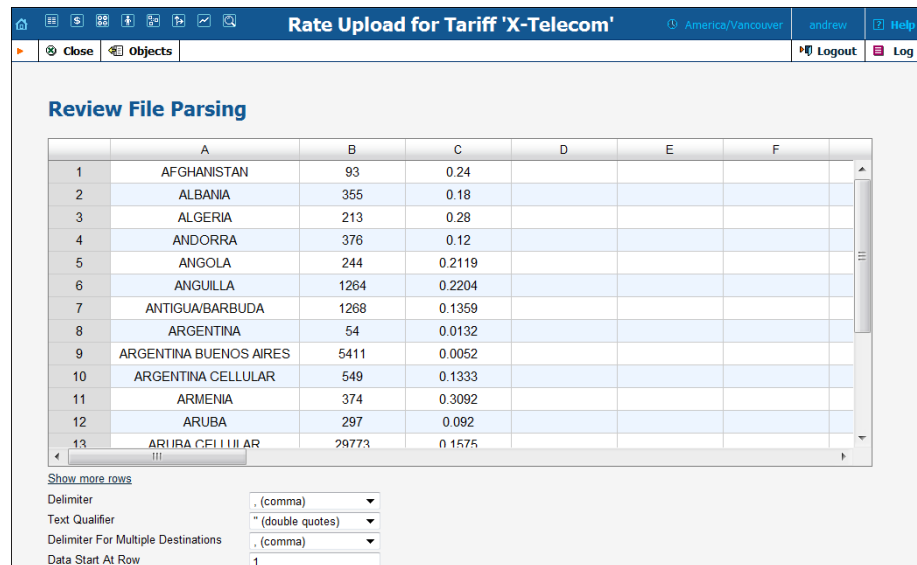
Sometimes carriers will include all prefixes in a rate update file, even if for some of them no change in pricing has occurred. If you upload the whole rate file, it will create duplicate rate rows. This has no effect on the way calls are billed, but it will increase the amount of entries in the rate table and, in the long run (if it occurs continually), have a negative effect on performance.

In order to prevent this, simply activate the option to skip duplicate rates. This will slightly increase the time it takes to upload the whole rate file (since PortaBilling® will have to check the already existing rates and compare them with the new ones). If rate parameters such as price, preference, and so on turn out to be identical, no extra (excess) rate will be inserted. We use this mode in our example (and certainly recommend using it whenever possible).

Finally, choose the rate file and click **Next**. The file is uploaded to the server, and we move on to the next step.

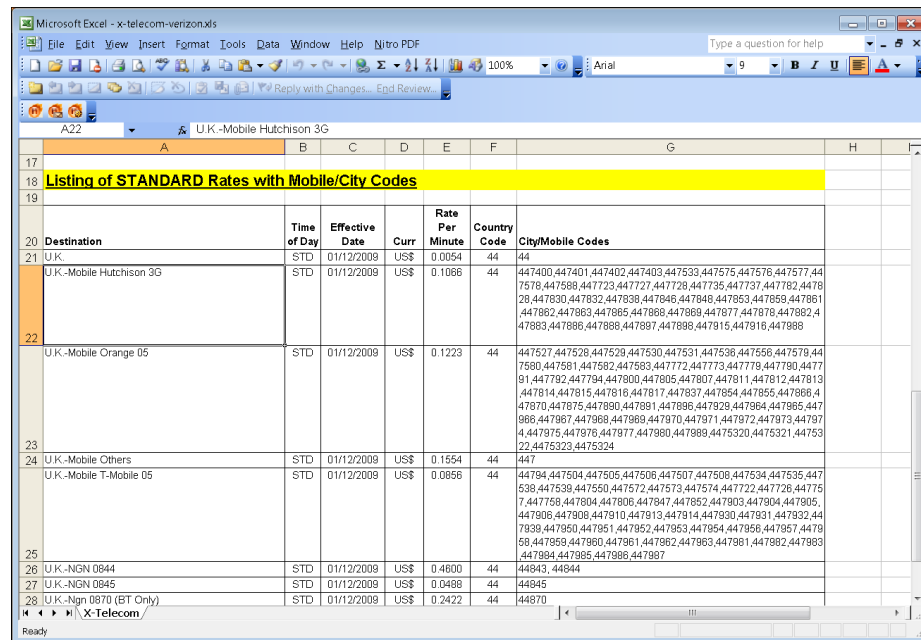
## Review File Parsing

The purpose of this screen is to verify that the general structure of the file has been determined correctly, so that the data can be properly extracted. There are different ways to organize data files: for instance, CSV files, despite their name (comma-separated values) can use semi-colons or other characters as a separator. PortaBilling® attempts to make a best guess, but it is important to review the results and, if necessary, change the settings according to your preference.



### Multiple prefixes in the same cell

Typically one row in the table contains the rate information for a single phone prefix (destination) such as 447 or 447527. Sometimes you may receive a file from the vendor where multiple prefixes are placed in the same table cell as shown in the screenshot below.



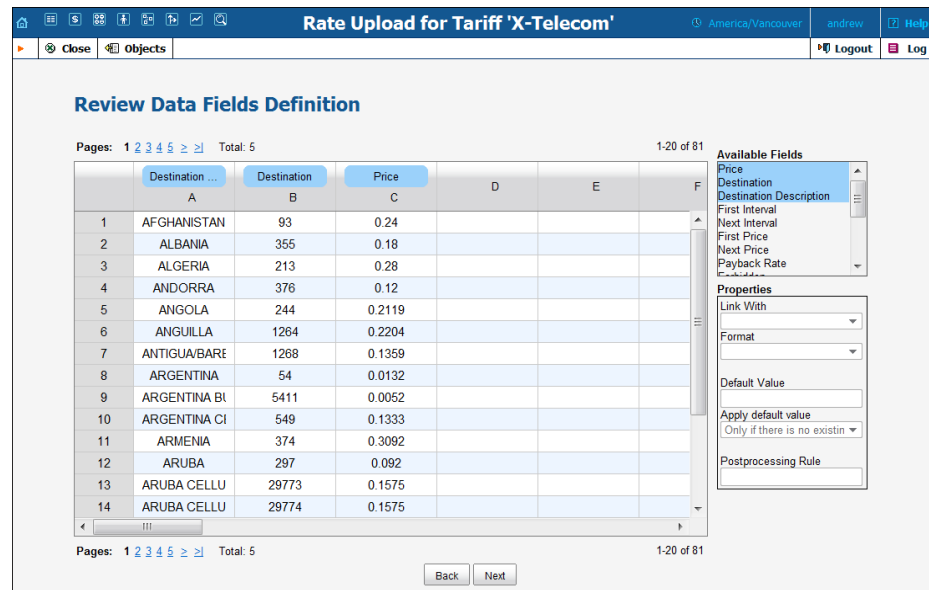
You can easily process such files – you just need to specify which character (e.g., comma (,), semicolon (;) or something else) will be used to separate the individual prefixes in the **Delimiter For Multiple Destinations** field. This way, during the upload, the system will treat each occurrence as if there is a separate row in the table for each prefix.

In our case, it looks as if the file was parsed properly, so we can click **Next** and move on to the next step

## Review Data Fields Definition

This is a very important step, since we need to identify where individual data elements (e.g. destination prefix or price) are located in the file, and map them to the attributes (data fields) for the rate. You can imagine what would happen if the system were to confuse them.

PortaBilling® applies some artificial intelligence, and usually guesses quite well where the specific columns are; but, obviously, you need to check whether the data fields have been assigned to the proper columns, and adjust them if necessary.



	Destination ... A	Destination B	Price C	D	E	F
1	AFGHANISTAN	93	0.24			
2	ALBANIA	355	0.18			
3	ALGERIA	213	0.28			
4	ANDORRA	376	0.12			
5	ANGOLA	244	0.2119			
6	ANGUILLA	1264	0.2204			
7	ANTIGUA/BARE	1268	0.1359			
8	ARGENTINA	54	0.0132			
9	ARGENTINA BI	5411	0.0052			
10	ARGENTINA CI	549	0.1333			
11	ARMENIA	374	0.3092			
12	ARUBA	297	0.092			
13	ARUBA CELLU	29773	0.1575			
14	ARUBA CELLU	29774	0.1575			

On the right you see the **Available Fields** select menu, which represents all the attributes of the rate record. You can drag and drop fields from here to the table headers in order to associate a particular data field with a column. A blue label will then remain at the top of the column, signaling that the values in this column (e.g. column A) will be used for the specified rate data field (e.g. **Destination**). Also, the data field in the list will be highlighted – this allows you to quickly see which data fields are already assigned.

You can also drag a label to a different column (thus associating the data field with a different column) or back to the **Available Fields** menu (the data field will then not receive any input values from the file).

The **Format** select menu allows you to adjust the way PortaBilling® interprets the values in the table cells, e.g. whether a leading 00 should be stripped off or considered part of the phone prefix, or whether a comma (,) or a dot (.) should be considered as a decimal separator for numbers.

Finally, you have the post-processing rule. Here you can write a mini-program in Perl which will alter the original value, e.g. append or remove characters, increase or decrease numeric values. It can also perform advanced operations, e.g. look up the current exchange rate for the vendor's currency and convert the value into the currency you use.

Please see the *Configuration Examples for Cisco Gateways* chapter for examples of programming various post-processing rules.

### What if the file does not contain a value for a certain data field?

This is another common situation: the carrier may not have included some important information (e.g. rounding intervals) in the file, or it could be that you simply need to assign the value based on your own decision (e.g. when uploading rates from carrier ABC, you will mark them as the Cheap route category). In this case, you may leave the data field unassigned to any column in the file, and simply type a value in the **Default Value** field.

The screenshot shows the 'Review Data Fields Definition' window in the 'Rate Upload for Tariff 'X-Telecom'' application. The window displays a table with columns for Destination, Price, and other fields. The 'Available Fields' panel on the right shows options for linking data fields to columns.

	Destination ... A	Destination B	Price C	D	E	F
1	AFGHANISTAN	93	0.24			
2	ALBANIA	355	0.18			
3	ALGERIA	213	0.28			
4	ANDORRA	376	0.12			
5	ANGOLA	244	0.2119			
6	ANGUILLA	1264	0.2204			
7	ANTIGUA/BARE	1268	0.1359			
8	ARGENTINA	54	0.0132			
9	ARGENTINA BI	5411	0.0052			
10	ARGENTINA CI	549	0.1333			
11	ARMENIA	374	0.3092			
12	ARUBA	297	0.092			
13	ARUBA CELLU	29773	0.1575			
14	ARUBA CELLU	29774	0.1575			

The 'Available Fields' panel on the right includes the following options:

- Destination Description
- First Interval
- Next Interval
- First Price
- Next Price
- Payback Rate
- Forbidden
- Hidden

The 'Properties' panel includes the following options:

- Link With
- Format: sec
- Default Value: 60
- Apply default value: Only if there is no existin
- Postprocessing Rule

### What if you need to associate a single column with more than one data field?

For instance, the carrier only supports a single “rounding interval” rating parameter, and so they provide a single column only (column D, in our example). In PortaBilling®, however, you have **First Interval** and **Next Interval**. In this case, you will associate one data field with the column, and then click on the other data field and link it to the first one (select the first field name in the **Link With** menu).

The screenshot shows a web application interface for reviewing data field definitions. The main area contains a table with the following data:

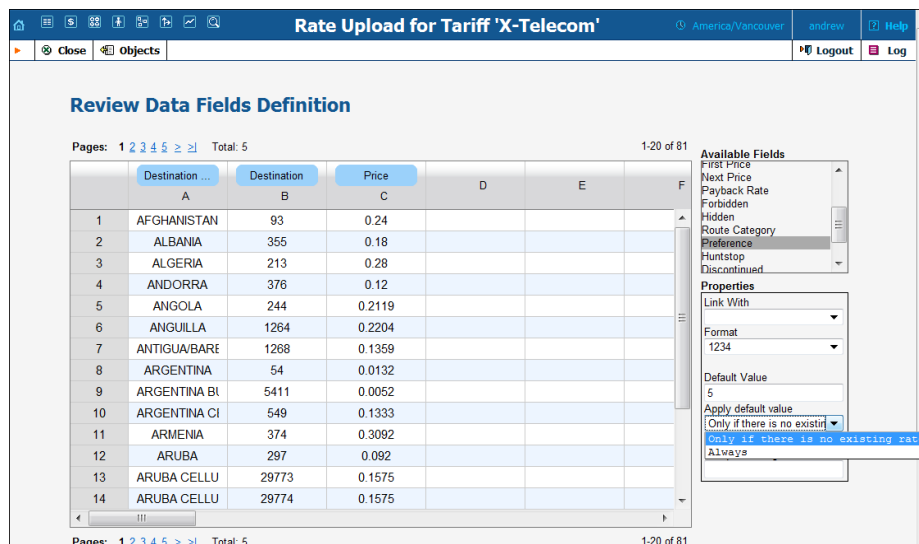
	Destination ...	Destination	Price	First Interval	E	F
	A	B	C	D		
1	AFGHANISTAN	93	0.24	1		
2	ALBANIA	355	0.18	60		
3	ALGERIA	213	0.28	1		
4	ANDORRA	376	0.12	60		
5	ANGOLA	244	0.2119	1		
6	ANGUILLA	1264	0.2204	1		
7	ANTIGUA/BARE	1268	0.1359	1		
8	ARGENTINA	54	0.0132	1		
9	ARGENTINA BI	5411	0.0052	1		
10	ARGENTINA CI	549	0.1333	1		
11	ARMENIA	374	0.3092	1		
12	ARUBA	297	0.092	1		
13	ARUBA CELLU	29773	0.1575	1		
14	ARUBA CELLU	29774	0.1575	1		

The sidebar on the right includes an 'Available Fields' list with 'Price', 'Destination', 'Destination Description', 'First Interval', 'Next Interval', 'First Price', 'Next Price', and 'Playback Rate'. The 'Properties' section shows 'Link With' and 'Apply default value' options.

**What if you want to “preserve” some of the already assigned rate attributes?**

Quite often you will initially upload all the rates from a given carrier with a default preference (e.g. 5) or route category (e.g. Default). After that, you start to fine-tune your routing based on quality reports, testing, customer feedback, and so on. Let’s assume that, in this particular vendor’s tariff, the preference for prefix 44 was changed to 8 (to reflect the fact that this is our preferred vendor for this destination) and the preference for prefix 447 was changed to 3 (here we actually decided to move the vendor to the bottom of the routing list for this particular destination). Now, if we were to simply upload the rate file, it would assign the default value (5) for preference to all the new rates, and our subsequent routing adjustments will be lost.

To prevent this, you may specify that the default value should only be applied if there are no existing rates for this prefix in the tariff.



Thus the parameter value from the existing rate will be copied into the new one, so that the new rate for 44 will retain preference 8, and the rate for 447 – preference 3.



Tip: In PortaBilling® you configure the rate information using two parameters: the price for the first interval (**First Price**) and the price for subsequent intervals (**Next Price**). Most of the wholesale carriers do the rating using only one parameter: price per minute. So when importing such a file into PortaBilling® you would need to assign the **First Price** data field to the column that contains the price and then link the **Next Price** to it. Since it is a very common operation, for your convenience the rate import wizard contains a special data field: **Price**. If this “virtual” data field is assigned to a column, then the value found there will be used for both **First Price** and **Next Price** rate parameters.

### Ready to move forward?



In order to proceed, you must assign the **Destination** and **Price** data fields to columns in the file.

The **Destination Description** field is not required for the actual rate import, but it will be very useful later on if there are any new destinations created.



Tip: In order for the destination description to be *automatically* filled in it is needed to create a “**Destination Description**” column and fill in some descriptive information in the file before the upload procedure.

Click **Next** to proceed.



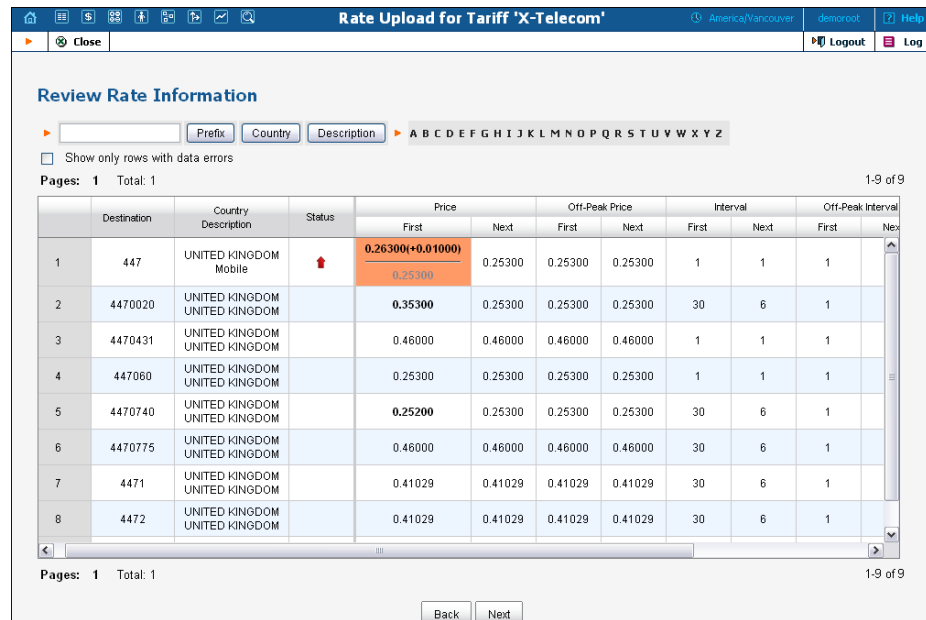
## Review Rate Information

The rate import wizard will process the rate data according to the rules previously specified and present the results on the screen for review before storing them in the database.

	Destination	Country Description	Status	Price		Off-Peak Price		Interval		Off-Peak Price
				First	Next	First	Next	First	Next	
1	93	AFGHANISTAN	↓	0.23000(-0.01000)	0.24000	0.24000	0.24000	60	60	1
2	355	ALBANIA		0.18000	0.18000	0.18000	0.18000	60	60	1
3	213	ALGERIA		0.28000	0.28000	0.28000	0.28000	60	60	1
4	376	ANDORRA	↑	0.13000(+0.01000)	0.12000	0.12000	0.12000	60	60	1
5	244	ANGOLA		0.21190	0.21190	0.21190	0.21190	60	60	1
6	1264	ANGUILLA	↓	0.21040(-0.01000)	0.22040	0.22040	0.22040	60	60	1
7	1268	ANTIGUA AND BARBUDA		0.13590	0.13590	0.13590	0.13590	60	60	1
8	44207	UNITED KINGDOM London	↑	0.03000(+0.00100)	0.02900	0.02900	0.02900	60	60	1

The **Status** column shows the comparison between the current rate and the new rate in the PortaBilling® file so you can quickly understand exactly how the rate will change. A red arrow indicates a price increase (this destination is more expensive) and a green arrow indicates a price decrease (making it cheaper to call that destination). In **Price** field you can also view the actual price differences.

You can edit the rate data right here (for instance, you negotiated a special last-minute rate change with the carrier or wish to fix a data error in the file) – just double-click on the specific cell in the table and enter a new value.



**Rate Upload for Tariff 'X-Telecom'**

Close

Review Rate Information

Prefix Country Description A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Show only rows with data errors

Pages: 1 Total: 1 1-9 of 9

	Destination	Country Description	Status	Price		Off-Peak Price		Interval		Off-Peak Interval	
				First	Next	First	Next	First	Next	First	Next
1	447	UNITED KINGDOM Mobile	↑	0.26300(+0.01000) 0.25300	0.25300	0.25300	0.25300	1	1	1	
2	4470020	UNITED KINGDOM UNITED KINGDOM		0.35300	0.25300	0.25300	0.25300	30	6	1	
3	4470431	UNITED KINGDOM UNITED KINGDOM		0.46000	0.46000	0.46000	0.46000	1	1	1	
4	447060	UNITED KINGDOM UNITED KINGDOM		0.25300	0.25300	0.25300	0.25300	1	1	1	
5	4470740	UNITED KINGDOM UNITED KINGDOM		0.25200	0.25300	0.25300	0.25300	30	6	1	
6	4470775	UNITED KINGDOM UNITED KINGDOM		0.46000	0.46000	0.46000	0.46000	30	6	1	
7	4471	UNITED KINGDOM UNITED KINGDOM		0.41029	0.41029	0.41029	0.41029	30	6	1	
8	4472	UNITED KINGDOM UNITED KINGDOM		0.41029	0.41029	0.41029	0.41029	30	6	1	

Pages: 1 Total: 1 1-9 of 9

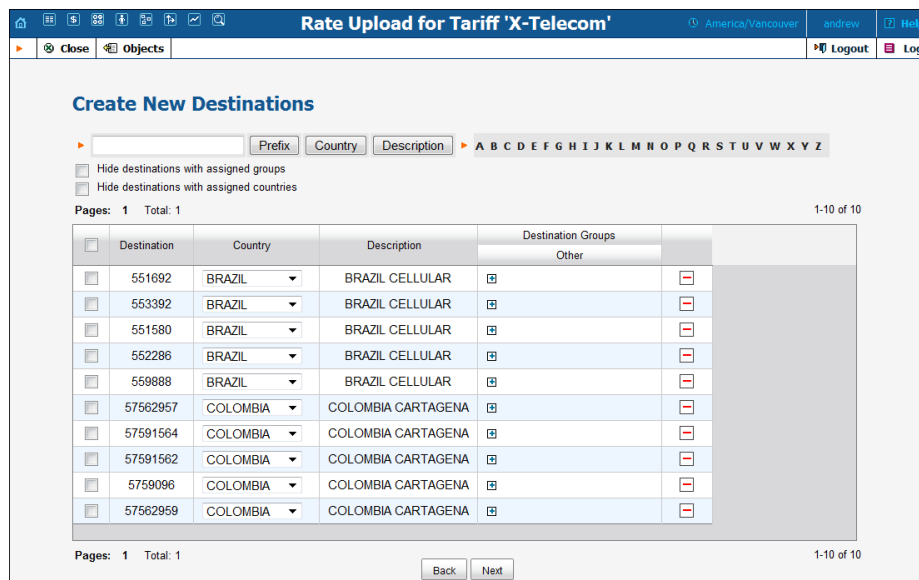
Back Next

As you can see in the screenshot, for the 447 destination, the price per minute has increased by \$0.01. Also, the value of the **Preference** parameter of this rate is 3 (while most other rates have preference 5) – this is because there is an existing rate for this destination, and it is already assigned preference 3.

Click **Next** in order to proceed.

## Managing New Prefixes

This screen only appears if the rate file contains any prefixes you haven't yet defined in your system and it allows you to add new prefixes quickly and efficiently. This process takes a very little time and reduces the chances for error.



Carriers frequently send rate files containing prefixes that have not yet been defined in your system. These prefixes must be added into the system in order for rates to be created for them – so the big questions are: ‘how will this affect the routing and billing on your system in general?’ and ‘how will other carriers and customers be affected?’

When adding a new destination, extra parameters may be provided in addition to the actual prefix - see below.

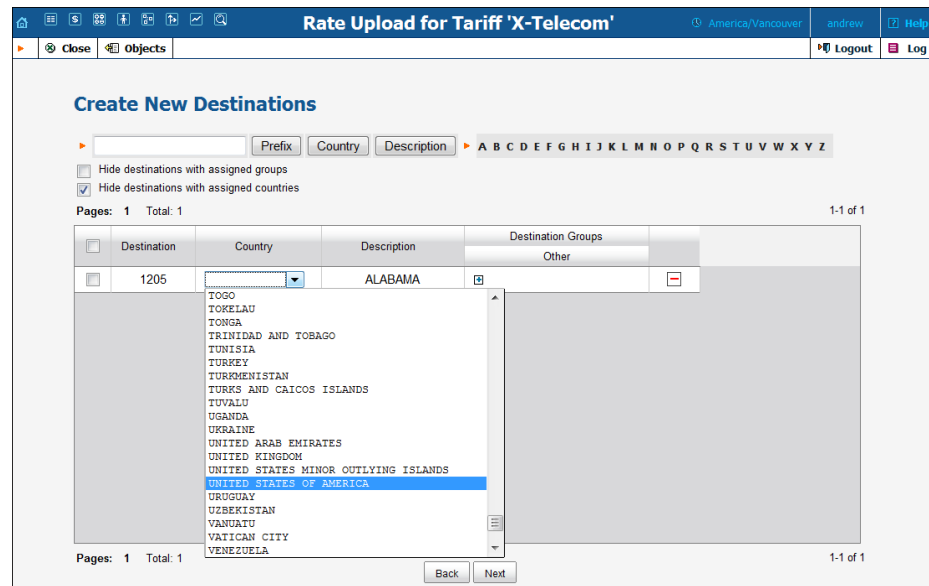
### Assigning the country

Each destination is associated with a country. For a new destination the association has to be made before it can be inserted into the database. It is a good idea to upload the default set of destinations provided with PortaBilling®, or some other set that contains, at the least, destinations for each country, e.g. United Kingdom – 44, Germany – 49, etc. Then PortaBilling® can correctly assign the country name to the majority of new prefixes. Thus you do not need to choose the country for *each* destination manually (e.g. if you try to upload a destination 33040, but there is already a more generic one 33 in the system and the country has been defined as France – the upload wizard will propose assigning the number 33040 to France as well). If required, a country for the new destination may be chosen from the drop-down list on the **Create New Destinations** page.

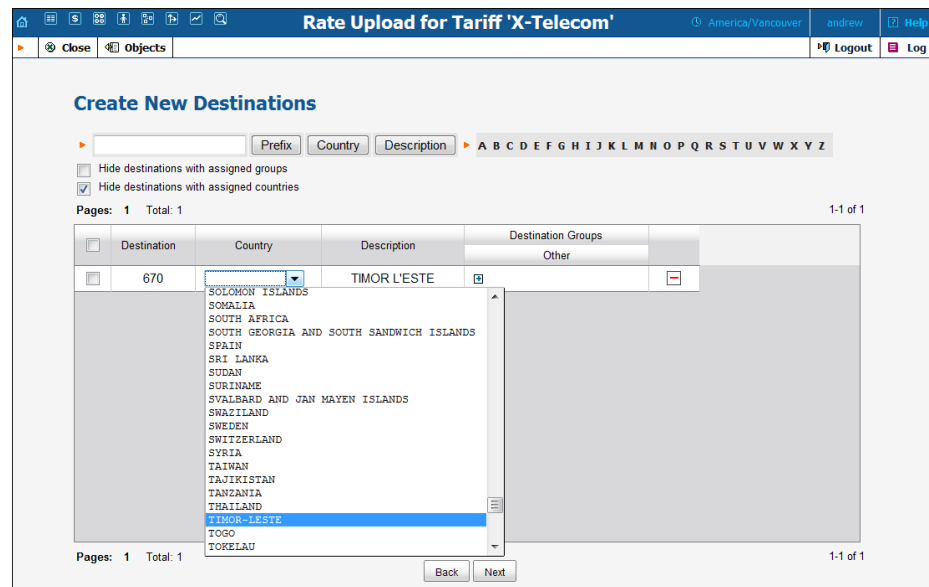
**NOTE:** This is a required step – the rate import cannot proceed until each of the new prefixes has been assigned to a country.

Sadly, both the US & Canada pose the biggest challenges, since they (plus a handful of other countries, like Bermuda) share the prefix 1. This makes it impossible to guess the country code just by looking at the phone number. For instance, 1204 is Manitoba, Canada and 1205 is Alabama,

US! In these cases you will need to manually assign country codes for these destinations. The good news is that new area codes for the US & Canada do not appear that often.



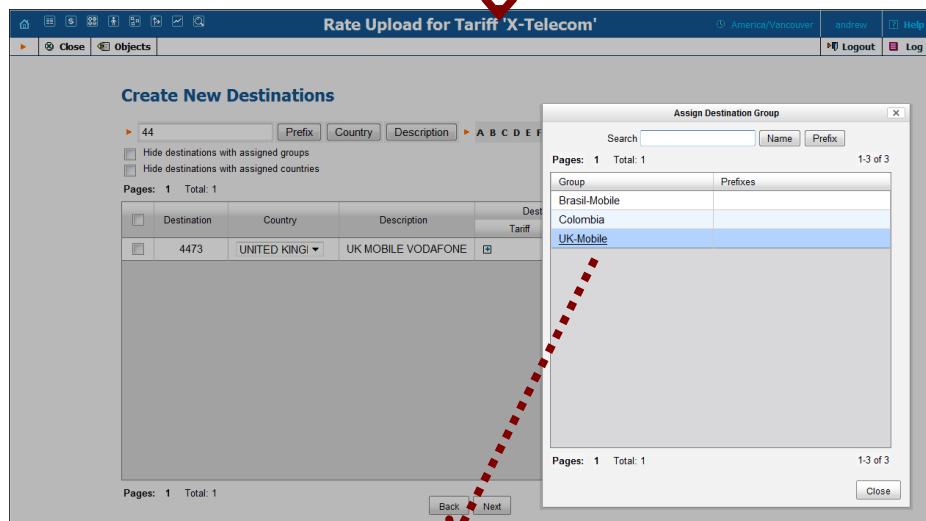
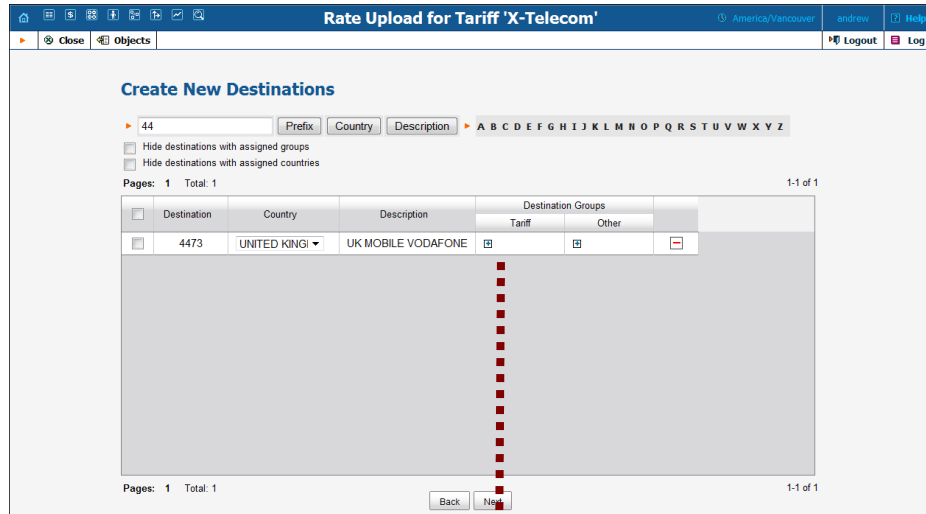
In our example we will assign the 670 destination to the country East Timor.

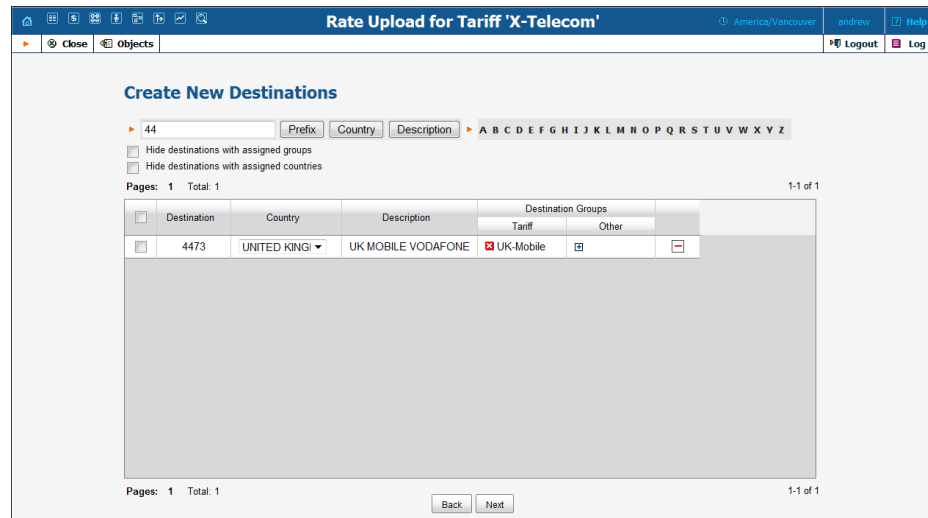


### Including a destination into a destination group

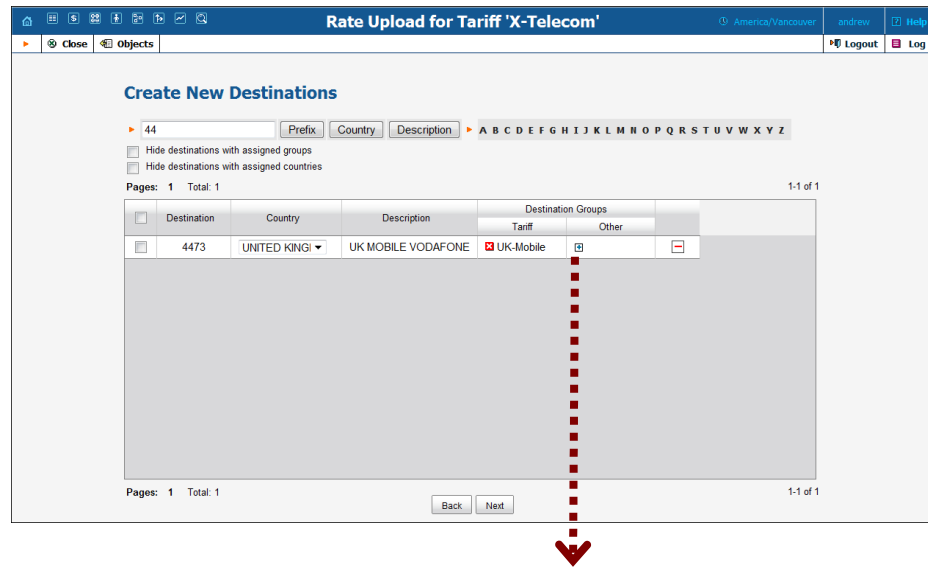
Destination groups are invaluable for saving hours of time and for avoiding mistakes, since one can change the rate for a whole group with just a single click instead of modifying rates for many destinations (and many could literally mean thousands), manually. So for instance, when the new destination 4473 is being added – it may be a good idea to

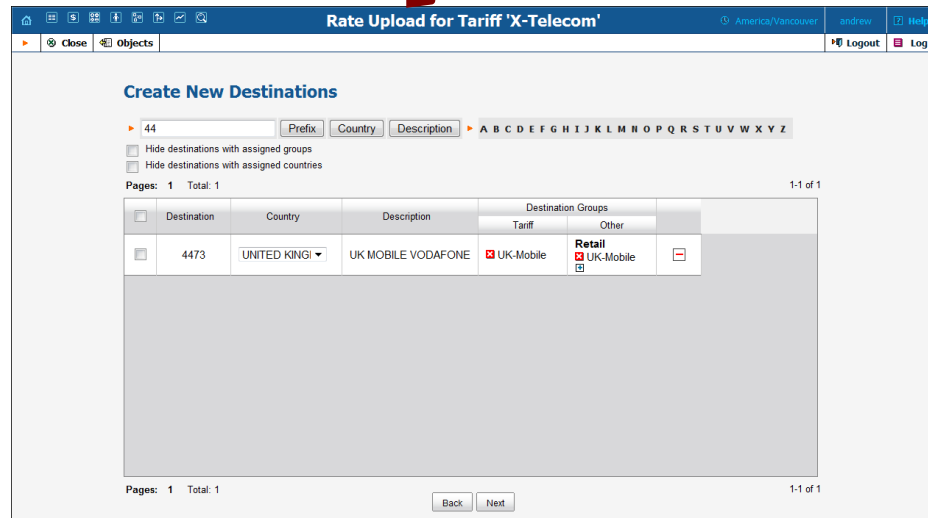
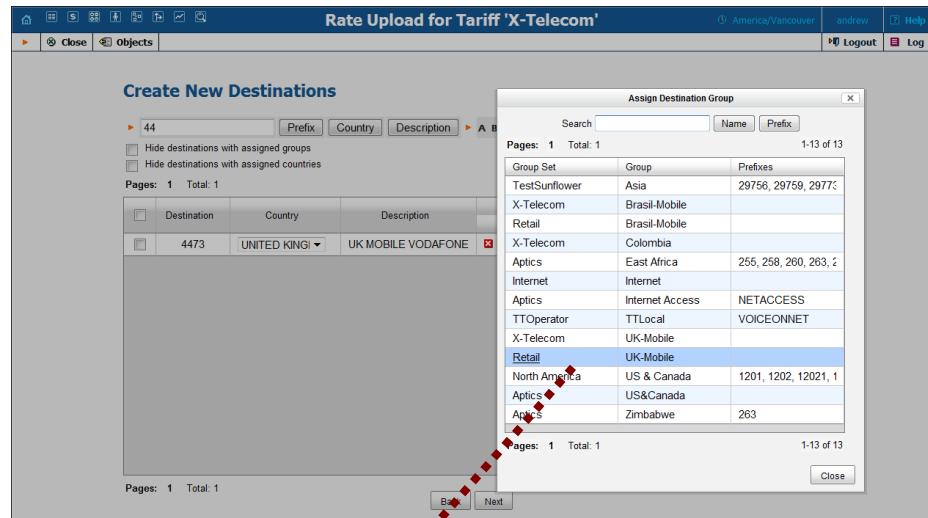
immediately include it into a destination group (within the destination group set that's associated with this tariff) – UK-Mobile in this case. Then the next time someone updates the UK-Mobile rate, the change will be applied to this prefix as well. See the screenshots below for the sequence of actions.





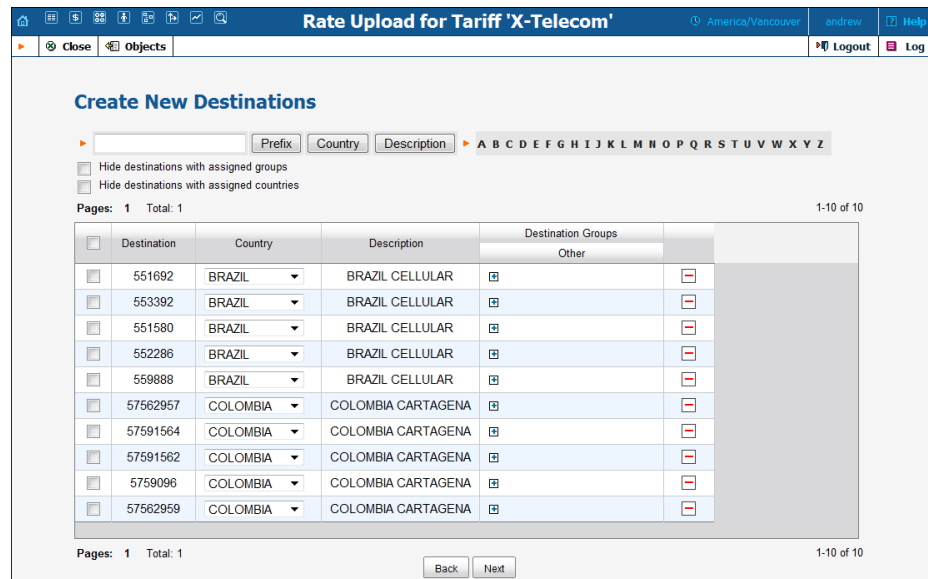
In some cases it may also be beneficial to include this destination into groups that are in other destination group sets. In our example, the new destination 4473 (UK-Mobile-Vodafone) is detected while uploading rates into the tariff of carrier X-Telecom (which has the X-Telecom destination group set associated with it). You may want to immediately add it into the UK-Mobile destination group in the Retail-Customers destination group set. This way the next time your colleague is generating rates to be applied to your customers – this prefix will appear and he can apply the special pricing for it.





### Multiple similar destinations

In our example you may notice that there are several destinations (55123, 55124, 55125, etc.) which look very similar. That's because they belong to the same country (Brazil) and they are in the same destination group (Brazil-Mobile).



**Rate Upload for Tariff 'X-Telecom'**

Close Objects

Prefix Country Description A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Hide destinations with assigned groups  
Hide destinations with assigned countries

Pages: 1 Total: 1 1-10 of 10

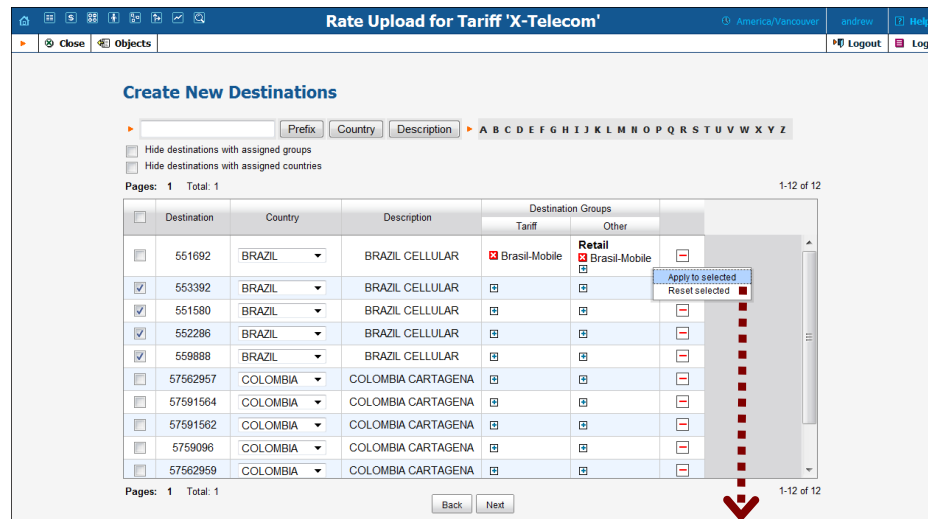
Destination	Country	Description	Destination Groups
			Other
<input type="checkbox"/>	551692	BRAZIL	BRAZIL CELLULAR
<input type="checkbox"/>	553392	BRAZIL	BRAZIL CELLULAR
<input type="checkbox"/>	551580	BRAZIL	BRAZIL CELLULAR
<input type="checkbox"/>	552286	BRAZIL	BRAZIL CELLULAR
<input type="checkbox"/>	559888	BRAZIL	BRAZIL CELLULAR
<input type="checkbox"/>	57562957	COLOMBIA	COLOMBIA CARTAGENA
<input type="checkbox"/>	57591564	COLOMBIA	COLOMBIA CARTAGENA
<input type="checkbox"/>	57591562	COLOMBIA	COLOMBIA CARTAGENA
<input type="checkbox"/>	5759096	COLOMBIA	COLOMBIA CARTAGENA
<input type="checkbox"/>	57562959	COLOMBIA	COLOMBIA CARTAGENA

Pages: 1 Total: 1 1-10 of 10

Back Next

In order to save time and avoid assigning parameters to each one of them manually, you can do the following: assign the required parameters to just one of them, select the others using the checkbox on the left side of each row and then move the mouse over to the rows that don't have parameters assigned. A popup menu will appear – choose **Apply to Selected** and this will automatically change all the rows.

Please see how the change is applied to several prefixes for Brazil below.



**Rate Upload for Tariff 'X-Telecom'**

Close Objects

Prefix Country Description A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Hide destinations with assigned groups  
Hide destinations with assigned countries

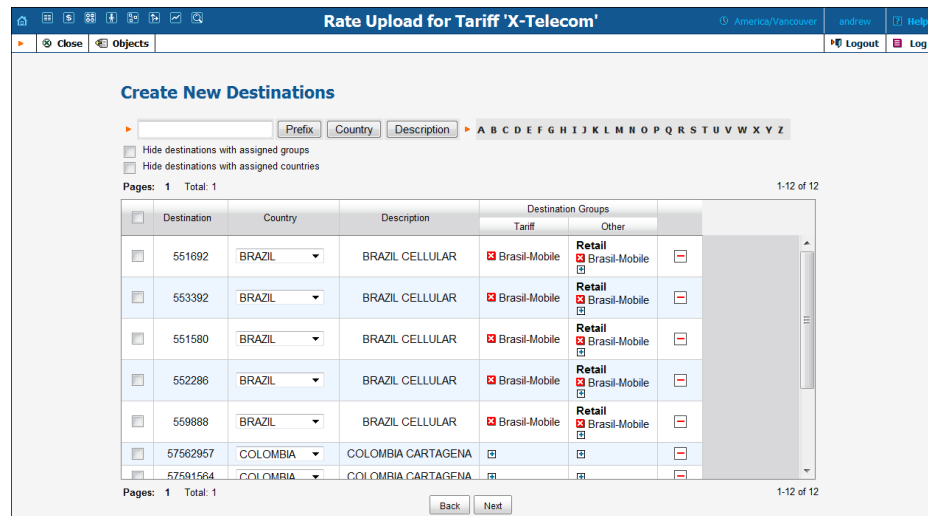
Pages: 1 Total: 1 1-12 of 12

Destination	Country	Description	Destination Groups
			Tariff Other
<input type="checkbox"/>	551692	BRAZIL	BRAZIL CELLULAR
<input checked="" type="checkbox"/>	553392	BRAZIL	BRAZIL CELLULAR
<input checked="" type="checkbox"/>	551580	BRAZIL	BRAZIL CELLULAR
<input checked="" type="checkbox"/>	552286	BRAZIL	BRAZIL CELLULAR
<input checked="" type="checkbox"/>	559888	BRAZIL	BRAZIL CELLULAR
<input type="checkbox"/>	57562957	COLOMBIA	COLOMBIA CARTAGENA
<input type="checkbox"/>	57591564	COLOMBIA	COLOMBIA CARTAGENA
<input type="checkbox"/>	57591562	COLOMBIA	COLOMBIA CARTAGENA
<input type="checkbox"/>	5759096	COLOMBIA	COLOMBIA CARTAGENA
<input type="checkbox"/>	57562959	COLOMBIA	COLOMBIA CARTAGENA

Pages: 1 Total: 1 1-12 of 12

Back Next






Tip: You can filter the list of new destinations by country or hide the destinations that have already been assigned a country or destination group. For this action, use the **Select All** button in conjunction with **Apply To Selected** to quickly apply settings to hundreds of destinations.


**If I add a new destination while uploading rates for carrier ABC will it affect my other carriers?**

Customers who are used to old-style routing systems are very concerned about adding new prefixes, since on many of those, a carrier with a longer prefixes in their tariff would all of a sudden get priority routing (although it is not the cheapest or the one with better quality). Attempts to “harmonize” the prefixes (to ensure that all carriers use the same prefix set) require lots of manual labor and are Sisyphean in scope: the moment you finish changing the prefixes and things are finally looking good, one of the carriers sends you an updated prefix list and you have to start the task all over again.

This is not the case with PortaBilling®, which uses a true real-time routing engine giving each carrier their own set of prefixes for the tariff. When the routing is calculated, available routes are compared based on cost, preference and route category – never on the prefix length. So if you upload the rate for 4471 for carrier A (and other carriers only have prefixes 44 and 447) – when a routing for a call to 4471234567 is computed, the 4471 rate will be compared by price and preference with the rates for 44 or 447 from other carriers (who don’t have the 4471 prefix). Consequently, the system always produces a correct routing and you don’t have to worry about adding new prefixes that are only used by a few carriers.

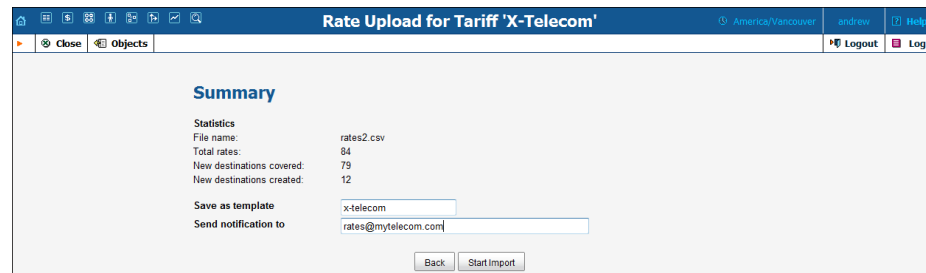
**I do not want to add a destination right now, what do I do?**

You can delete the destination from the list of destinations that will be automatically created during the import by using the  delete button. Note that in this case, the rate for this destination will not be imported

(since there is no destination to associate it with). To undo the delete destination action, click the  button, respectively.

## Summary

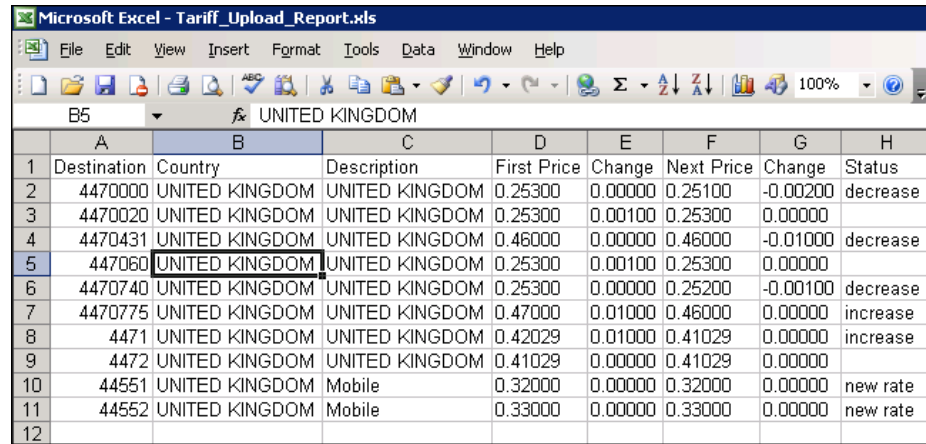
On the **Summary page**, you will see an overview of information about the number of rate records to be processed. You can also specify a name under which the current import settings will be saved as a template. Later you can re-use them when uploading rates into this or other tariffs.



You may specify who should receive a report about the rates being uploaded, and then click **Start Import** to launch the rate import process. The report will contain following information:

- Total rates processed - the total number of rates in the imported file
- Total rates created - the total number of rates created including the newly created rates (the rates which were not present in the tariff prior to the import) and the overwritten ones
- Old rates overridden - reflects the total number of rates, which were updated (i.e. the previous rates were replaced by the new ones for some destination)
- Skipped (due to errors) – the number of rates that contained errors (e.g. a typo in the price column) and therefore were not added to the tariff. The information about the occurred errors you can see in the e-mail with the tariff upload report
- Skipped (duplicates) – the number of skipped duplicate rates. It means that if some rates (rate parameters) in the uploaded file were identical with the ones already present in the tariff, the system skipped the duplicates i.e. no extra (excess) rate were inserted into the tariff
- Rates for destinations, previously absent in this tariff, created – the number of rates created for destinations which were not in the tariff prior to the import
- Destinations, previously absent in the system, created – the number of new destinations created in the system (billing environment)

In the attached file you can see the detailed information about the result of the rate upload procedure in order to quickly understand exactly how the existent rates were changed. You can also see information about new rates added if there are any. See the example of the file on the screenshot below:



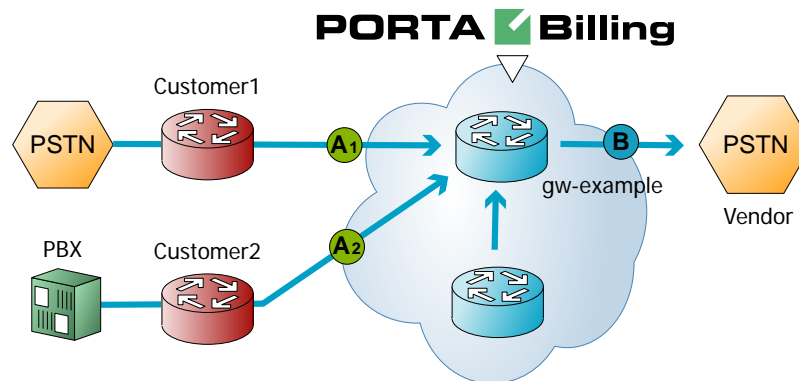
	A	B	C	D	E	F	G	H
1	Destination	Country	Description	First Price	Change	Next Price	Change	Status
2	4470000	UNITED KINGDOM	UNITED KINGDOM	0.25300	0.00000	0.25100	-0.00200	decrease
3	4470020	UNITED KINGDOM	UNITED KINGDOM	0.25300	0.00100	0.25300	0.00000	
4	4470431	UNITED KINGDOM	UNITED KINGDOM	0.46000	0.00000	0.46000	-0.01000	decrease
5	447060	UNITED KINGDOM	UNITED KINGDOM	0.25300	0.00100	0.25300	0.00000	
6	4470740	UNITED KINGDOM	UNITED KINGDOM	0.25300	0.00000	0.25200	-0.00100	decrease
7	4470775	UNITED KINGDOM	UNITED KINGDOM	0.47000	0.01000	0.46000	0.00000	increase
8	4471	UNITED KINGDOM	UNITED KINGDOM	0.42029	0.01000	0.41029	0.00000	increase
9	4472	UNITED KINGDOM	UNITED KINGDOM	0.41029	0.00000	0.41029	0.00000	
10	44551	UNITED KINGDOM	Mobile	0.32000	0.00000	0.32000	0.00000	new rate
11	44552	UNITED KINGDOM	Mobile	0.33000	0.00000	0.33000	0.00000	new rate
12								

# 4. Wholesale Termination via a Gateway

Wholesale voice is a growth market, with service providers building new capacities and launching new services. The primary wholesale service is long-distance transport and aggregation, with the key advantage being that country-specific features and domestic calling regulations are not required. The principal beneficiaries are developing countries, where, in many cases, the quality of VoIP is superior to that of traditional PSTN services.

## Typical Business Case

Central to the delivery of wholesale voice services are voice points-of-presence (POPs), which are interconnected to other service providers. The Minutes Aggregation and Resale service (including ASP Termination) allows wholesale network providers to collect traffic from multiple originating providers, then aggregate and deliver it to the termination providers they select.



The provider in this scenario is the owner of termination node (POP) gw-example. This is a typical example of a VoIP network where customers pay the provider to terminate traffic at point (A<sub>n</sub>), while the provider himself pays the vendor for traffic at point (B). The provider makes his profit on the difference between:

- the tariff he charges his customer (A<sub>n</sub>), and
- the tariff he is being charged by the vendor (B).

The following configuration assumes that the service is provided using only PortaBilling® and a termination gateway. Please consult the *Setting up a Wholesale Traffic Exchange* chapter for an example of advanced wholesale VoIP services using PortaSIP®.

# Setting up Your Network Components

## Configuring Gateway

### Obtain the remote authentication script

The default Cisco remote IP authentication application (`app_remote_ip_authenticate.2.0.0.tcl`) is provided free of charge to all users with a valid Cisco support contract (CCO). Please note that this script does not support the extra features available in PortaOne's

**Advanced Remote Authenticate** script, such as:

- Ability to perform authentication by tech-prefix, ANI, DNIS, fixed string or SIP username, in addition to just an IP address
- Ability to translate the authentication ID in the script before sending it to RADIUS (e.g. remove the last part of the IP address after the dot)
- Ability to perform authorization (as opposed to only performing authentication)
- Ability to forward calls to an account's redirect number defined in the billing
- Using an authentication method different than the default (so that authentication requests from this script may go to a different RADIUS server)

You may obtain the **Advanced Remote Authenticate** script by contacting PortaOne sales team.

Place the authentication script on your TFTP server. For your convenience, the TFTP server is already pre-configured in the `/tftpboot` directory on the PortaBilling® slave server.

### 1. Basic router configuration

It is highly recommended to use the latest telephony IOS and DSP firmware, and that the hostname be the same as the h323-id.

```
hostname <h323_id>
ip domain name <default domain>
```

**NOTE:** VSA `h323-gw-id="hostname.domain"`

### 2. NTP

**NOTE:** It is very important to have reliable time services.

```
ntp server <name/IP>
```

```
.....  
ntp server <name/IP>  
ntp master 5  
clock timezone <your time zone> 1  
clock summer-time <your summer time zone> recurring <your rules>
```

**NOTE:** It is important that you only use well-known time zone abbreviations which are supported by the billing engine. If unsure, use the UTC time zone.

### 3. AAA

```
aaa new-model  
aaa authentication login h323 group radius  
aaa authorization exec h323 group radius  
aaa accounting connection h323 stop-only group radius
```

### 4. VoIP interface

```
interface <your interface to the world>  
h323-gateway voip interface  
h323-gateway voip id <gatekeeper id> ipaddr <IP> <port>  
h323-gateway voip h323-id <h323_id>
```

**NOTE:** If you want to use a virtual interface then add the line:

```
h323-gateway voip bind srcaddr <IP>
```

### 5. Enable gateway functionality

```
gateway
```

### 6. Enable gateway accounting

For older IOS versions:

```
gw-accounting h323 vsa
```

For newer IOS versions (12.2T or 12.3):

```
gw-accounting aaa  
acct-template callhistory-detail
```

**NOTE:** VSA does not work for all platforms.

### 7. Radius

**IMPORTANT NOTE:** Ports 1645 / 1646 are the traditional Radius ports used by many vendors without obtaining an official IANA assignment. The official assignment is now ports 1812 / 1813, and users are encouraged to migrate to these new ports when possible.

#### Cisco notes:

- "radius-server" commands will be available only after issuing "aaa new-model" command.
- UDP port for RADIUS accounting server - default is 1646 (see note above)
- UDP port for RADIUS authentication server - default is 1645 (see note above)

**Keep in mind:**

- Default ports for Cisco are 1645 / 1646
- Defaults in /etc/ services are 1812 / 1813

```
radius-server host <name / IP> auth-port 1812 acct-port 1813
radius-server key <key>
radius-server vsa send accounting
radius-server vsa send authentication
```

## 8. Voice-card

## 9. Controller

## 10. Voice-port

Depends on your hardware configuration

## 11. Call application voice &amp; dial-peers

```
call application voice remote_ip ftp://.../app_remote_authenticate.tcl
call application voice remote_ip authenticate-by ip
call application voice remote_ip authorize yes
```

```
!
dial-peer voice 10 pots
  destination-pattern .
  port 0:D
!
dial-peer voice 11 voip
  application remote_ip
  incoming called-number .
```



## Checklist

Print the following page and use it to check off the operations you have completed while performing system setup according to the instructions in this chapter. Please be sure to perform all of the operations (all of the boxes must be checked), otherwise the service will not work.

Operation	Done
<b>General configuration</b>	
Enter company data under My Company.	[ ]
Specify a base currency.	[ ]
For any other currency you plan to use, specify the exchange rate source and define exchange rates.	[ ]
Create all the required destinations.	[ ]
<b>Network configuration</b>	
Create a node for your gateway.	[ ]
Configure your gateway.	[ ]
<b>Rating configuration (Vendor)</b>	
Create a tariff A, which describes your termination costs.	[ ]
Insert rates in tariff A for destinations you will terminate to PSTN.	[ ]
Create a vendor.	[ ]
Create a connection for this vendor using tariff A.	[ ]
<b>Rating configuration (Customer)</b>	
Create a tariff B, which will apply to customers who send you traffic for termination.	[ ]
Insert rates in tariff B for destinations which will be covered by your termination service.	[ ]
Create a wholesale product.	[ ]
Create one rating entry for this product, using the node you created and tariff B.	[ ]
<b>Account provisioning</b>	
Create a customer class which will apply to your customers.	[ ]
Create a <b>retail</b> customer who owns the accounts representing remote gateways.	[ ]
Create an account for each of this customer's remote gateways.	[ ]
<b>Testing</b>	
Try to make a test call.	[ ]

## PortaSwitch® Configuration

Please refer to the [PortaBilling Web Reference Guide](#) PDF file for detailed instructions on how to navigate and operate the web interface, as well as detailed explanations of particular fields.

## Initial Configuration of PortaBilling

The following steps are normally performed only once, after the system has been installed. This includes:

- Visit **My Company** from the main menu. Enter information about your company and set up a base currency. Of course this does not limit your operations to this currency only. However, on reports such as cost / revenue different currencies will be converted to the one you specify here.
- From the main menu, choose **Users** and create login entries for users who will be working with the system. It is not recommended that the default PortaBilling® root user (**pb-root**) be used for any operations other than initial set-up.
- Make sure you are able to login as the newly-created user and change the password for the **pb-root** user.

**NOTE:** It is possible that you will require assistance from PortaBilling® support personnel in the future. In order to provide support, they will need access to the web interface. Therefore, when you submit a problem report please either provide them with a new password for the **pb-root** user, or create a special user for them.

- If you plan to do billing in more than one currency, define them and specify exchange rates in **Currencies** section.

## Create Destinations

This step is only required if you have not defined the necessary destinations before. There are two ways of entering new destinations into the system:

- One-by-one, using the **+** **Add** functionality on the web interface
- A bulk update, by uploading destinations from a file

**NOTE:** A file with the default destination set is supplied with PortaBilling®. You can download it and then upload it to the server. However, it may be possible that your business requires different types of prefixes, so please check the data in the file before uploading.

## Creating Destinations “One-by-One”:

1. In the **Rating** section of Admin-Index, choose **Destinations**.

Prefix *	Country	Subdivision	Description	Delete
4202	CZECH REPUBLIC	Not Applicable	Prague	<input type="checkbox"/>

2. Click on the **Add** button.
3. Fill in the required information. This includes the phone prefix and country. The country subdivision is optional. You can use the **Description** column to store some extra information about the destination (for example, if it is a mobile or fixed number).
4. Click **Save**.
5. Repeat steps 2-4 for each additional destination.

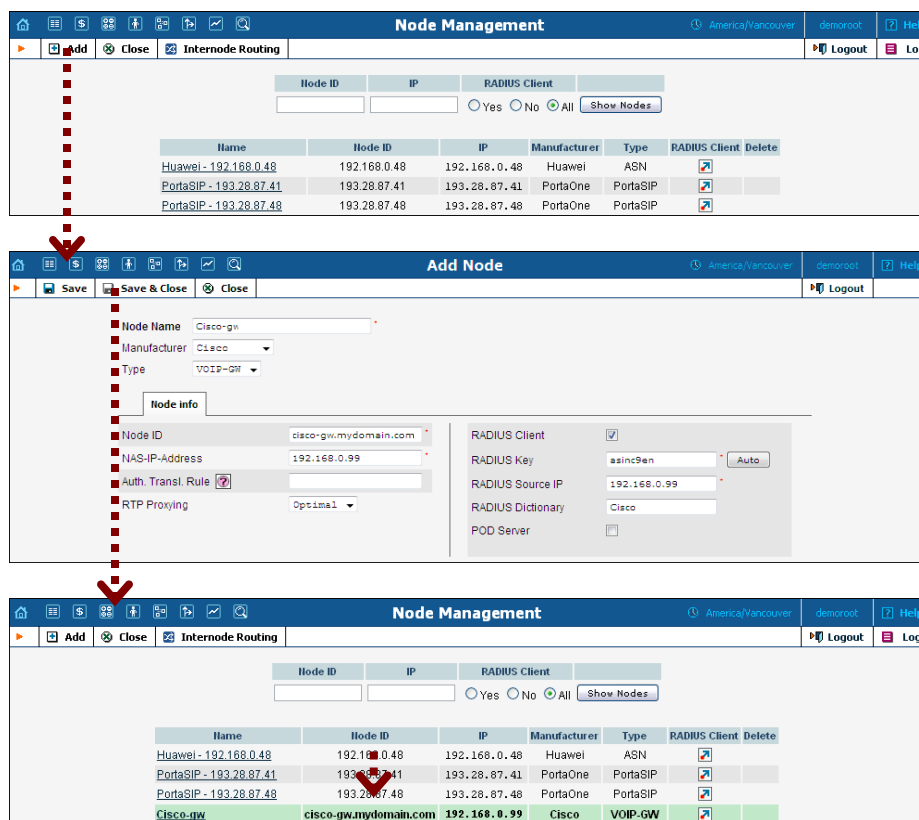
## Uploading a Set of Destinations from a File

1. In the **Rating** section of Admin-Index, choose **Destinations**.
2. Click on **Get default set** to download a set of destinations as a CSV (Comma-Separated Values) file.
3. Open this file in Microsoft Excel or any other suitable program. Edit the data if required.
4. Save the file and close it in Excel.
5. Switch back to the PortaBilling® web interface, and click **Upload** on the Destinations screen.
6. Type in the filename of the file you have edited, or click on the **Browse...** button and select the file.
7. Click **Save&Close**.

## Create Nodes

This step is only required if you have not entered your gateways into the system before. In this case, you must enter your gateways as nodes. PortaBilling® requires some key information about your network equipment such as IP address, Node ID, Radius shared secret, etc.

**NOTE:** Only your own gateways have to be entered as nodes. Remote gateways which belong to the customer, or ones which legally belong to you but are used solely by your customer(s), are not considered nodes.



1. In the **Networking** section of the Admin-Index page, choose **Nodes**.
2. In the Node management window, click the **Add** icon.
3. Fill in the New Node form:
  - o **Node Name** – A short descriptive name for this node (will be used in the select menus).
  - o **Manufacturer** – Select **Cisco** or **Quintum**.
  - o **Type** – VoIP node type; select **VOIP-GW**.
  - o **Node ID** – h323-id (recommended hostname.domainname)
  - o **NAS-IP-Address** – IP address of the gateway.
  - o **Auth. Transl. Rule** – Leave this empty for now; see the *Translation Rules* section of the **PortaBilling Administrator Guide**.
  - o **RTP Proxying** – Leave the default selection (Optimal); for more details regarding NAT traversal, see the **PortaSIP Administrator Guide**.
  - o **RADIUS Client** – Make sure this check-box is enabled, since the gateway (node) must be able to communicate with PortaBilling via RADIUS.
  - o **RADIUS Key** – Enter the RADIUS secret key you have specified in the configuration of the gateway.
  - o **RADIUS Source IP** – Unless your gateway has multiple network interfaces, the value here should be the same as the NAS-IP-Address.
4. Click **Save&Close**.

- Repeat steps 2-4 until all of your nodes have been entered.

## Create a Vendor Tariff

A tariff is a single price list for call services. A tariff combines:

- conditions which are applicable to every call regardless of the called destination;
- per destination rates.

The image shows two screenshots of the Tariff Management interface. The top screenshot shows the 'Tariff Management' page with a table of existing tariffs. The bottom screenshot shows the 'Add Tariff' form with the following fields:

- Name:** Termination to SPT Telecom
- Currency:** USD - US Dollar
- Applied To:** Vendor
- Service:** Voice Calls
- Routing:**
- General Info:**
  - Default Off-Peak Period: NOT DEFINED
  - Destination Group Set: [dropdown]
  - Free Seconds: 0
  - Post Call Surcharge: 0.00000 %
  - Login Fee: 0.00000
  - Connect Fee: 0.00000
  - Round Charged Amount: [input]
  - Default Formula: [input]
  - Short Description: [input]
  - Description: [text area]

- In the **Rating** section of Admin-Index, choose **Tariffs**.
- On the Tariff Management page, choose **Add**.
- Fill in the **Add Tariff** form:
  - Name** – A short name of the tariff object. This is the name you will see later in the select menus.
  - Currency** – Indicates the currency, in which the vendor charges you.

**NOTE:** The currency for the tariff is chosen only once, and cannot be changed later.

- Applied To** – Choose **Vendor** as this tariff will be used to calculate costs associated with your vendors.
  - Routing** – Leave the **Routing** box checked.
  - Service** – Choose **Voice Calls** here.
  - Short Description** – A short tariff description.
  - Description** – An extended tariff description.
- Click **Save**.

## Enter Rates

Rates are per-destination prices. Please refer to the *Call Billing Parameters* section in the [PortaBilling Administrator Guide](#) for more details on billing parameters.

## Managing Rates Online

Managing rates online is very convenient for maintaining existing rate tables, as well as for reference purposes. In the case of new price lists or major updates, the offline method is better.

Destination	Country	Peak-Off-Peak	Routing	Interval, second	Price, USD/minute	Effective From
Description			Route Category Preference Huntstop	First Next	First Next	YYYY-MM-DD HH:MM:SS
420		NOT DEFINED	Default 5	1 1	0.1 0.1	Immediately





1. On the Tariff Management page you will see a list of available tariffs. Click the **Rates** icon in front of the name of the tariff. When you are in Tariff Management for a particular tariff, click on **Rates** in the toolbar.
2. In the **Edit Rates** screen, click **Add**.
3. Fill in the required information:
  - o **Destination** – A destination prefix may be entered directly, e.g. **420** for Czech Republic, or you can access the destinations directory by clicking the **Destination** link (in the column header). Here you can find the desired prefix by country name.

**NOTE:** The phone prefix you are trying to create a rate for must already exist in Destinations.

- o **Route category** – You can split your available routes into several categories, such as “High quality”, “Premium”, etc., then create routing plans for your customers. Use the **Default** route category for now.
- o **Preference** – The routing priority for the specific destination. 10 is the highest priority, 0 is the lowest (i.e. do not use this destination for routing at all). For now, you can just set all of your vendor rates at preference 5, and the system will organize available routes according to cost (LCR).
- o **Huntstop** – Do not try any routes with a lower preference.
- o **Interval First** – First billing unit in seconds.
- o **Interval Next** – Next billing unit in seconds.
- o **Price First** – Per-minute price for first interval.
- o **Price Next** – Per-minute price for next interval.

- **Off-peak Interval First**– First billing unit in seconds for off-peak time.
- **Off-peak Interval Next** – Next billing unit in seconds for off-peak time.
- **Off-peak Price First** – Per-minute price for first interval of off-peak time.
- **Off-peak Price Next** – Per-minute price for next interval of off-peak time.

**NOTE:** Off-peak fields appear only if an **off-peak period** has been defined for the tariff.

- **Rate Formula Wizard**  – Launches the wizard for creating a custom rating formula
  - **Effective From** – If you want this rate to take effect sometime in the future, you can either type in a date manually, or use the calendar (click the DD-MM-YYYY link). Click on the  Stop Watch icon to make the rate effective **immediately**.
  - **Payback Rate, Hidden, Forbidden** or **Discontinued** flags are optional
4. Click the  **Save** button in the toolbar, or the  icon on the left end of the row.
  5. Repeat these steps if you need to enter more rates.

## Managing Rates Offline


You also can upload rates from a .CSV or .XLS file – please refer to the description of this process in the previous chapter.

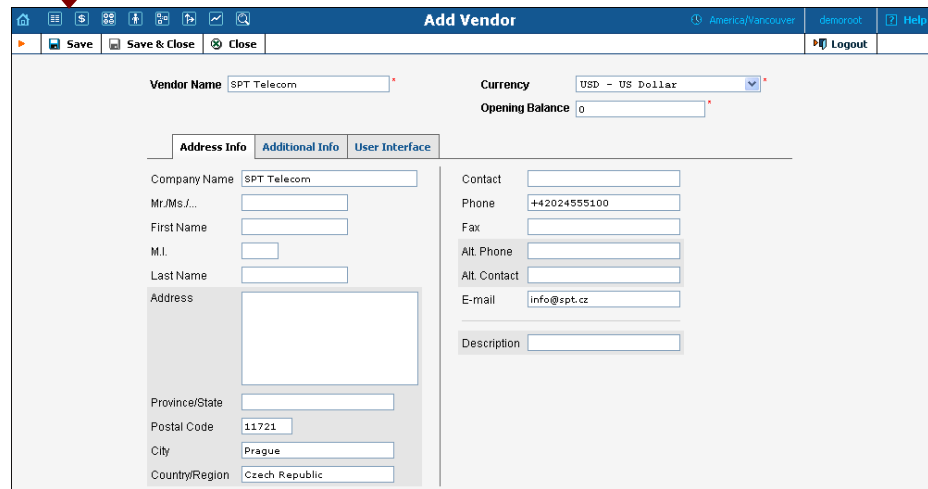


Perform the *Create Tariff* and *Enter Rates* steps described above until you have created a tariff with the termination costs for each termination partner you have.

## Create Vendors

This step is only required if you have not entered information about your vendors into the system before. Vendors are your termination partners or the providers of incoming toll-free lines.

1. In the **Participants** section of the Admin interface, choose **Vendors**.
2. On the Vendor Management page, choose  **Add**.

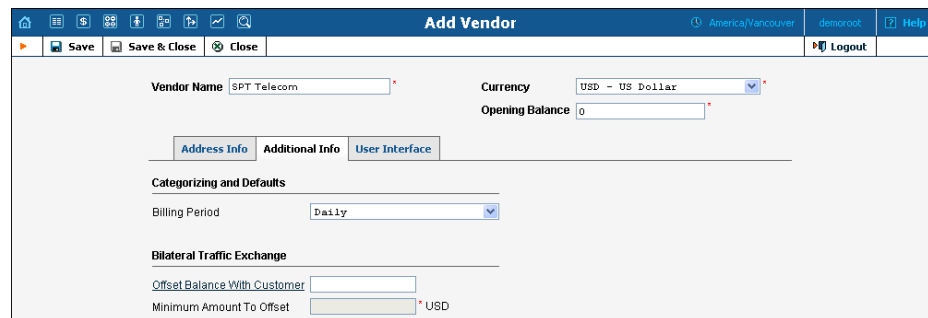


3. Fill in the **New Vendor** form. Please note that there are three tabs available on the screen. The most important fields are:

Main form (top)

- **Vendor Name** – A short name for the vendor object; this will be used on the web interface.
- **Currency** – The currency in which this vendor charges you.
- **Opening Balance** – Starting balance for the vendor; default is zero.

Additional Info



- **Billing Period** – Split period for vendor statistics.



### User Interface

- **Time Zone** – The time zone which the vendor uses for his billing period. Statistics will be divided into periods according to this time zone.

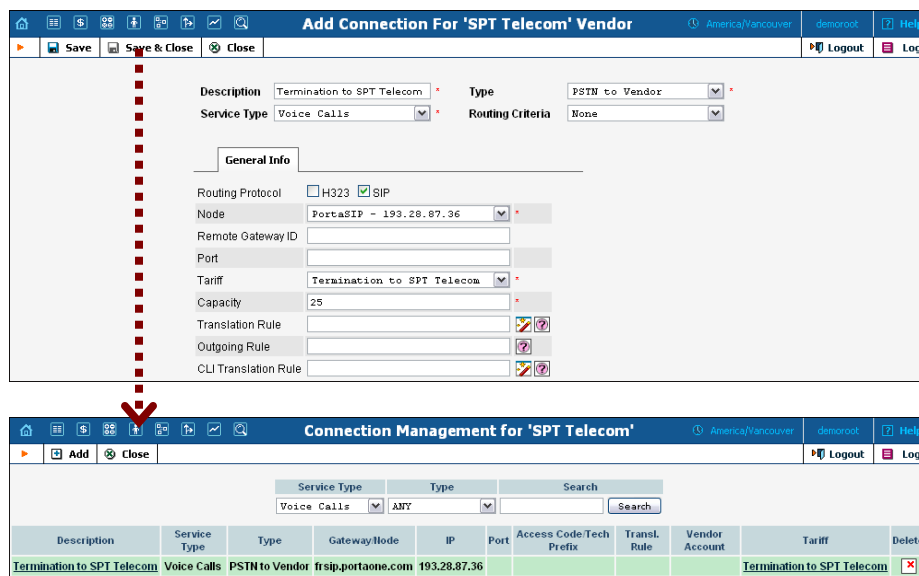
4. Click **Save&Close**.
5. Repeat steps 2-4 to add all of your vendors.

### Define Connections

This step is only required if you have not entered information about your vendors into the system before. Vendors are your termination partners or the providers of incoming toll-free lines.

xDRs	Name	Connections	Currency	Balance	E-mail	Delete
	DID Supplier	2	USD	0.00000		
	DIDX	3	USD	0.00000		
	GlobaNet	2	USD	0.08580		
	SPT Telecom	0	USD	0.00000		

Description	Service Type	Type	Gateway/Node	IP	Port	Access Code/Tech Prefix	Transl. Rule	Vendor Account	Tariff	Delete
	ANY	Default								



1. In the **Participants** section of the Admin interface, choose **Vendors**.
2. Click on the **Connections** icon next to the vendor name.
3. Press **+ Add** to add a new connection.
4. Fill in the connection information. If you send traffic to the vendor via telephony, choose the node and enter an optional port pattern. If you send traffic via VoIP, enter the remote IP address. Choose the tariff which defines your termination costs for this connection / vendor. **Description** and **Capacity** are mandatory for all connection types.
5. The **Translation Rule** is necessary if you send calls to the vendor in a format different from the one you use (e.g. the number 420296111222 is sent to the vendor as 004202111222), so that you can convert the phone number to the correct format. **Outgoing Rule** is only present if PortaSIP® is installed, and is used to convert the number into the vendor-specific format.
6. Click **Save & Close**.
7. Repeat steps 3-6 to add more connections to the same vendor, then click **Close** in order to exit to the **Vendor Management** screen.
8. Repeat steps 2-7 to add connections for other vendors.


## Create a Customer Tariff

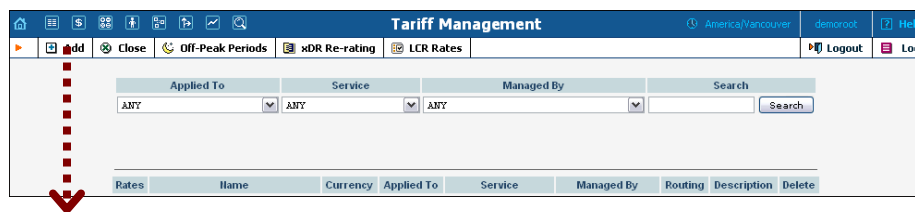
Normally you need a separate tariff for each of your customers.

1. In the **Rating** section of Admin-Index, choose **Tariffs**.
2. On the Tariff Management page, choose **+ Add**.
3. Fill in the **Add Tariff** form:
  - o **Name** – A short name of the tariff object. This is the name you will see later in the select menus.

- **Currency** – Indicates the currency in which you charge your customers.

**NOTE:** The currency for the tariff is chosen only once, and cannot be changed later.

- **Applied To** – Choose “**Customer**”, as this tariff will be used to charge your prepaid customers.
  - **Managed By** – Choose **Administrator Only** here.
  - **Service** – Choose **Voice Calls** here.
  - **Default Off-peak Period** – If you do not differentiate between peak and off-peak rates, just choose **Not defined**; otherwise, select one of the previously defined off-peak periods.
  - **Destination Group Set** – If you wish to enter rates in the tariff not for each individual prefix, but for a whole group of prefixes at once, you should create a destination group set and destination groups beforehand. Leave this select menu empty for now.
  - **Round Charged Amount** – Instead of calculating xDRs with a 5-decimal-place precision, round up xDR amount values (e.g. XXXXX.XX000 means rounding to cents, so that 1.16730 becomes 1.17).
  - **Default Formula** – The default rating formula which will be applied to every new rate created in the tariff. If you leave this empty, “old-style” rating will be used.
  - **Short Description** – A short tariff description. This will be shown in the rate lookup on the admin interface and the self-care pages for your accounts and customers.
  - **Description** – An extended tariff description.
4. Click  **Save**.



The screenshot shows the 'Tariff Management' interface. At the top, there is a navigation bar with the title 'Tariff Management' and a breadcrumb 'America/Vancouver'. Below the navigation bar is a toolbar with buttons for 'Add', 'Close', 'Off-Peak Periods', 'xDR Re-rating', and 'LCR Rates'. There are also 'Logout' and 'Log' buttons on the right. The main content area contains a search form with dropdown menus for 'Applied To' (set to 'ANY'), 'Service' (set to 'ANY'), and 'Managed By' (set to 'ANY'). A 'Search' button is next to the dropdowns. Below the search form is a table with the following columns: 'Rates', 'Name', 'Currency', 'Applied To', 'Service', 'Managed By', 'Routing', 'Description', and 'Delete'. A red dashed arrow points to the 'Add' button in the toolbar.

**Add Tariff** America/Vancouver demoot Help

Save Save & Close Close Logout Log

Name Termination services \* Currency USD - US Dollar \*  
 Applied To Customer \* Service Voice Calls \*  
 Managed By Administrator only

**General Info**

Default Off-Peak Period NOT DEFINED  
 Destination Group Set  
 Free Seconds 0  
 Post Call Surcharge 0.00000 %  
 Login Fee 0.00000  
 Connect Fee 0.00000  
 Round Charged Amount XXXXX.XXXXX  
 Default Formula  
 Short Description Termination services  
 Description What we charge our customers for calls they terminate on our network

**Edit Tariff 'Termination services'** America/Vancouver demoot Help

Save Save & Close Close Download Upload Rates Test Logout Log

Name Termination services \* Currency USD  
 Applied To Customer \* Service Voice Calls \*  
 Managed By Administrator only

**General Info** Web Upload & Download Email Upload Notepad

Default Off-Peak Period NOT DEFINED  
 Destination Group Set

**Rates for tariff 'Termination services'** America/Vancouver demoot Help

Add Save Close Upload Tariff Logout Log

Effective From: Now Destination: Number Prefix Group Country

Edit	Destination *	Country	Description	Peak/Off-Peak	Interval, second		Price, USD/minute		Effective From YYYY-MM-DD HH24:MI:SS	Delete
					First *	Next *	First *	Next *		
	420			NOT DEFINED	1	1	0.15	0.15	immediately	
					1	1	0.015	0.015		




**Rates for tariff 'Termination services'** America/Vancouver demoot Help


Add Save Close Upload Tariff Logout Log

Effective From: Now Destination: Number Prefix Group Country

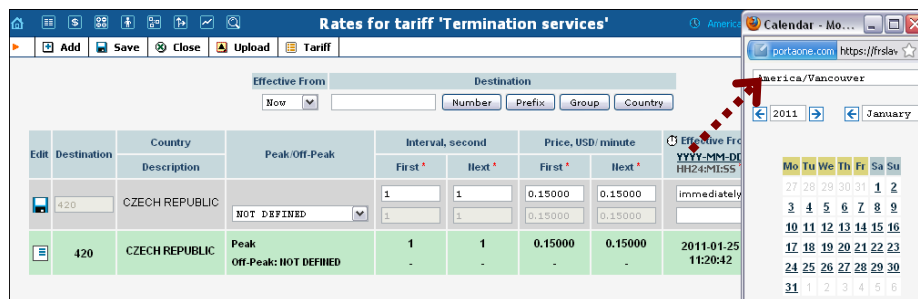
Edit	Destination *	Country	Description	Peak/Off-Peak	Interval, second		Price, USD/minute		Effective From YYYY-MM-DD HH24:MI:SS	Delete
					First *	Next *	First *	Next *		
				NOT DEFINED						
	420	CZECH REPUBLIC		Peak Off-Peak: NOT DEFINED	1	1	0.15000	0.15000	2011-01-25 11:20:42	



## Enter Rates

1. On the Tariff Management page you will see a list of available tariffs. Click the  **Rates** icon in front of the name of the tariff. When you are in Tariff Management for a particular tariff, click on  **Rates** in the toolbar.
2. In the **Edit Rates** screen, click  **Add**.

3. Fill in the required information (please refer to the *Enter Rates for Vendor Tariff* section above for a detailed description of the available rate attributes):
  - o **Effective From** – If you want this rate to take effect sometime in the future, you can either type in a date manually, or use the calendar (click the DD-MM-YYYY link). Click on the  Stop Watch icon to make the rate effective **immediately**.

**NOTE:** When using the calendar, you can specify that the date you are entering is in a different time zone than your current one. PortaBilling® will then automatically adjust the time.




4. Click the  Save button in the toolbar, or the  icon on the left end of the row.
5. Repeat these steps if you need to enter more rates.



Perform the *Create Tariff* and *Enter Rates* steps described above until you have created a tariff for each account’s billing scheme. For example, if you plan to have two types of service packages (Termination-Easy and Termination-Gold) with different rates, you will need to create two separate tariffs.

## Create a Product

Each of the remote customer gateways will be represented as an account and billed accordingly. Hence we need to create a product for this account in order to have a defined way of billing it. If you have per-customer specific rates / tariffs, then you will need a product for each customer.

1. In the **Rating** section of the Admin-Index page, choose **Products**.
2. On the Product management page, click the  Add icon.
3. Fill in the “Add Product” form:
  - o **Product name** – Product object name.
  - o **Currency** – Product currency; only tariffs which have the same currency will be permitted in the rating list.
  - o **Managed by** – If you plan for this product to be used for your reseller’s accounts, so that the reseller himself can change the parameters of this tariff and create new accounts with this

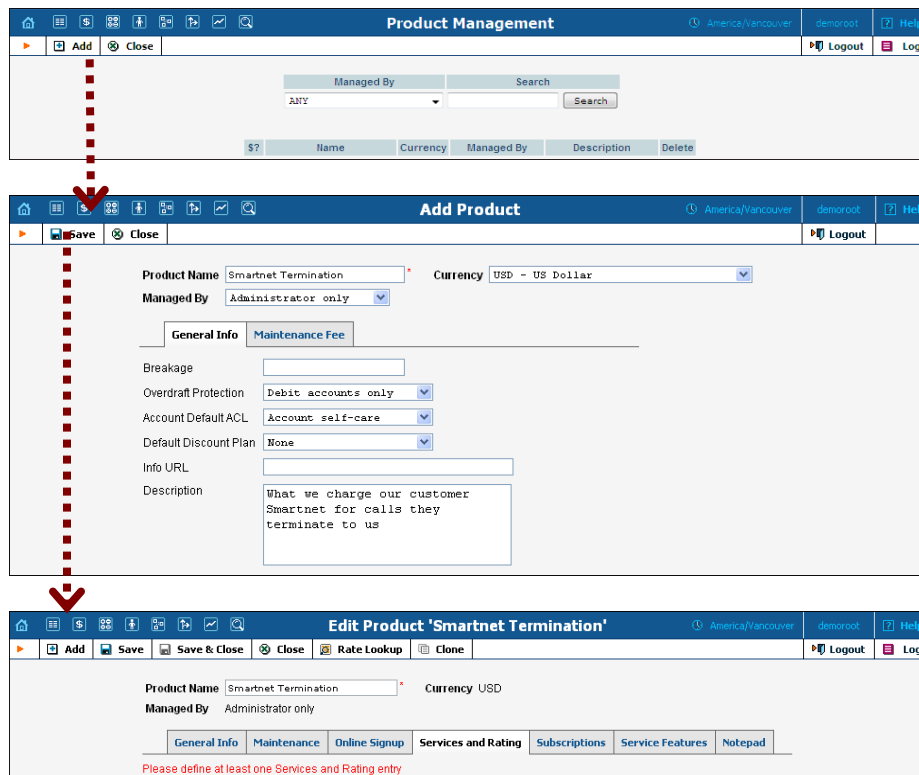
product, choose the customer’s name from the menu. Otherwise choose **Administrator only** here.

General Info

- **Breakage** – This parameter is typically used only for prepaid accounts, so leave it empty.
- **Account default ACL** – The access level assigned by default to new accounts created with this product. The ACL determines which operations may be performed by accounts on the self-care pages. The default value is “Account self-care” (pre-defined ACL), which allows all possible operations.
- **Default Discount Plan** – Leave **None** as the selected entry if you do not plan to offer discounted rates based on call volume. Please refer to the description of volume-based discounts in the [PortaBilling Administrator Guide](#) for more details.
- **Info URL** – If you have an external server with a description of product features, enter the URL here (e.g. <http://www.myproduct.com>). Your customers will be able to go there from their self-care page.
- **Description** – Your description of the intended use of this product.

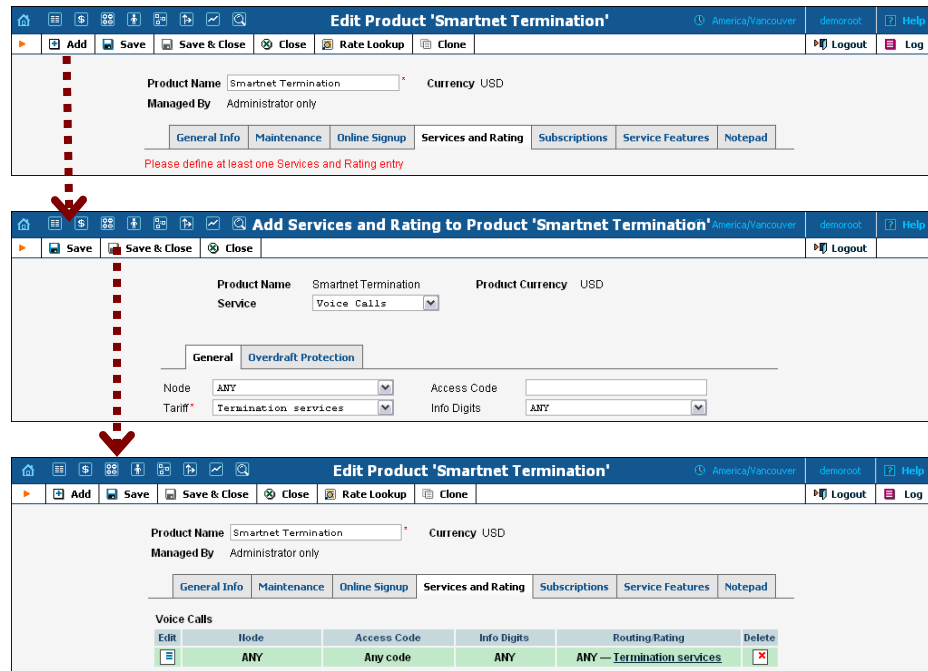
4. Click  **Save**.

Click on the **Services and Rating** tab to edit this product’s rating list.



## Enter Node and Tariff into the Product's Rating Entry

For incoming VoIP traffic we normally do not really need different rating entries, as just one row with “ANY” node and tariff should be enough. However, if, for example, you want to let a customer send traffic to your gateway A but not gateway B, this can be achieved by using rating entries.




1. When the **Services and Rating** tab is selected, click on the **Add** icon.
2. Choose **Voice Calls** in the **Service** select menu.
3. Choose **ANY** as node, choose the tariff with which you want to bill your customer, and leave the **Access Code** field empty.
4. Click **Save** to save this rating entry.

## Create a Customer Class


Customer class provides the ability to define a group of parameters in a centralized way, then apply those parameters to many customers at once. (If you have already created a customer class that you can use for prepaid card distributors, skip this step and go to the next one.)

1. In the **Billing** section of the Admin interface, choose **Customer Classes**.
2. On the Customer Class Management page, choose **Add**.

3. Fill in the **Name** parameter; the other fields can be left empty for now.
4. Click  **Save&Close**.

## Create a Customer

A customer is an owner of accounts. The customer’s contact information is used to distribute account usage information, call statistics, invoices, and so on.

1. In the **Participants** section of Admin-Index, choose **Customers**.
2. On the Customer Management page, choose  **Add Customer** (In this example, we assume that you are creating the customer manually, so choose **Manually** from the drop-down menu (do not use any of the Quick Form options)).
3. Fill in the **New Customer** form. Please note that there are several tabs with extra information available on the screen. The most important fields are:



**Add Customer** America/Vancouver demoroot Help

Save Save & Close Close Logout

Customer Name SmartNet Currency USD - US Dollar  
 Blocked  Opening Balance 0  
 Type Retail Customer Class Enterprise

Address Info User Interface Dialing Rules Additional Info Payment Info Service Features Custom Fields

Company Name SmartNet Contact  
 Mr./Ms./... Phone  
 First Name Fax  
 M.I. Alt. Phone  
 Last Name Alt. Contact  
 Address 7200 25th Street E-mail info@smartnet.com  
 BCC  
 Description  
 Province/State WA  
 Postal Code 90154  
 City Seattle  
 Country/Region USA

**Add Customer** America/Vancouver demoroot Help

Save Save & Close Close Logout

Customer Name SmartNet Currency USD - US Dollar  
 Blocked  Opening Balance 0  
 Type Retail Customer Class Enterprise

Address Info User Interface Dialing Rules Additional Info Payment Info Service Features Custom Fields

Discount Plan None  
 Subscription Discount Rate %  
 Distributor Not defined  
 Representative Not defined  
 Tax ID  
 Billing Period Monthly  
 Next Billing Date 2011-02-01  
 Shift Billing Date To YYYY-MM-DD  
 Send Statistics Customer class' default  
 Invoice Template Customer class' default  
 Send Invoices Customer class' default

**Add Customer** America/Vancouver demoroot Help

Save Save & Close Close Logout

Customer Name SmartNet Currency USD - US Dollar  
 Blocked  Opening Balance 0  
 Type Retail Customer Class Enterprise

Address Info User Interface Dialing Rules Additional Info Payment Info Service Features Custom Fields

Credit Limit  
 Balance Warning Threshold

**Add Customer** America/Vancouver demoroot Help

Save Save & Close Close Logout

Customer Name SmartNet Currency USD - US Dollar  
 Blocked  Opening Balance 0  
 Type Retail Customer Class Enterprise

Address Info User Interface Dialing Rules Additional Info Payment Info Service Features Custom Fields

Login smartnet Time Zone Europe/Prague  
 Password 84gm8zry Auto Web Interface Language en - English  
 Access Level Retail  
 IP Centrex Self-Care Enabled (demo)  
 Periodic Payments Management Enabled  
 Abbreviated Dialing Management Enabled

Output Format  
 Date YYYY-MM-DD 2003-12-31  
 Time HH24:MI:SS User Defined  
 Date & Time YYYY-MM-DD HH24:MI:SS User Defined

Input Format  
 Date YYYY-MM-DD 2003-12-31  
 Time HH24:MI:SS User Defined

### Main form (top)

- **Customer Name** – A short name for the customer object; will be used on the web interface.
- **Currency** – The currency in which this customer will be billed.
- **Opening balance** – Starting balance for the customer; the default is zero.
- **Type** – Since this customer will be sending you traffic and paying for it, he is a **Retail** customer.
- **Customer Class** – Choose the customer class you created in the previous step.

### Address Info

- **Email** – Email address for distribution of accounting information. After the billing period is over, a list of xDRs and other statistics will be sent to this address.
- **BCC** – Delivery to the specified email address of your account representative a copy of every outgoing email sent to the customer; this may be used for debug and archiving purposes.

### Additional Info

- **Billing period** – Frequency of distribution of accounting information. For more details about different available billing periods, see the [PortaBilling Administrator Guide](#).
- **Subscription Discount Rate** – Amount of discount applied by default to all subscriptions of this customer (assigned either directly to a customer or to one of his accounts).
- **Send Statistics – Summary only** – Distribute a call summary only, and do not attach a details file; this might be useful in the case of a large amount of calls. Other options are **full statistics** (attach a complete list of xDRs) or **do not send** (no not deliver call statistics to this customer via email at all).

## Payment Info

- **Credit limit** – If left empty, there is no credit limit for this customer.
- **Balance Warning Threshold** – Customer can be notified by email when his balance is dangerously close to the credit limit and his service will soon be blocked. Here you can enter the value for the warning threshold as follows:
  - As a percentage (e.g. 90%). A warning will be sent when the customer's balance exceeds this percentage of his credit limit. Thus, if his credit limit is \$1000.00 and the threshold is 90%, a warning will be sent as soon as the balance is over \$900.00. This is only applicable when the customer has a positive credit limit.
  - As an absolute value. A warning will be sent as soon as the balance exceeds the specified value.

## User Interface

- **Time Zone** - This parameter serves two purposes. First of all, it defines in which time zone the customer will see his xDRs. It also defines which time zone will be used to divide the customer's billing periods. For example, if you choose America / New\_York with a monthly billing period here, the customer's invoice will cover the period starting at 00:00 EST on the 1st of every month.
- **Web Interface Language** - The language to be used on the customer self-care web interface.


## Service Features

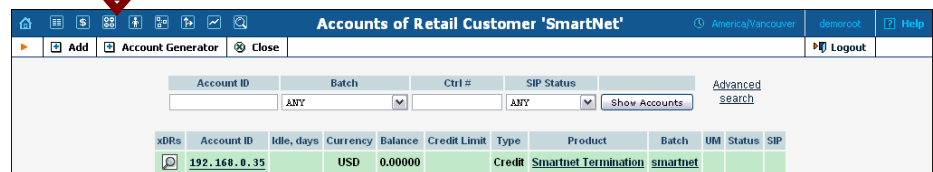
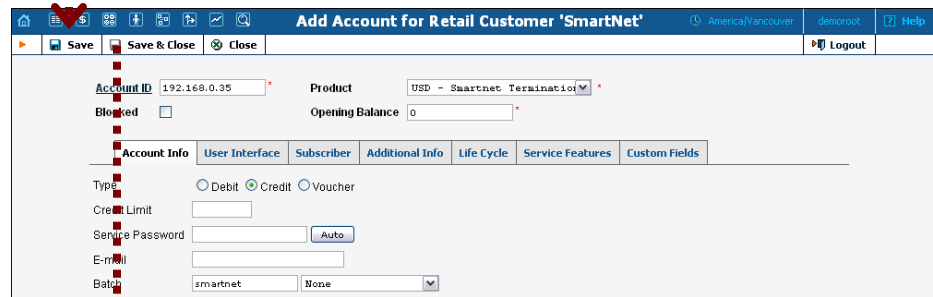
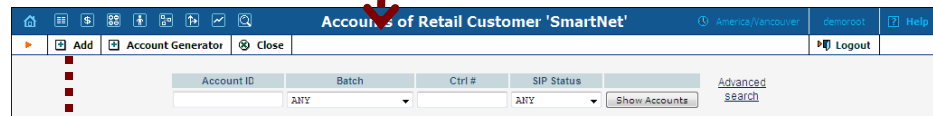
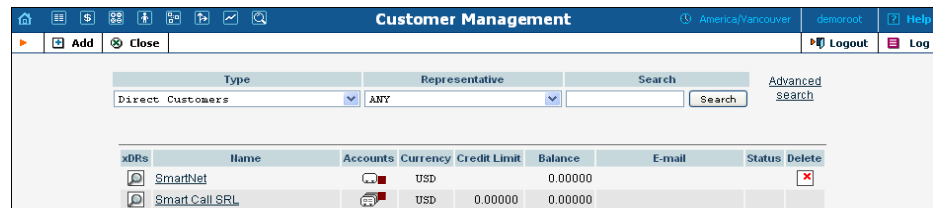
Using this tab, the administrator can activate / deactivate various features of the services provided to customers. Note that features are defined per *service type* (the physical service provided to the user) rather than per *service*.

The **Service Type** links on the left allow you to specify for which service type you would like to define parameters. Click on the **Voice Calls / Outgoing Calls** service type and define the following parameters

- **Max number of simultaneous calls** – Only allow a specific number of concurrent calls for accounts of this customer.
  - The other settings on this tab control various IP Centrex features which are available when using PortaSIP®. Leave them as is, since they are not applicable in the case of termination services provided directly on a Cisco gateway.
4. Click  **Save&Close** to save your work. See the [PortaBilling Administrator Guide](#) for more information.

# Create Accounts

1. Go to the **Customers** screen (the screen which contains a list of customers).
2. Next to the customer name, click on the  icon (the one in the **Accounts** column), which will take you to the account management for that customer.



3. Now click on **Add** (In this example, we assume that you are creating the account manually, so choose **Manually** from the drop-down menu (do not use any of the Quick Form options)).
4. Fill in the **Add account** form:
  - o **Account ID** – Identification of the account (value to be sent in the **User-Name** attribute). For an account which represents a remote gateway, this is normally an IP address.
  - o **Product** – Choose the product which you would like your accounts to use.
  - o **Blocked** – Check this if you want to create the account as initially blocked.
  - o **Opening Balance** – The initial balance on the card. For credit accounts, the opening balance is normally zero.

### Account Info

- **Type** – Account type; select **Credit**.
- **Credit Limit** – Maximum allowed credit.
- **Service Password** – Password for authentication / authorization. If you are using the default Cisco `remote_ip_authenticate` script, put **cisco** here.
- **Batch** – A batch is a management unit for accounts. If a new batch name is provided in the text field, the created account will be placed into a new batch with the given name. Alternatively, an existing batch could be selected from the drop-down list. If you leave this field empty, the created account will not be tied to any specific batch.

### Life Cycle

- **Activation Date** – Account activation date.
- **Expiration Date** – Account expiration date; since we are setting up a postpaid service, which should function for a long time, leave this field blank.
- **Life Time** – Relative expiration date; since we are setting up a postpaid service, which should function for a long time, leave this field blank.

### User Interface

- **Login** – The login name this account will use to access the self-care pages. This can be the same as the account ID, or a different one may be chosen for increased security. This field is mandatory.
  - **Password** – Password for the self-care pages.
  - **Time Zone** – When an account owner accesses the web self-care pages to see a list of his calls, the time will be shown in the time zone most appropriate for him.
  - **Web Interface Language** – The language to be used on the account self-care web interface.
  - **IP Centrex Self-Care Enabled (demo)** – If enabled, account owners will use a new self-care interface to view their profile data and manage settings. To switch back to the default account self-care interface, simply disable this option.
5. Click  **Save&Close**; a confirmation screen will indicate that the account has been created.
  6. Repeat steps 3-5 if the customer has more than one remote gateway.

# 5. Adaptive Routing and Quality of Service

PortaBilling® allows you to automate the process for controlling the call quality which becomes increasingly important today. That is, if you want to evaluate acceptable vendors for terminating VoIP calls, there is no need to hire numerous human operators or network engineers, who will track and analyze the specific route. All you need is to implement adaptive routing model.

## Setting up Adaptive Routing

The main idea of adaptive routing is to dynamically measure a vendor's quality parameters, and adjust the routing priority accordingly. These quality requirements are predefined in the form of threshold parameters on the **Routing Criteria** page, and are then automatically applied to specific vendors. Any vendor who fails to satisfy your quality requirements will go to the “penalty box” – the very bottom of the routing list. This means that the system will try first to terminate calls using other carriers (with a good quality evaluation). However, if all of them fail or are unavailable, the “penalized” carrier will have a chance to terminate the call. It is still better to send a call via an inferior vendor than to have it fail completely.

Thus, if the quality requirements are applied, a carrier's place on the routing list is determined not only by the route category, the assigned preference value, and the cost parameters (LCR model), but additionally by quality criteria.

## Add / Edit Routing Criteria

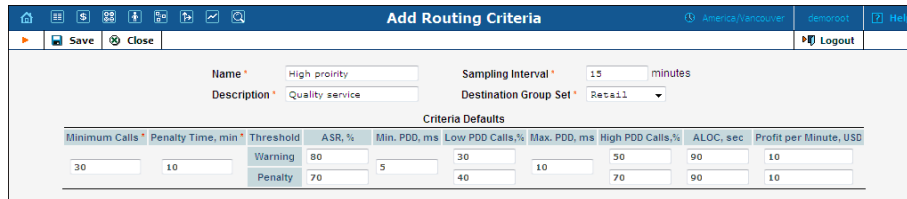
1. In the **Routing** section of Admin-Index, choose **Routing Criteria**.
2. On the **Routing Criteria** page, choose **Add**.



An existing routing criterion can be edited by clicking on its name in the list.




3. Fill in the required information:
  - **Name** - The logical name of the routing criterion for use within PortaBilling®;
  - **Description** - A description of the routing criterion.
  - **Sampling Interval** - The time interval for which statistics are computed. Smaller intervals will make the system “quicker” to notice any change in a vendor's quality, but there is also a higher chance that a short-term problem on the vendor's side (which can be fixed in a matter of minutes) will penalize his route for a relatively long period of time.
  - **Destination Group Set** - A set of destination groups you would like to use for more convenient quality criteria entry.
4. In the **Criteria Defaults** table, specify the initial default values to be applied for all routing criteria you will create next:




Minimum Calls	Penalty Time, min	Threshold	ASR, %	Min. PDD, ms	Low PDD Calls, %	Max. PDD, ms	High PDD Calls, %	ALOC, sec	Profit per Minute, USD
30	10	Warning	80	5	30	10	50	90	10
		Penalty	70		40		70	90	10

- **Minimum Calls** – The minimal required amount of calls via a given connection for the statistics to be considered representative. If the number of calls is below the specified value, the quality parameters will not be matched against the threshold, and no routing adjustments will be made.
- **Penalty Time** – The time interval for which a connection will be “penalized” (at the very bottom of the routing list) if a given vendor does not meet the quality criteria.
- **ASR** – (Answer Seizure Ratio) – The number of successfully connected calls divided by the total number of call attempts.  
(Post Dial Delay) – The time interval between the connection request to the vendor and ring-back.
- **PDD** – (Post Dial Delay) – The time interval between the connection request to the vendor and ring-back.
- **ALOC** – Average Length of Call
- **PPM** – (Profit per Minute) – The aggregated profit, i.e. the difference between the actual charged amounts in your customers’ and vendors’ CDRs.


**NOTE:** The **ASR, PDD, ALOC, PPM** parameters require two values that define the warning and penalty thresholds, respectively.

5. Click the  **Save** button to save your progress when done.

## Define Routing Criteria for Individual Destination Groups

1. Click  **Add** in the toolbar to define routing criteria for the specific destination group.




An existing routing criterion can be edited by clicking the  **Edit** icon on the row containing the details.



The screenshot shows the 'Edit Routing Criteria' interface for a 'High priority' routing model. The 'Name' is 'High priority' and the 'Description' is 'Quality Service'. The 'Sampling Interval' is set to 15 minutes and the 'Destination Group Set' is 'Retail'. Below this is a 'Criteria Defaults' table with columns for Minimum Calls, Penalty Time, Threshold, ASR, Min. PDD, Low PDD Calls, Max. PDD, High PDD Calls, ALOC, and Profit per Minute. The table has two rows: 'Warning' and 'Penalty'. Below the table is a red message: 'Please add a criteria definition for at least one destination group.' At the bottom is a table with columns for Destination Group, Minimum Calls, Penalty Time, Threshold, ASR, Min. PDD, Low PDD Calls, Max. PDD, High PDD Calls, ALOC, Profit per Minute, and Delete. The 'Europe' group is listed with various default values.

2. Click the **Destination Groups** column header link to choose a group from a searchable list inside the pop-up window. You can access only groups associated with **Destinations Groups Set** defined previously.
3. Provide the quality parameters to be applied to your vendors:
  - **ASR** - (Answer Seizure Ratio) – The number of successfully connected calls divided by the total number of call attempts.
  - **PDD** - (Post Dial Delay) – The time interval between the connection request to the vendor and ring-back.
  - **PDD** - (Post Dial Delay) – The time interval between the connection request to the vendor and ring-back.
  - **ALOC** -Average Length of Call
  - **PPM** - (Profit per Minute) – The aggregated profit, i.e. the difference between the actual charged amounts in your customers' and vendors' CDRs.

**NOTE:** The **ASR, PDD, ALOC, PPM** parameters require two values that define the warning and penalty thresholds, respectively.

4. Click the  **Save** button to save your progress when done.



Instead of entering the same values for each destination group, you can simply leave quality parameters fields empty. They will be automatically filled with values from **Criteria Defaults** table.

## Define Routing Criteria for Specific Connection

After you configure the **Routing Criteria**, you can now apply your quality requirements to specific vendor's connection. Thus, when such a routing model is associated with a connection, PortaBilling® will automatically arrange routes according to your quality preferences.

1. In the **Participants** section of the Admin interface, choose **Vendors**.
2. Click on the **Connections** icon next to the vendor name.
3. In the **Routing Criteria** box, select the routing model you want to apply;

The screenshot shows a web interface for configuring a connection. At the top, there are navigation buttons: Save, Save & Close, and Close. The main form has the following fields:

- Description: Termination to X-Telecom
- Service Type: Voice Calls
- Type: VoIP to Vendor
- Routing Criteria: High priority

The 'General Info' section includes:





- Routing Protocol:  H323  SIP
- Remote Gateway ID: [empty]
- Remote IP: 216.73.20.45
- Remote IP Port: [empty]
- CLD Tech Prefix: [empty]
- RTP Proxying: Direct
- Tariff: Termination X-Telecom
- Capacity: 60
- Caller Identity: Do Not Supply
- Vendor Account: None
- Translation Rule: [empty]
- Outgoing Rule: [empty]
- CLI Translation Rule: [empty]
- Additional SIP Settings: [empty]

4. Click the  **Save** button.


When saved, the additional **Tracking** tab will appear.

## Tracking Connection Status

When the value of a parameter reaches the predetermined threshold, the administrator receives an e-mail alert about the latest connection threats. The administrator can track the current connection status on the **Tracking** page. This status is represented by different colors, as follows:

-  GREY – the number of calls is not enough to apply filtering differentiation;
-  GREEN – the route meets the quality requirements;
-  YELLOW – the route is active, but some of its quality parameters are outside the warning thresholds;
-  BLOCKED - this route is currently being penalized.

**NOTE:** The penalized route will be on the “penalty row” for a certain period of time, specified in the **Penalty Time** box and then will be unblocked automatically. Alternately, you can click the **Unblock Now** button to unblock the penalized route manually.

-  RED – the route was manually unblocked; this status will remain unchanged till the next time interval for which the statistics will be computed.

**Edit Connection 'Termination to X-Telecom' For 'X-Telecom' Vendor**

**Description** Termination to X-Telecom \*      **Type** VoIP to Vendor  
**Service Type** Voice Calls      **Routing Criteria** High priority

Status	Destination Group	Number of Calls	Threshold	ASR, %	Min. PDD	Max. PDD	ALOC	Profit per Minute	Blocked From	Blocked Till	Unblock How
<input type="radio"/>	US&Canada	0	30	0/70	0/40	0/70	0/90	0/10			

# 6. Configuration Examples for Cisco Gateways

## Bill Customers Who Are Connected via T1 / E1 Directly to a Port on Your Gateway

Typically, you do not use authentication or authorization for such “port-based billing”, since you are always sure that your customer is on the other end of the physical line. Although it might be a good idea to implement call authorization so that you can control which destinations the customer is allowed to call to, we will not discuss this here. For port-based billing, you need only do the following:

1. For each such customer, create a tariff that you want to use to bill the customer and a product. Only one row in rating entry is necessary, with the node “ANY” and the tariff you have created.
2. Now you must make sure that each call made by that customer is tagged as belonging to him. Use the corresponding application on your gateway to handle the call. You can use the PortaOne’s “Session name” application, or create your own.

The often difficult part in gateway configuration is designing dial-peers to match certain voice ports. Dial-peers should resemble the following configuration:

```
dial-peer voice 1 pots
  application client_on_port_1
  direct-inward-dial
  port 1:D
```

They will be listed with an operation status of down, as the port specification must be accompanied by a number matching a specification, for example:

```
dial-peer voice 1 pots
  application client_on_port_1
  incoming called-number .
  direct-inward-dial
  port 1:D
```

This dial-peer is not adequate for our needs, because any number matching the specification will prefer the port specification, i.e. this dial-peer will match any port. The solution is to use a number-matching scheme that will not match any number.

```
dial-peer voice 1 pots
  application client_on_port_1
  incoming called-number A
  direct-inward-dial
  port 1:D
```

This solution may be considered a “hack”, yet it is functional and secure. For increased security, you may specify a 32-character string with a random sequence of “ABCD” characters. The probability of receiving such a number is near zero. So the configuration should look as follows:

```
aaa new-model
aaa authentication login h323 group radius
aaa authorization exec h323 group radius
aaa accounting connection h323 stop-only group radius
!
call application voice client_on_port_1
flash:app_session_name.2.1.0.tcl
call application voice client_on_port_1 user-name abc_ltd
!
call application voice client_on_port_2
flash:app_session_name.2.1.0.tcl
call application voice client_on_port_2 user-name xyz_inc
!
gw-accounting h323 vsa
!
dial-peer voice 1 pots
  application client_on_port_1
  incoming called-number A
  direct-inward-dial
  port 1:D
!
dial-peer voice 2 pots
  application client_on_port_2
  incoming called-number B
  direct-inward-dial
  port 2:D
!
gateway
!
```

1. Create customers who will own these accounts.
2. Create accounts with an Account ID identical to the name you entered in the configuration for the applications (**abc\_ltd** and **xyz\_inc** in our example).

## Implement Authentication for Incoming VoIP Calls



When your gateway is installed and connected to the Internet via the network interface, it can accept incoming VoIP calls and send them onward. This is fine, assuming that calls are coming in from one of your customers; but potentially *anyone* on the Internet can send you traffic if they know your gateway’s IP address. This could happen due to a mistake, or it could be done intentionally; in any case, it is not good for your business if this happens. How to prevent this and make sure that only your customers and you yourself are able to use your VoIP network?

There are a few methods which enable you to do this:

1. Set up an access list (ACL) on your gateways so that VoIP traffic will be allowed **only** from certain IP addresses / subnets. This is a very reliable method. Unfortunately it has one drawback: it is difficult to maintain, since everything is configured on the individual gateways. For example, if you have 12 gateways and you wish to add a new customer, you have to change the ACL 12 times.
2. Set up an application to handle incoming VoIP calls. This application will authenticate the remote party (by IP address or some other parameter) in PortaBilling® and, if authentication is successful, will connect the call. There are several advantages to this approach:
  - Information about authorized gateways is stored in one place, so it is easy to maintain.
  - The application can include data required for IP-based billing in the call information (so the User-Name attribute will contain an Account ID).
  - It may be combined with authorization, so that you can also check if a remote gateway is allowed to call a particular number.
  - You can use more sophisticated ways of identifying a remote gateway. For example, instead of IP address you can use an IP+MAC address combination.
3. An improved version of the previous item is a solution in which all calls to your network arrive to a proxy (such as PortaSIP®) which will take care of call authorization, while your gateways will only accept incoming calls from that proxy. Again, the easiest way to implement this is by using IP authentication on both the proxy and gateways.

We assume that you will use either method 2 or 3, i.e. your terminating gateway will authenticate incoming VoIP calls (to check that the remote gateway is allowed to send you traffic). This may be done by sending an authentication request to PortaBilling®, where the User-Name contains an identification of the remote gateway; typically this is an IP address. You can use the Cisco application `remote_ip_authenticate.1.1.1.tcl` provided as part of the TCL Ware package, or you can purchase an improved version called **Advanced Remote Authenticate** from PortaOne, Inc. See the configuration guidelines for Cisco gateway below.

## Authenticate and Bill Customers by the IP Address of their Gateway

This is another example of how easy it is to implement different billing schemes with PortaBilling®. For IP-based billing, you just have to do the following:

1. Create a tariff and a product. Since “Node” and “Access Code” are insignificant for this type of service, set node to “ANY” and leave Access Code blank for the IP-based billing product.
2. Use the corresponding application on your gateway to handle the call. You can use the Cisco application `remote_ip_authenticate`, PortaOne’s “Advanced Remote Authenticate” (recommended), or create your own. The only important thing is that the IP address of the remote GW be in the User-Name attribute in the AAA requests which will go to the billing. Here is a sample configuration:

```
aaa new-model
authentication login h323 group radius
aaa authorization exec h323 group radius
aaa accounting connection h323 stop-only group radius
!
gw-accounting h323 vsa
!
call application voice remote_ip tftp://.../portaone.tcl
call application voice remote_ip authenticate-by ip
call application voice remote_ip_auth password cisco
!
dial-peer voice 11 voip
  application remote_ip
  incoming called-number .
!
```

3. Create a customer who will own these accounts.
4. Create accounts with an Account ID identical to the IP address of the remote gateway, and enter cisco as the Service password for this account. (The password cisco has been chosen only for backward compatibility with the Cisco `remote_ip_authenticate` script. With PortaOne’s “Advanced Remote Authenticate” you can use a different password; just change the list in the application config).




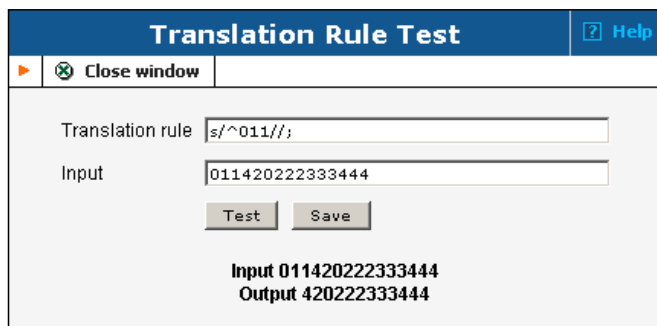
## Handle Technical Prefixes and Numbering Formats

Different termination partners often require that you send them numbers in some specific format. For example, your termination partner might require usage of the technical prefix *58901#* (so you have to send him *58901#42021234567* instead of *42021234567*), while your local phone provider requires that outgoing call numbers be dialed without the country code (so a call to *42021234567* has to be dialed as *21234567*). The more partners you have, the more likely it is you will run into these problems with different numbering formats. Of course it is better to use a single numbering format internally. Our recommendation is to use the E.164 format in billing and on your network. An E.164 compliant number is one consisting of *<countrycode><areacode><phone#>*. Examples of valid E.164 numbers are ***42021234567*** and ***16049876543***. The following numbers are not valid E.164 numbers: *6049876543* (NANP format), *01142021234567* (US overseas dialing format), *021234567* (local format).

PortaBilling® provides you with a powerful tool for converting all outside numbering formats into the unified format which is to be used in billing. For every connection to a vendor you can specify a translation rule that will convert the number into E.164 format. Here are some ready-to-use examples of translation rules:

- Convert NANP (North American Numbering Plan) phone number (area code + phone number, e.g. ***604 888 7766***) into E.164:  
`s/^1/;`
- Convert European international dialing format (00 + country code + area code + phone number, e.g. ***00 1 604 888 7766***) into E.164:  
`s/^00//;`
- Convert North American international dialing format (011 + country code + area code + phone number, e.g. ***011 1 604 888 7766***) into E.164:  
`s/^011//;`
- Convert Australian international dialing format (0011 + country code + area code + phone number, e.g. ***0011 1 604 888 7766***) into E.164:  
`s/^0011//;`
- Convert tech prefix format (tech prefix + country code + area code + phone number, e.g. ***6789# 1 604 888 7766***) into E.164:  
`s/^6789#//;`
- Convert European domestic dialing format (0 + area code + phone number, e.g. ***0 5 888 7766***) into E.164 (assuming that the country code is ***44***):  
`s/^0/44/;`

Always test your translation rules before entering them into the billing. A special test window is available on the web interface. To access it, click on the test icon  next to the translation rule field.



Translation Rule Test		Help
▶	Close window	
Translation rule	<input type="text" value="s/^011/;"/>	
Input	<input type="text" value="011420222333444"/>	
	<input type="button" value="Test"/>	<input type="button" value="Save"/>
Input 011420222333444 Output 420222333444		

This will enable you to check if your translation rule has the proper syntax, and you can also immediately see if it performs the translation you need.

## Configure an Outgoing Connection to a Vendor, matched by Tech-prefix instead of by remote IP address

Although matching the connection by IP address is the simplest and error-proof method, in some situations it is not applicable.

### Billing only

It may be that your external switch uses routing via an H323 gatekeeper, where the actual IP address of the remote gateway is provided by the remote gatekeeper only during a call attempt. In this case, PortaBilling® is not involved in the routing, and all that is needed is to ensure that these calls are accounted to the correct vendor. To do this, enter the tech-prefix in the **CLD Tech Prefix** field of the connection; for example, if you are using appending the tech-prefix 334567# to the phone number when sending a call to the vendor, enter **334567#**.

The screenshot shows the 'Edit Connection' configuration page for a vendor named 'X-Telecom'. The page is titled 'Edit Connection 'X-Telecom' For 'X-Telecom' Vendor'. The 'Description' field is 'X-Telecom' and the 'Service Type' is 'Voice Calls'. The 'Type' is 'VoIP to Vendor' and the 'Routing Criteria' is 'High priority'. The 'General Info' tab is selected, showing the following fields:

- Routing Protocol:  H323  SIP
- Remote Gateway ID: [Empty]
- Remote IP: 216.73.20.45
- Remote IP Port: [Empty]
- CLD Tech Prefix: 334567#
- RTP Proxying: Direct
- Tariff: Termination to X-Telecom
- Capacity: 60
- Caller Identity: Supply
- Vendor Account: None
- Translation Rule: s/\*334567#//
- Outgoing Rule: s/\*334567#//
- CLI Translation Rule: [Empty]
- Additional SIP Settings: [Empty]

**NOTE:** When a value entered into the CLD Tech Prefix field, this automatically creates proper translation rules for this connection.

Matching by tech-prefix takes lower precedence than matching by remote IP. Thus if a call is sent to remote IP 1.2.3.4 with tech-prefix 123#, and you have defined a connection to vendor A with remote IP 1.2.3.4 and a connection to vendor B with tech-prefix 123#, the call will be billed to vendor A.

## Routing and billing

A typical case is one in which a vendor offers you several categories of route quality. Although calls will always go to the same IP address (the vendor's switch), the termination cost would be different based on the tech-prefix transmitted as a part of the number. In this case, PortaSwitch® must also route the calls properly to the vendor, adding the required tech-prefix.

To do this, create multiple connections for the same vendor, for each one of them specify the corresponding tech-prefix in the **CLD Tech Prefix** field (make sure you keep the translation rules, automatically created after that) and use different values in the **Remote Gateway ID** field. Obviously these connections will have different tariffs associated with them. For example, if the vendor's proxy address is 5.6.7.8, and tech-prefix 345# offers low-cost routes, while tech-prefix 789# offers premium routes, there would be two connections, with the Remote IP field containing the same value (5.6.7.8), but the the **CLD Tech Prefix** field will contain 345# and 789# respectively.