PORTA ONE

Porta Switch™

PortaSwitch Handbook: Advanced SIP Services

Part II

Maintenance Release 15

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Preface

This document provides PortaSIP (PortaSwitch) users with the most common examples and guidelines for setting up a VoIP network. The last section of the document answers the most frequent questions users ask after running PortaSwitch for the first time.

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 in-between minor releases. The online copy of this guide is always up-to-date, integrating the latest changes to the product. You can access the latest copy of this guide at: **http://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`

Caution indicates that the described action might result in program malfunction or data loss.

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

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

Tips provide information that might help you solve a problem.

1. Setting up a Wholesale Traffic Exchange

This chapter will demonstrate how to set up a basic SIP service so that your customers will be able to make outgoing calls via your SIP server.

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.

Basic SIP service

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
General configuration	
Enter company data in Company Info.	[ ]
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.	[ ]
Network configuration	
Create a node for PortaSIP.	[ ]
Rating configuration	
Create route categories.	[ ]
Create a tariff A, which contains your selling rates to customers.	[ ]
Enter rates in tariff A for destinations you will allow your customers to call.	[ ]
Create a tariff B, which describes your termination costs and routing for the first vendor (make sure it has the **Routing** type!).	[ ]
Enter rates in tariff B for destinations you plan to terminate to this vendor.	[ ]
Create a routing plan which will apply to your customers.	[ ]
Create a wholesale exchange product.	[ ]
Create an accessibility entry for this product, using the PortaSIP node and tariff A.	[ ]
Create an off-net calls vendor B.	[ ]
Create a connection for this vendor using tariff B.	[ ]
Create any other vendors required.	[ ]
Account provisioning	
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.	[ ]
Testing	
Check the routing by using the **Test Dialplan** 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 **Company Info** 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 these in the **Currencies** section and specify exchange rates in **Exchange Rates.**

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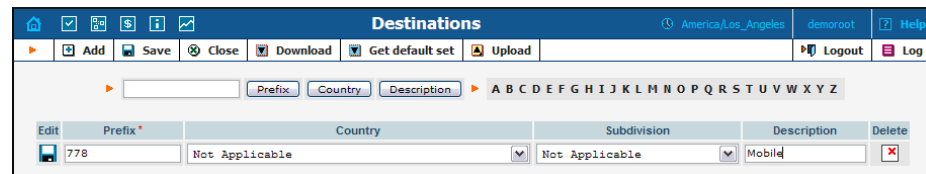
This step is only required if you have not previously defined the necessary destinations. There are two ways to insert a new destination into the system:

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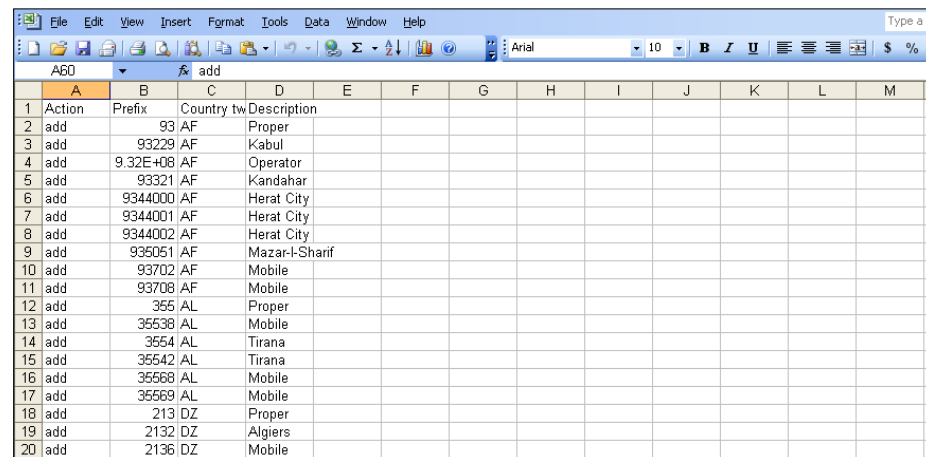
4. Click **Save**.
5. Repeat these steps for any additional destinations you would like to add.

Uploading a set of destinations from a file:

1. In the Management section of Admin-Index, choose **Destinations**.
2. Click on **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 a PortaSIP Node

Now you have to enter your SIP server as a node. PortaBilling requires some key information about your network equipment, such as the IP address, h323-id, Radius shared secret, and so on.
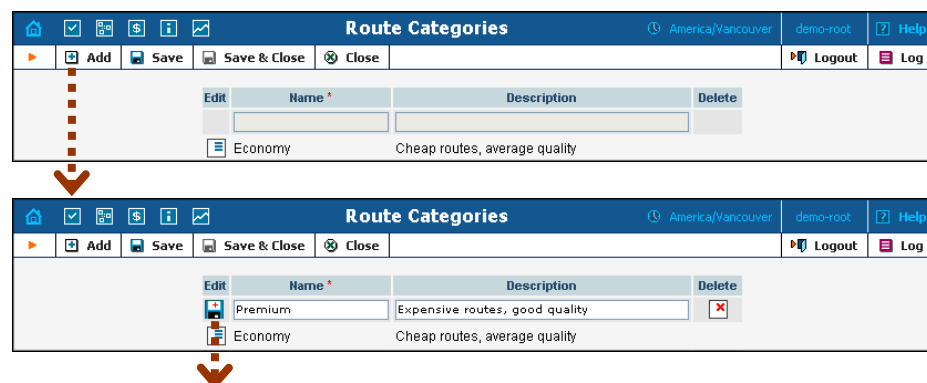
1. In the management section of the Admin-Index page, choose **Nodes.**
2. In the Node management window, click the **Add** icon.
3. Fill in the New Node form:
   o **Node name** – a short descriptive name for your SIP server (this will be used in the select menus).
   o **H323-ID** – PortaSIP server's hostname (recommended: hostname.domainname).

- o **VoIP Password** – if you plan to send calls from your SIP server to your Cisco gateways, where the default Cisco remote IP authentication script will be used, enter `cisco` here.
- o **NAS-IP-Address** – the IP address of the PortaSIP server.
- o **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).
- o **Manufacturer** – select **PortaOne**.
- o **Type** – VoIP node type; select **PortaSIP**.
- o **Radius Client** – check this, since PortaSIP will need to communicate with the billing.
- o **Radius Key** – enter the radius shared secret here; this must be the same **key** which you entered during the PortaSIP installation.
- o **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.

4. Click 🖫 **Save&Close**.

NOTE: There is some propagation delay between the database and the Radius server configuration file; however, it is no more than 15 minutes.

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 Management 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 Tariffs

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

1. In the Management section of the Admin-Index page, choose **Tariffs**.
2. On the Tariff Management page, choose ⊞ **Add**.
3. Fill in the **Add Tariff** form:

- o **Name** – A short name for the tariff object; this is the name you will then see in the select menus.
- o **Currency** – Indicates in which currency pricing information is defined. All pricing information for a single tariff must be defined in the same currency.

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

- o **Applied To** – If this is a tariff that describes your vendor's termination costs, choose **Vendor** here and select **Routing** check-box, as this tariff will be used not only to calculate termination costs, but also to route SIP calls. Otherwise, choose the **Customer** in the **Applied To** field.
- o **Managed By** – Choose "**Administrator Only**" here (this option is only visible after you select **Applied to: Customer** above).
- o **Service Type** – Choose **Voice Calls** here.
- o **Off-peak Period** – Defines the off-peak period. Click on the Off-peak period wizard icon (🪄) to summon the wizard, which will help you construct the correct period definition. Click **Help** for more information on period format definition. If you do not differentiate between peak and off-peak rates, just leave this field empty.
- o **Off-peak Description** – A description of the off-peak period, automatically filled in by the off-peak period wizard; thus you do not have to fill in this field.
- o **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.
- o **Free Seconds** – The number of free seconds allowed for each call. In order to claim free seconds, the length of the call must be at least one billing unit (first interval; see the 'Enter Rates' section above).
- o **Post-Call Surcharge** – Percentage of the amount charged for the call.
- o **Login Fee** – Amount to be charged immediately after the first user authentication (i.e. after the user enters his PIN).
- o **Connect Fee** – Amount to be charged for each connected call (call with a non-zero duration).
- o **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.
- o **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.
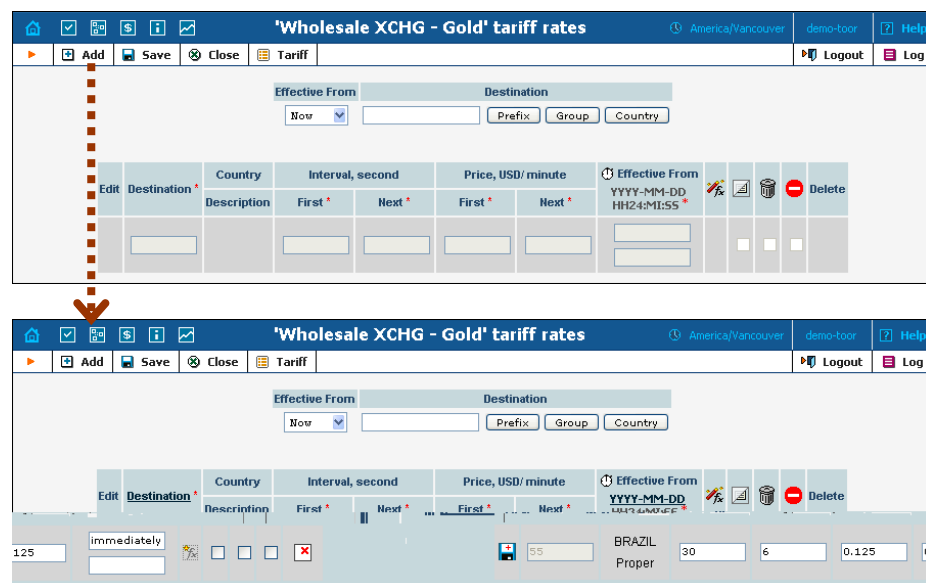
o **Short Description** – A short tariff description. This will be
shown in the rate lookup on the admin interface and the self-care
pages for your accounts and customers.
o **Description** – An extended tariff description.
4. Click 💾 **Save**.
5. Repeat steps 1-4 until you have entered all of the tariffs. You will need
at least two tariffs – one, which you will use to charge your customers,
and another, which describes your termination costs. Make sure you
choose **Vendor** in the **Applied To** select menu and check the box
Routing when creating tariffs for your vendors.

Enter Rates

Rates are per-destination prices. Please refer to the *System Concepts* chapter
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. For new price lists or for major
updates, an offline method is better.

1. On the Tariff Management page you will see a list of the available
tariffs. Click the 📋 **Rates** icon next to 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:
o **Destination** – A destination prefix may be entered directly, e.g.
55 for Brazil, 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 **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
- o **Off-peak Interval First**– first billing unit in seconds for off - peak time
- o **Off-peak Interval Next** – next billing unit in seconds for off-peak time
- o **Off-peak Price First** – per minute price for first interval for off-peak time
- o **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.

- o **Rating Formula Wizard** – Launches the wizard for creating a custom rating formula
- 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 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.

- o The **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.

Tariffs with routing extensions

These tariffs are created for your vendors. In addition to the billing parameters described above, you can also specify your routing preferences.

- o **Route category** – You can split your available routes into several categories, such as "Low-cost", "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.
- o **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).
- o **Huntstop** – Do not try any routes with a lower preference.

Managing rates offline

NOTE: **Templates** are available in PortaBilling, a powerful tool for uploading rates from custom format data files. However, in this particular example we assume that you will enter data using the PortaBilling default format.

The rates table may be prepared using a spreadsheet processor (i.e. Microsoft Excel) and easily imported into PortaBilling. This is very convenient if you are going to make many changes. For example, you might increase all prices by 10%.

1. If you are not in Tariff Management for your tariff, go to the main menu, click on **Tariffs**, and then click on the tariff name.
2. In the Edit Tariff window, move the mouse over the **Download** button and hold it there until a popup menu appears. Choose the **Now** menu item and click on it. This will download the current set of rates (empty), but will also provide you with an overview of the file structure.
3. You will see the **File download** dialog and be prompted to choose whether to save the file or open it from the current location. We recommend that you save the file into the folder you will be using in the future to store tariff data files, then open it in Excel.
4. Now you should see something similar to the screenshot below:

5. Edit the file by adding more rows with rate data, so that it resembles the screenshot below.
6. Note that the **Country** and **Description** columns are only for reference, and are ignored during import. Also, when using the default template you must fill in data in the Off-peak columns even if your tariff does not have an off-peak period (use the clipboard to easily copy the values from the 4 peak columns).
7. Also note that you may only use those phone prefixes which you already have defined as destinations (see the **Create destinations** step above).
8. Make sure that you clear the values in the **Effective from** column (which would mean that the new rates are effective immediately), or enter a future date there. Otherwise, if you retain past dates, these rates will fail to upload.

9. Save the file in Excel. You will probably get a warning from Excel that your file "*may contain features that are not compatible with CSV (Comma delimited)*". Ignore this, and choose **Yes** to retain the CSV format.
10. Close the file in Excel. If you performed step 6, then disregard the message "*Do you want to save the changes you made*", since this arises only because your format is not the default Excel XLS format.
11. Go back to the PortaBilling web interface, and then go to the **Tariff** screen.
12. Click on the ![upload icon] **Upload** button.
13. Either enter the name of your file manually, or click **Browse…** and choose the file.
14. Click ![save icon] **Save&Close**. You should return to the **Tariff** screen, where a message will tell you about the status of the import. Also, you will receive an email confirmation of the tariff upload. If any operations have failed, you will receive whatever data was not uploaded as an attachment, so you can try to import it later.

You can verify your work using the **Edit Rates** feature. After you have done so, go to the **Main menu** (by clicking on the **Home** icon).

Create All Required Tariffs

Repeat the *Create Tariff* and *Enter Rates* steps, after which you will create:

- 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.
- A tariff with the termination costs for each termination partner you have; these tariffs are created as "Applied to: Vendor".
- If you have resellers, you should also create tariffs for charging each of them; these tariffs are created as "Applied to: Reseller". Do not create tariffs which will be applied to your resellers' subscribers yet. First create the resellers, and then return to this step. When creating these subscriber tariffs, make sure you choostepPxampto: Vendor
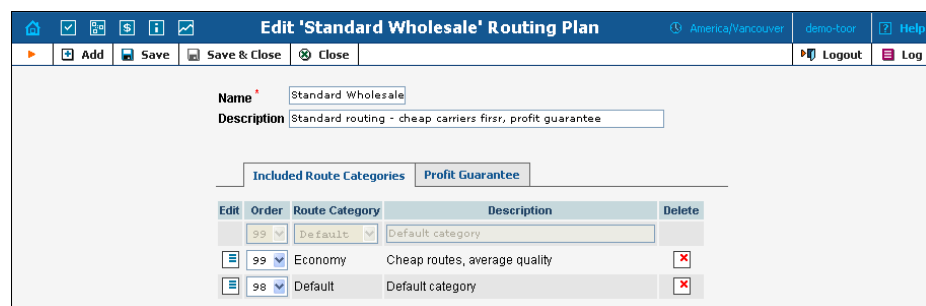
o **Description** – Your designation of the intended purpose of this routing plan.
o **Choose only routes which guarantee profit** – If this checkbox is selected on **Profit Guarantee** tab, vendors whose price per minute is higher than the selling price to the customer will be automatically removed 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.

Now you should 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.

Create 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 an accessibility list.

1. In the Management 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 accessibility list.

      o **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 **None** here.

      o **Breakage** – This parameter is typically used only for prepaid accounts, so leave it empty.

      o **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.

      o **Default Discount Plan** – Leave **None** as the selected entry if you do not plan to offer any discounted rates based on call volume..

      o **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.

      o **Description** – your comments about the intended use of this product.

4. Click ▣ **Save**.
5. Click on the **Accessibility** tab to edit this product's accessibility.

Enter Node and Tariff into the product's accessibility list
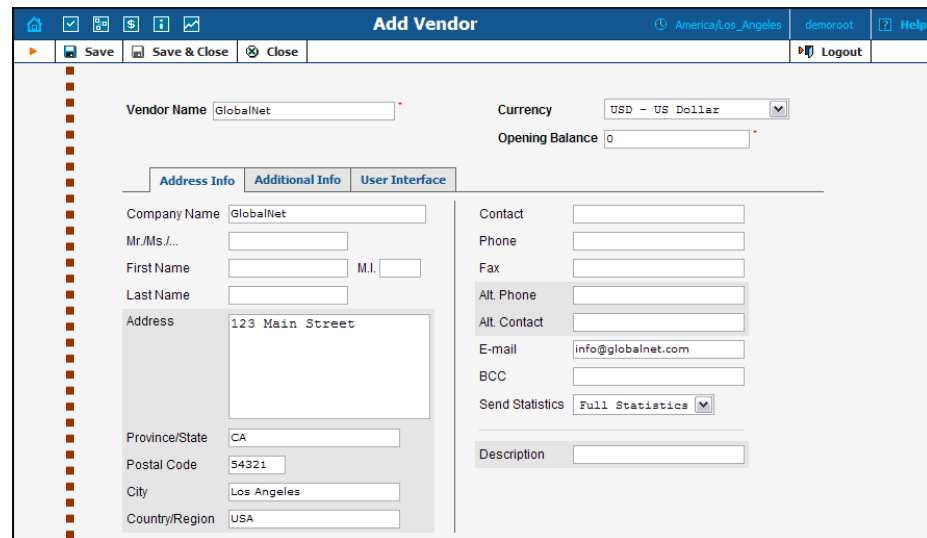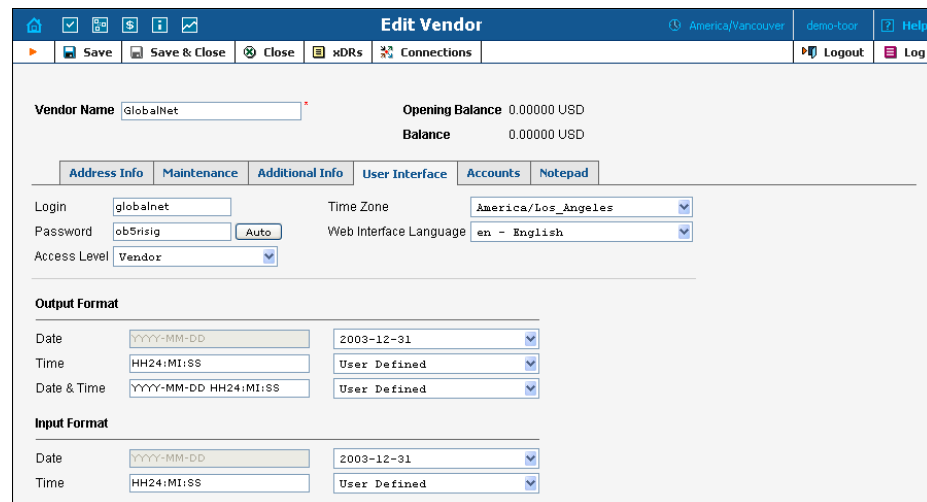
The Accessibility List has two functions: it defines permitted access points (nodes and access numbers) and specifies which tariff should be used for billing in each of these points.

1. When the Accessibility tab is selected, click on the ⊞ **Add** icon.
2. Choose **Voice Calls** in the **Service Type** select menu.
3. In the accessibility entry 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. Click ▣ **Save** to save this accessibility entry.

Create Vendors

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

1. In the Management 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 two tabs available on the screen. The most important fields are:

Main form (top)
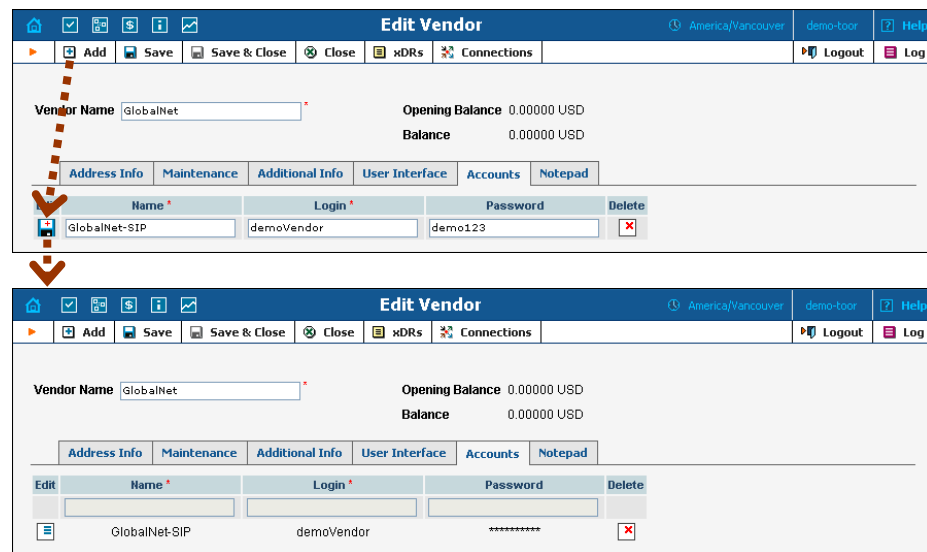
- o **Vendor name** – short name for the Vendor object; this will be used on the web interface.
- o **Currency** – the currency in which this vendor charges you.
- o **Opening balance** – starting balance for the vendor; the default is zero.

Additional info:

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

User Interface:

    o   **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. If you plan to terminate your calls to the vendor's SIP server, typically he would provide you with a username/password which will authorize you to send calls to his server. Enter this information as **Vendor account**.
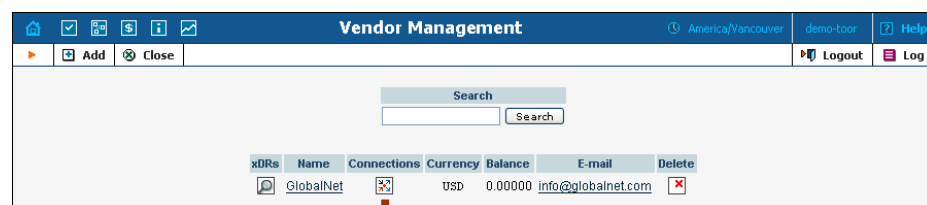
6. Click **Close** in order to return to the **Vendors** admin page.
7. Repeat steps 2-6 to add all of your vendors.

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

3. Choose the type of connection (for a wholesale exchange platform, it is typically **VoIP to Vendor**) by clicking on the corresponding tab.
4. Press ⊞ **Add** to add a new connection.
5. Fill in the connection information. If you send traffic via VoIP, 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.
6. Click 🖫 **Save**.
7. Repeat steps 3-6 to add more connections to the same vendor, then click **Close** to exit to the **Vendor Management** screen.
8. Repeat steps 2-7 to add connections for other vendors.

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

The most important fields are:

Main form (top)

- o **Name** – short name for the customer object; this will be used on the web interface.
- o **Currency** – the currency in which this customer will be billed.
- o **Opening balance** – a starting balance for the customer; the default is zero.
- o **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.
- o **Customer Class** – Choose the customer class you created in the previous step

Address info tab

- o **Email** – 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
- o **Bcc** – Blind carbon copy in email; may be used for debug and archiving purposes.
- o **Send Statistics** – If you choose "Summary only**"**, the statistics email will only include a brief call summary, without an attached details file.; for most of your customers, the xDR file will be too large to be sent via email.

Additional info tab

- o **Routing Plan** – If you wish to assign an individual routing plan to this customer, select it here. Otherwise, the system default routing plan will be used.
- o **Billing Period** – Frequency of invoice generation. For more details about the different available billing periods, see the **PortaBilling Administrator Guide**.

Payment info tab

- o **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).
- o **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

- o **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.
- o **Web Interface Language** – language to be used on the customer self-care web interface.

Call 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 are a few important ones:

- 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.

o **Dialing rules** (on the right) – 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**.
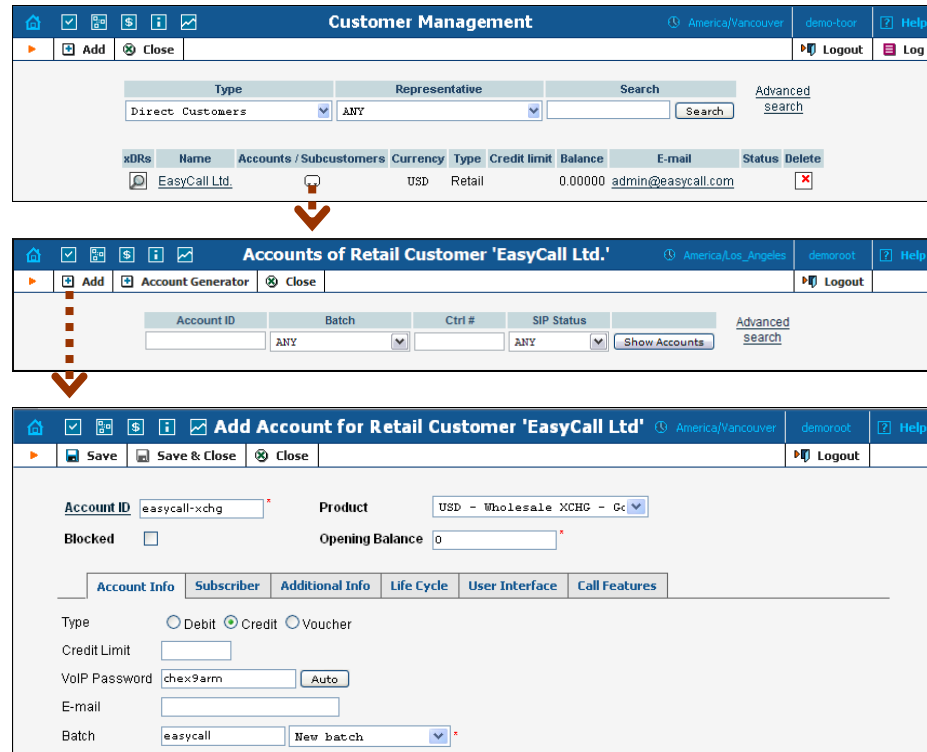
Create Accounts

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.

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. Fill in the "Add Account" form:
    o **Account ID** – SIP ID which will be used to login to the SIP
       server and receive incoming calls.
    o **Product** – Choose the previously created wholesale exchange
       product.
    o **Blocked** – You may create your account as blocked, although
       this is rarely done with SIP service accounts.
    o **Opening balance** – The initial balance on the account.

Account Info tab

    o **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).
    o **Credit limit** – For a credit account, specify the credit limit. If
       you leave this field blank, it means there is no credit limit for this
       account (but a customer credit limit may still apply).
    o **VoIP 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.
    o **Email** – Enter the account owner's email 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.
    o **Batch** – A batch is a management unit for accounts. The batch
       name is alphanumeric. You can type a new name here, or use an
       existing name in order to generate more accounts for the same
       batch.

Life Cycle tab

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

5. After clicking 💾 **Save&Close**, you will see a confirmation screen
    announcing that a new account has been created.
6. Repeat steps 3-5 if the customer has more than one phone line
    (extension).

Set up Dialing Rules for the 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.

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

Dialing rules wizard	? Help

▶ 💾 Save   💾 Save & Close   ⊗ Close

Your country code		**Sample settings**
Your area code(s)		E.164
Always dial the area code as a part of the number	☐	North America, WA, 7 digit dialing North America, BC, 10 digit dialing Europe, Czech Rep., always dial using the areacode
Prefix for accessing the outside phone network	78949#	Europe, Czech Rep., local and domestic dialing (obsolete) Australia, Sydney
Prefix for domestic calls, but outside of your area code (e.g. 1, 0)		[Clear] [Reset] [Load Sample]
International dialing prefix (e.g. 011, 00, 0011)		
Emergency numbers (e.g. 911, 112)		
Exceptions (e.g. *98)		
Local dialing number length		
Convert ANI (CLI) for incoming calls into this dialing format	☐	

Check yourself

To call **1234567** outside of your office, but within the same area you dial	78949# 1234567
To call long distance **604 1234567** (within your country) you dial	78949# 604 1234567
To call **420 2 12345678** internationally you dial	78949# 420 2 12345678

4. Click 💾 **Save&Close** to exit the wizard screen.
5. 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 the Routing with the 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 Management 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.

Testing 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 the Log Files

Browse the SIP server log file (`/var/log/sipenv-<sipserverIP>/log/sip.log` on the SIP server host) with a file display utility such as `less` or `more`. Some SIP auxiliary requests or parameters have been removed for greater clarity.

Using the SIP log viewer

You can also 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.

3. 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 the 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 Call** function.

- In the Helpdesk section of Admin-Index choose **Trace a Call**.
- Fill in the check phone number form:
  - **h323-conf-id** – if you need to trace a specific call, enter h323-conf-id here; otherwise this leave empty.
  - **Destination** – 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 **Trace a Call.**

For the administrator convenience, a customer's xDRs may also be accessed from the Customer Management window by clicking the **xDR** icon for the customer.

2. Using the DID Inventory

This chapter demonstrates how to efficiently manage a large number of phone numbers (DIDs) used for your SIP service.

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.

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Using the DID inventory

The following section will assist you in importing a set of DID numbers into PortaBilling, managing them, allocating them to your distributors or resellers and, finally, provisioning them on SIP phones.

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.
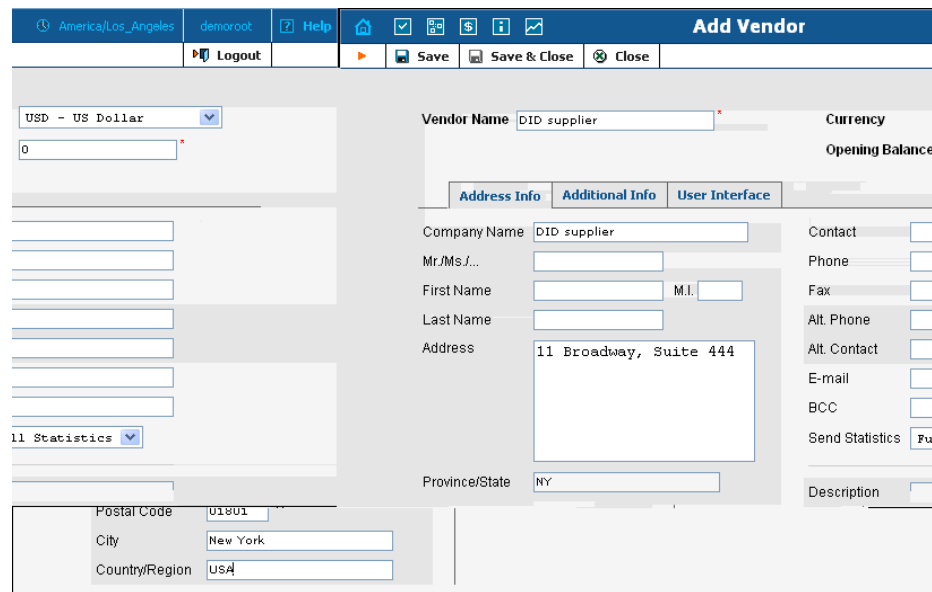
The checklist below assumes that you have already configured the basic SIP and PSTN-to-SIP services according to the instructions provided in the previous chapters.

Operation	Done
Initial configuration	
General and network configuration has already been done according to the instructions in previous chapters.	[ ]
Basic SIP service configuration has already been done according to the instructions in previous chapters.	[ ]
PSTN-to-SIP service configuration has already been done according to the instructions in previous chapters.	[ ]
Rating configuration	
Create a DID supplier vendor.	[ ]
Create a DID batch for this vendor.	[ ]
Upload the DID list to this batch.	[ ]
Create an owner batch.	[ ]
Allocate some DIDs to this batch.	[ ]
Account provisioning	
Check that the retail SIP service customer has already been created according to the instructions in previous chapters.	[ ]
Create a new account for this customer, with an account ID identical to the SIP phone number (DID).	[ ]
Testing	
Program the parameters (phone #, password, SIP server address) into the SIP phone and make a test call.	[ ]

Create a DID Supplier Vendor

This entity is required in order to keep track of your incoming DID expenses, as well as to provide an adequate level of security on your network. If you have already created a vendor while setting up a PSTN-to-SIP service, please proceed to the next step.

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

3. Fill in the **Add Vendor** form. Please refer to the instructions provided in the *Basic SIP service* chapter for a detailed description.
4. Click 💾 **Save**.
5. If you need to enter a vendor-specific configuration (connections, vendor accounts), please refer to the instructions in the previous chapters.

Create a DID Batch for the Vendor

A DID batch groups together a set of phone numbers (typically from the same city or area) provided by a particular vendor.

1. In the Management section of the admin interface, choose **DID Inventory**.
2. On the DID Inventory page, choose 📇 **Vendor Batches**.
3. Press ➕ **Add** to add a new batch.

4. Click the 🖬 **Save** button in the toolbar, or the 🖬 icon on the left end of the row.
5. Repeat steps 1-4 if you need to create more DID batches.

Upload DID numbers

Now we must fill in the DID batch with actual numbers. This is done by uploading a CSV file containing the numbers into PortaBilling. (There is no operation for adding a single number into the batch from the web interface, as this is practically never needed; every DID supplier will be selling you numbers by the hundreds or even thousands.)

1. Prepare a CSV file. This file has a very simple structure, with only two columns:
   - The first column contains the DID phone number (in E.164 format).
   - The second column contains the batch name; make sure the name matches that of the batch you have created.

   See the sample file below:
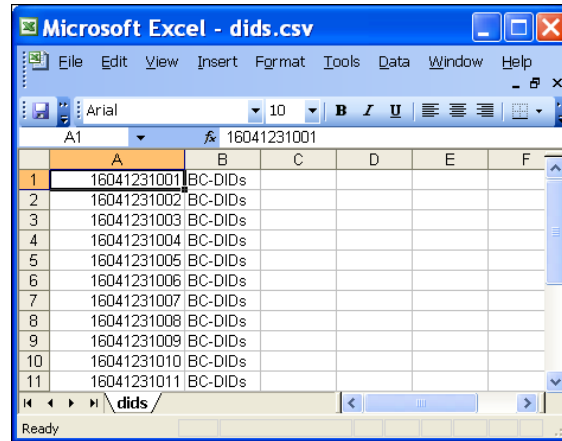
2. In the DID Inventory page, click ⬛ **Upload** in the toolbar.
3. Either enter the name of your file manually, or click **Browse…** and choose the file.
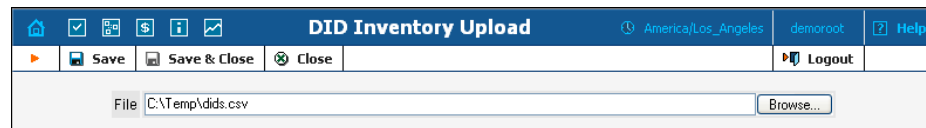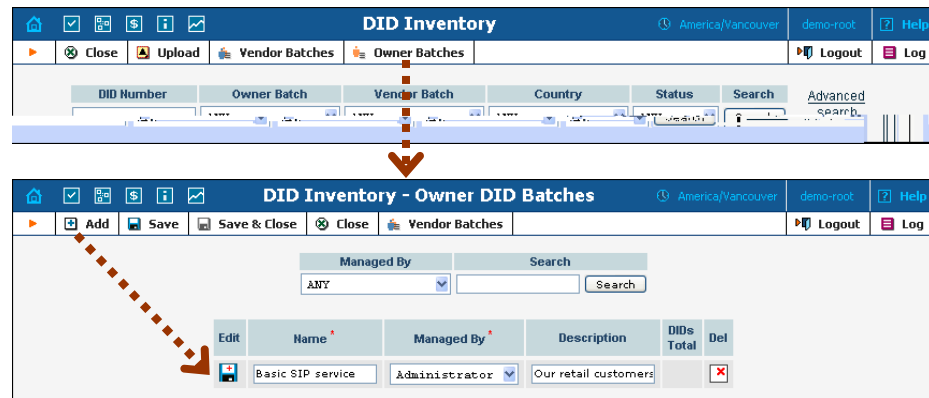
4. Click ⬛ **Save&Close**.
5. You will see a DID management screen displaying the numbers you have just uploaded, similar to the one below.
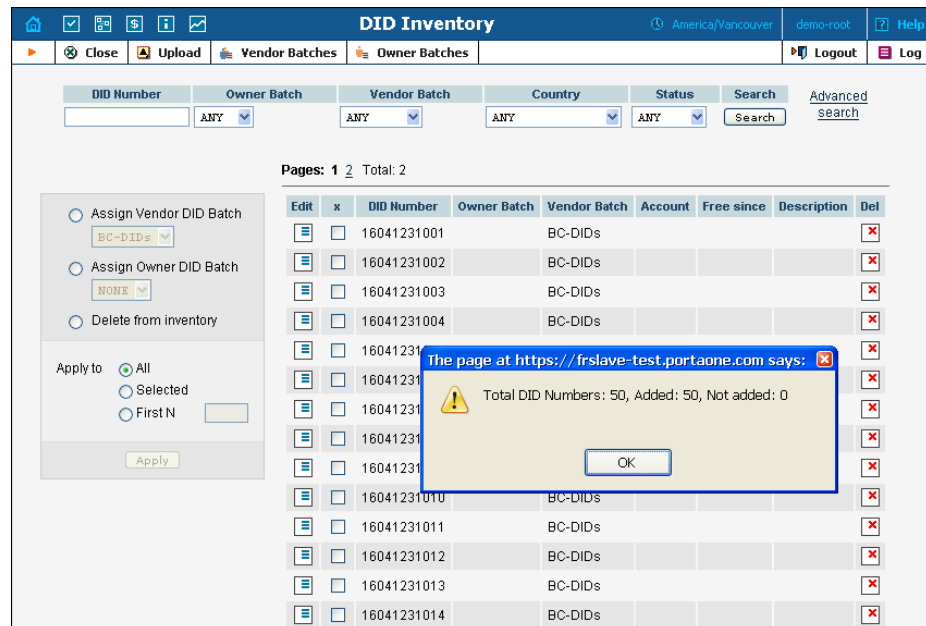
Create an Owner DID Batch

The owner DID batch is a set of DIDs to be used for a particular purpose (e.g. to be distributed by a particular reseller). Even if resellers are not being used, this allows you to clearly identify which DID numbers should be used by your administrators, and which should be kept in reserve.

1. In the Management section of the admin interface, choose **DID Inventory**.
2. On the DID Inventory page, choose ≣ **Owner Batches**.
3. Press ➕ **Add** to add a new batch.
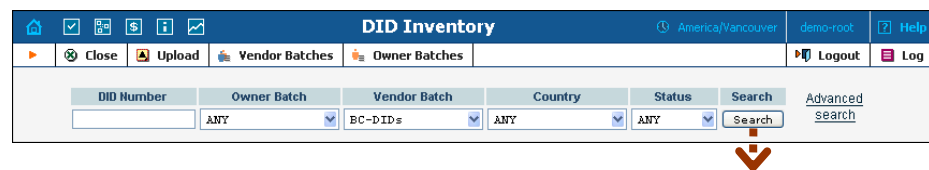
4. Click the 🖫 **Save** button in the toolbar, or the 🖫 icon on the left end of the row.
5. Repeat steps 1-4 if you need to create more owner DID batches.

Allocate DIDs to the Owner Batch

Now you just need to specify which DIDs will be included in this batch.

1. In the Management section of the admin interface, choose **DID Inventory**.
2. On the DID Inventory page, choose a specific vendor batch in the **Vendor Batch** select menu and press **Search**.

3. Select the appropriate DIDs or, alternatively, use the **First N** option to automatically process a large number of DIDs at once.
4. Choose the desired operation; in this case, choose Assign Owner DID Batch and select which owner batch these DIDs should be assigned to.
5. Click the Apply button. On the refreshed screen you will see that these DIDs have now been assigned to the owner batch.

Create an Account

1. Go to the **Customers** screen (the one containing the list of customers).
2. Next to the customer name, click the icon (the one in the **Accounts** column) to go to account management for that customer.

3. Click on ➕ **Add**.
4. When entering data for a new account, you will notice that Account ID is now a link. Click on it and a popup window appears, from which you can choose one of the available DID numbers.
5. Finish creating the account according to the instructions given in the previous chapters.

Create a Group of Accounts

If a customer (e.g. a small enterprise) buys multiple phone numbers, there is a convenient way of creating many accounts at once and allocating proper DID numbers to all of them.

1. Go to the **Customers** screen (the one containing the list of customers).
2. Next to the customer name, click the 🖥 icon (the one in the **Accounts** column) to go to account management for that customer.

3. Click on ⊞ **Account Generator**.
4. Choose DID Inventory as the **Generation Method**.
5. Select a corresponding DID batch from the **DID Owner Batch** menu.
6. If you wish, you can enter the starting DID manually or use the popup menu, e.g. if you want to make sure that the customer's phone range starts with a "round" phone number such as …00, with the following numbers …01, …02 and so on.
7. Specify the other parameters according to the instructions given in the **PortaBilling Web Reference Guide**.
8. Click **Generate** to start the account generation process.

Setting up a Product with Volume Discounts

The following section will assist you in setting up a product that includes various types of volume discounts. In the example below, we assume that the goal is to set up a product which will provide:

- 200 free minutes of calls to US and Canada per month
- $5 worth of calls to all European destinations per month
- a 10% discount on all European calls after at least $20 of such calls have been made in the current month

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.
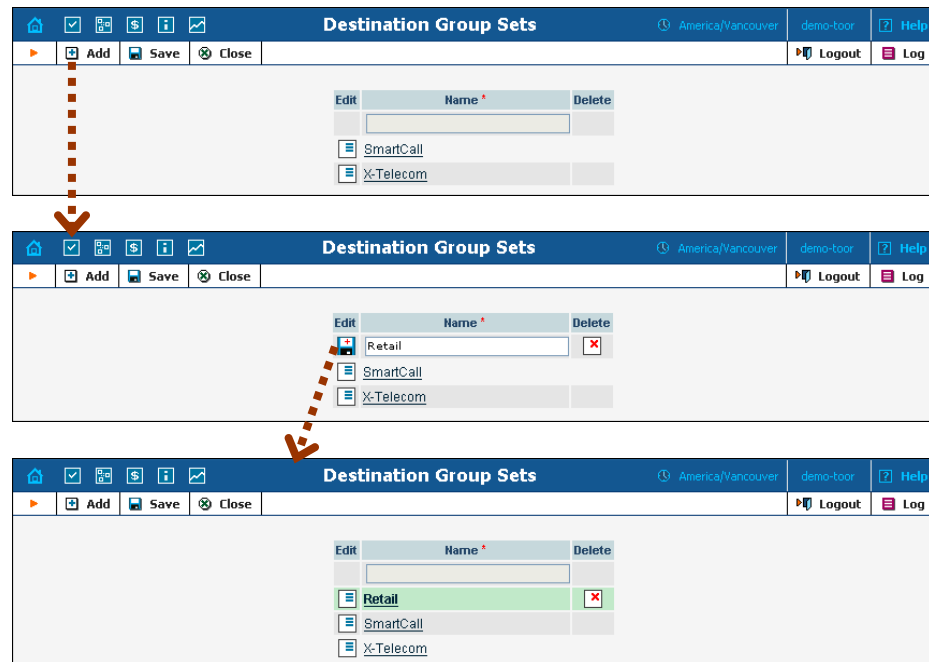
The checklist below assumes that you have already configured the basic SIP service according to the instructions provided in previous chapters.

Operation	Done
Initial configuration	
General and network configuration has already been performed according to the instructions in previous chapters.	[ ]
Basic SIP service configuration has already been performed according to the instructions in previous chapters.	[ ]
Rating configuration	
Create a destination group set.	[ ]
Create the required destination groups.	[ ]
Assign prefixes to these destinations.	[ ]
Create a volume discount plan.	[ ]
Define discounts within this discount plan.	[ ]
Assign this discount plan as the default one for a certain product.	[ ]
Account provisioning	
Check that the retail SIP service customer has already been created according to the instructions in previous chapters.	[ ]
Testing	
Program the parameters (phone #, password, SIP server address) into the SIP phone and make a test call.	[ ]

Create a Destination Group Set

A destination group set is a logical container for destination groups which are used for the same purpose. For instance, in this case a destination group set contains various destination groups (such as US&Canada, or Europe) that apply to your customers.

1. In the Management section of the admin interface, choose **Destination Group Sets**.
2. On the Destination Group Sets Management page, choose **+ Add**.

3. Type in the name of the new destination group set.
4. Click the **Save** button in the toolbar or the icon on the left end of the row.
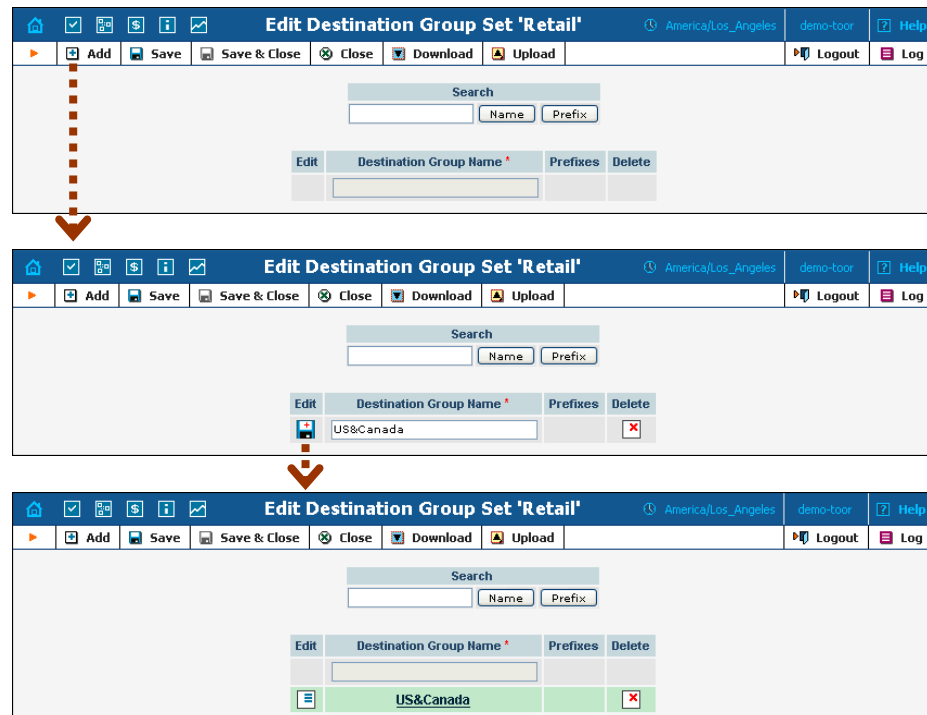
One common mistake in naming a destination group set results when you need to define a discount for US and Canada calls, and so create a destination group set named US&Canada which includes a US&Canada destination group. While this may suffice initially, what happens if you soon also need to provide a special rating for Asia calls? You can, of course, create another destination group for Asian phone prefixes, but then the name of the destination group set will be misleading. This is why it is recommended that a destination group set be named according to its purpose, not its contents. Thus a destination group set to be used for entering rates for your vendor X-Telecom will be named "X-Telecom", while a destination group set to be used to define rates for your customers will be named "Retail customers" or the like.

Define a Destination Group

Now you need to create the actual destination groups, each of which will contain phone prefixes.

1. In the Management section of the admin interface, choose **Destination Group Sets**.
2. On the Destination Group Sets page, click on the destination group set name to enter the Edit screen.
3. Click ⊞ **Add** to add a new destination group.
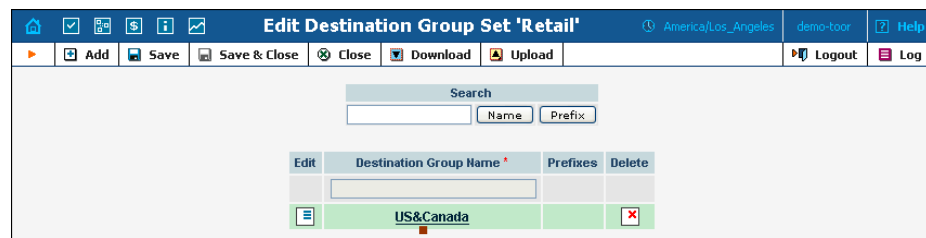
4. Type in the destination group name, then click the 🖫 **Save** button in the toolbar or the 🖫 icon on the left end of the row.

Assign Prefixes to the Destination Group
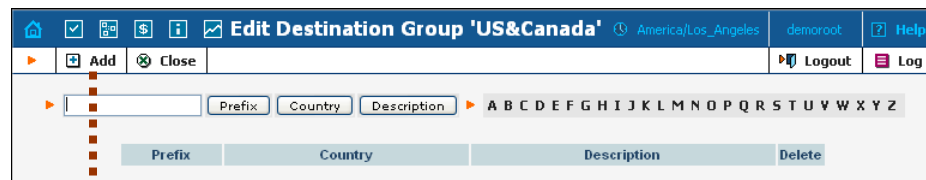
Assuming that you have already defined all the required prefixes (destinations) in the Destinations section earlier, you now just need to allocate them to destination groups, so that PortaBilling will know exactly which prefixes belong to which destination group.

Add prefixes online from the web interface

1. When in edit mode for a destination group set, click on the name of the destination group to see detailed information about it.

2. Click ⊞ **Add** to enter "add prefixes" mode.

3. To display the available prefixes, type in the country name or a master phone prefix and press one of the search buttons (**Prefix** to search by prefix, **Country** to search by a country name).

4. When you see a list of the available prefixes, select the ones you would like to include in this destination group, and then press the ⬛ **Save** button.
5. Now you will return to edit destination group mode, where you can see a list of currently included prefixes. You may delete some of these, or add more prefixes if required.

Upload prefixes from a file

When dealing with destination groups that contain a large number of prefixes (such as US&Canada, in this example) the preferred way to populate the destination group is by uploading a CSV file.

1. Prepare a CSV file which contains information about the prefixes. The file structure is as displayed in the picture: the first row contains column titles (and is ignored), while all the other rows include three columns: <action>,<destgroup>,<prefix>. **Action** is either add or delete, **destgroup** is the name of the destination group, and **prefix** is the actual destination (in E.164 format). You may include definitions of multiple destination groups in the same file.
2. When in edit mode for a destination group set, click the 🔺 **Upload** button in the toolbar.

3. Either enter the name of your file manually, or click **Browse…** and choose the file.
4. Click ▢ **Save&Close**.
5. You will now see the Edit Destination Group Set screen, which displays the currently defined destination groups and the prefixes included.

NOTE: If the number of prefixes within the destination group is too large, not all of them will be displayed on this page; instead, ... will be shown at the right end of the **Prefixes** column. Click on the destination group name to go into edit mode and see all the prefixes.

Create All Required Destination Groups

Repeat the *Define a destination group* and *Assign Prefixes to the destination group* steps, and then create a destination group for each calling area for which you would like to offer special conditions. For example, if you plan to provide free minutes to US&Canada and special volume discounts for calls to Europe, you will need two separate destination groups within the *same* destination group set.

Create a Volume Discount Plan

A volume discount plan contains definitions of all the applicable special discounts offered to users of a certain product.

1. In the Management section of the admin interface, choose **Volume Discount Plans**.
2. On the Discount Plan Management page, choose ➕ **Add**.

3. Fill in the Add Discount Plan form:

- **Name** – A short descriptive name for this discount plan.
- **Currency** – Indicates in which currency pricing information is defined; a volume discount plan can only apply to accounts and customers with the same currency.
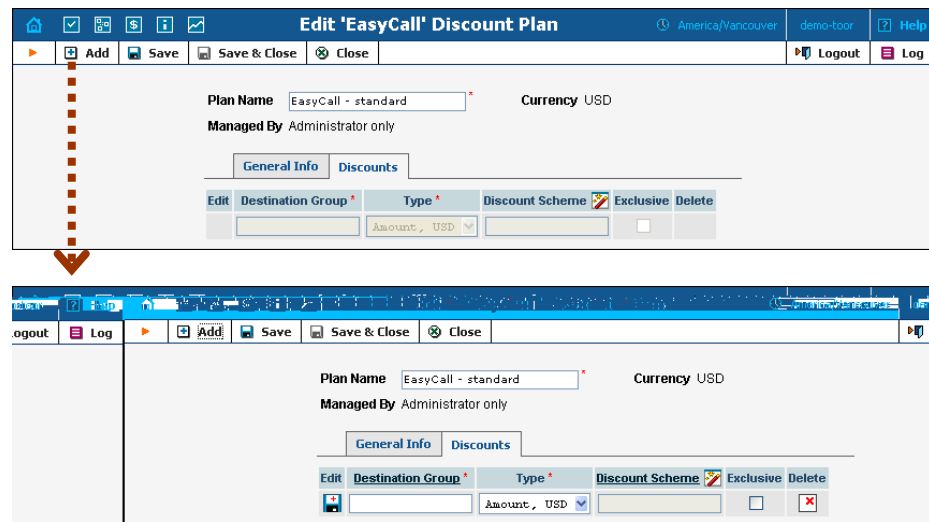
NOTE: The currency for the discount plan may be chosen only once (at creation) and cannot be changed later.

- **Managed by** – If you want this discount plan to be used for your reseller's accounts, so that 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 **None** here.
- **Destination Group Set** – The destination group set which will be used to select the definitions of individual destination groups. Choose the destination group set you created in the previous steps.
- **Counter Reset** – If you want your customers to receive a one-time promotion (e.g. 500 free minutes for each new subscriber), choose **Never**. This means that call counters will be never reset, and discounts will always be calculated based on the sum total of calls since account activation. The default option is **Once in billing period**, meaning that in every billing period the counters are set to zero and the process starts all over again, e.g. every month the customer is entitled to 200 free minutes.
- **Description** – An extended tariff description.

4. Click 🖫 **Save.**

Define Discounts within the Volume Discount Plan

1. While in the Edit Discount Plan form, click on the Discounts tab.
2. Press ➕ **Add** to add a new discount.
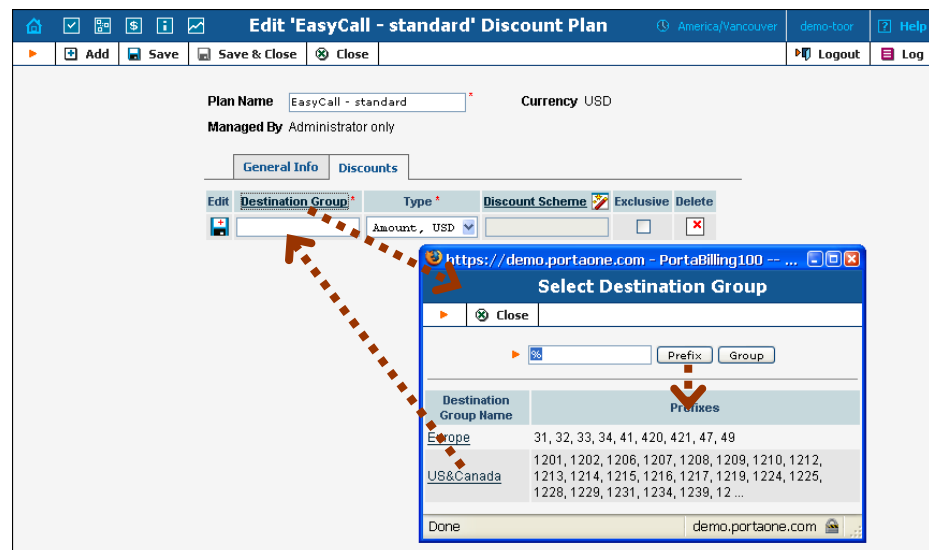
3. Enter the initial information about this discount:
   - **Destination Group** – Type in the name of the destination group this discount will apply to, or click on the column header to invoke a popup menu, where you can search for available destination groups and select one of them.
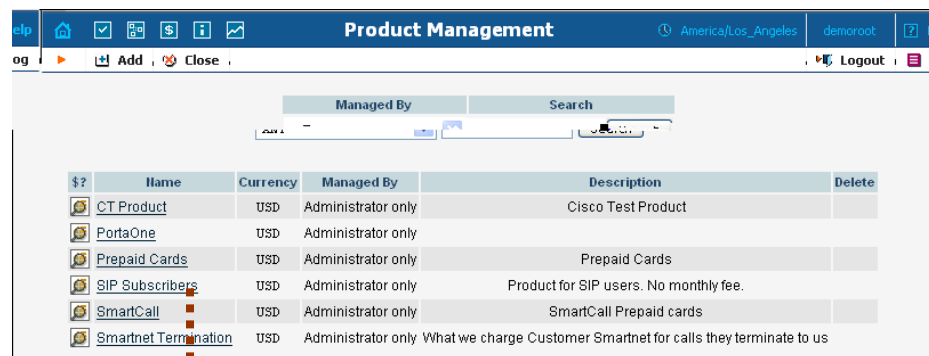
- **Type** – If the discount levels are to be based on the total number of minutes, choose Volume, min. Otherwise, choose Amount, USD to use cost-based discount levels. For more details about different discount level options, see the **PortaBilling Administrator Guide**.
- **Discount Scheme** – Click on the
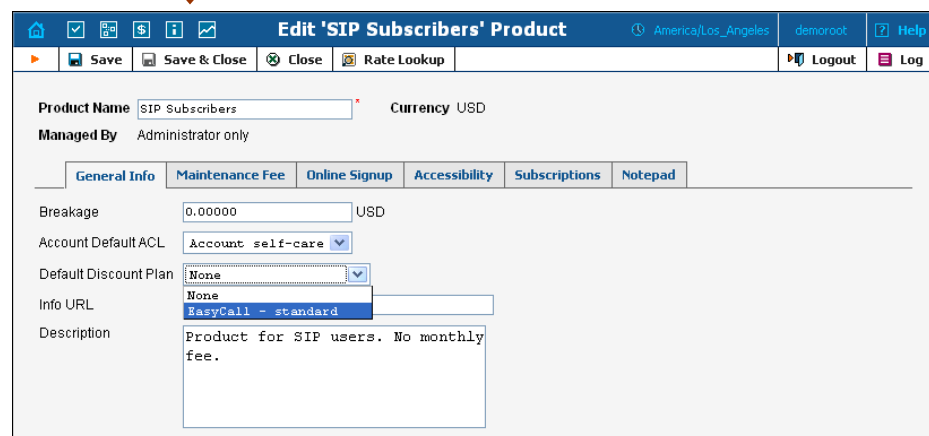
4. Click the 💾 **Save** button in the toolbar or the ➕ icon on the left end of the row to save this discount.
5. Repeat steps 2-4 above to define more discounts within this discount plan.

Assign a Default Discount Plan to a Product

1. In the Management section of the admin interface, choose **Products**.
2. On the Product Management page, click on the name of your SIP services product.

3. In the Default Discount Plan select menu, choose the volume discount plan you have just created.
4. Click 💾 **Save&Close**.

Now this discount plan will be applied automatically to all accounts with this product (unless it is manually overridden at the account level – see below).

Assign a Specific Discount Plan to an Account (optional)

1. Go to the **Customers** screen (the one containing a list of customers).

2. Next to the customer name, click the ⬚ icon (the one in the **Accounts** column) to enter account management for this customer.
3. Perform an account search and, when the required account is displayed, click on the account ID.
4. On the Account Info page, click on the **Additional Info** tab.

5. In the **Discount Plan** select menu, choose the volume discount plan you have just created.
6. Click ▣ **Save&Close**.

Assign a Specific Discount Plan to a Customer

1. Go to the **Customers** screen (the one containing a list of customers).
2. Click on the customer name.
3. On the Customer Info page, click on the **Additional Info** tab.
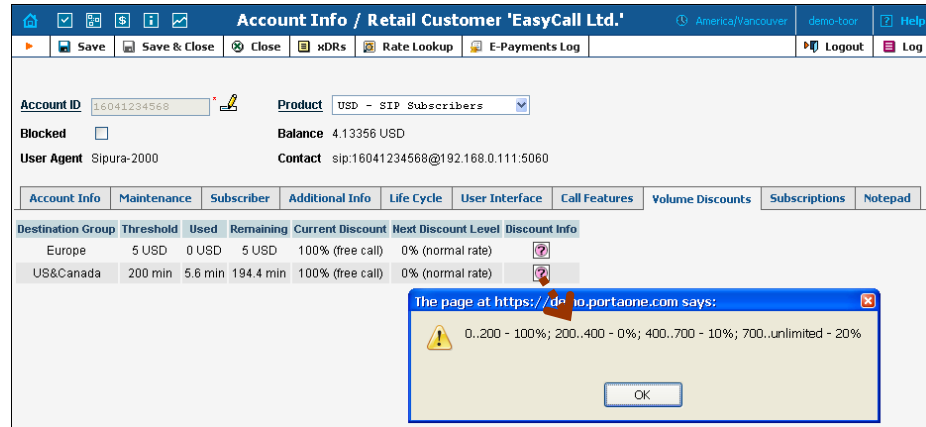

4. In the Discount Plan select menu, choose the volume discount plan you have just created.
5. Click ▣ **Save&Close**.

Check the Current Volume Discount Statistics for an Account

1. Go to the **Customers** screen (the one containing a list of customers).

2. Next to the customer name, click the 🖼 icon (the one in the **Accounts** column) to enter account management for this customer.
3. Perform an account search and, when the required account is displayed, click on the account ID.
4. On the Account Info page, click on the **Volume Discounts** tab.

5. View the information in the table:
    *   **Destination Group** – The destination group this discount applies to.
    *   **Threshold** – The threshold value of the currently applied discount level.
    *   **Used** – The current volume counter (total number of minutes or money spent).
    *   **Remaining** – The total number of minutes or money remaining at this discount level; after it is used up, the next discount level will be applied.
    *   **Current Discount** – The currently applied discount percentage.
    *   **Next Discount Level** – The discount percentage which will be applied after the threshold is crossed.
    *   **Discount Info** – Click on the 🔵 icon to view comprehensive information about all applicable discounts levels.
6. Click 🔲 **Close**.

4. Appendices

APPENDIX A. Cisco GW Setup for PortaSIP (COMEDIA)

```
sip-ua
  nat symmetric check-media-src
```