PORTA ONE

Porta Switch™

Handbook:

Prepaid Services

Maintenance Release 22

www.portaone.com

Copyright Notice & Disclaimers

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

PortaSwitch Handbook: Prepaid Services, May 2011
Maintenance Release 22
V1.22.2

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. Such 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 3

1. Prepaid Calling Cards (Using a Gateway) 4

Typical Prepaid Service Scenario 5
Setting up Your Network Components 7
Checklist 8
PortaBilling Configuration 9
Create Destinations 9
Create Nodes 11
Create a Tariff 12
Enter Rates 14
Create All Required Tariffs 20
Create a Product 20
Create Vendors 23
Define Connections 25
Create a Customer 26
Generate Accounts 28
Verify Call History for Account 37
Check Call History 38
Provisioning Prepaid Accounts 40
PortaOne Calling Card Application Special Features 41

2. Prepaid Calling Cards (Using PortaUM) 45

Setting up Prepaid IVR on PortaUM 46
Checklist 46
General PortaBilling Configuration 47
Configure Access from PSTN 47
Configure the IVR Access Number 47
Customize the parameters of the IVR application 48
Prepaid Card IVR Configuration Parameters 52

3. Callshop Services 54

Callshop Services 55

4. Appendices 57

Prepaid Billing Features 58
Cisco Gateway Configuration Guidelines 61
Quintum Configuration Guidelines 65
Charge calling card customers XX/min extra when they call a toll-free line 66
Authorize and Bill Customers by the Originating Phone Number (ANI-based Billing) 67
Prevent an ANI number from being used as a PIN 69

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

Preface

This document provides PortaBilling100 users with step-by-step instructions and examples for setting up various prepaid 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/**

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 performing the action described in the paragraph.

Tips provide information that might help you solve a problem.

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

1. Prepaid Calling Cards (Using a Gateway)

Prepaid services enable Internet telephony service providers (ITSPs) to offer calling card services that customers can pay for in advance.

The market for prepaid services includes tourists, immigrant communities, mobile populations such as military personnel, and people with limited credit histories who cannot otherwise get a private telephone line in their homes. These users can all gain immediate access to long-distance or international calling services from wherever they are located by using prepaid calling cards purchased at supermarkets and other types of retail outlets.

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

Typical Prepaid Service Scenario

In an ITSP internal network infrastructure, prepaid services are implemented through a debit card application that works in conjunction with the following:

- **VoIP gateway**
- **Interactive Voice Response (IVR) server**
- **PortaBilling RADIUS server**

This combination of services enables a carrier to authorize voice calls and debit individual user accounts in real time.

Customer interaction:

- Customer dials access number
- Customer is asked to enter prepaid card number
- Customer enters prepaid card number
- Customer is provided with information about current balance and asked to enter destination number
- Customer dials destination number
- Customer is provided with information about maximum permitted call duration
- Call is connected
- After disconnect, Customer's balance is reduced.

System components interaction:

Customer	GW	IVR	PortaBilling
Dials the access number			
	Accepts the call and launches the IVR		
		Plays voice prompts ("Welcome…"), asks user to enter his PIN	
Enters his PIN			
		Attempts to authenticate this PIN	
	Sends authentication request using Radius protocol (User-Name equals PIN)		
			Checks that such account exists in the database, that it is not blocked or expired, and that it is allowed to use the service at this location. Upon success, returns account's

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

			balance and other data. Also keeps information about this call in memory to prevent multiple logins with the same account ID
		If authentication is unsuccessful, asks to re-enter PIN or hangs up. Otherwise, tells customer his current balance and prompts him to enter phone number he wishes to call	
Enters destination number			
		Attempts to authorize call to the destination	
	Sends authorization request using Radius protocol (User-Name equals PIN, Called-Station-ID equals number dialed by customer)		
			Checks that account is allowed to call this destination, calculates maximum possible call duration based on account balance and rate for this destination
		If authorization has failed, prompts user to enter another number or hangs up. Otherwise, tells customer maximum allowed call duration and tries to call destination number	
	Determines call route according to rules (dial-peers or gatekeeper information), attempts to connect the call		
		When call is connected, sets timer to the maximum call duration	
Speaks on the phone			
		Warns customer when he has only 1 minute left and, if timer hits zero and customer is still talking, disconnects the call	
	After call is disconnected, sends accounting information		

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

	about the outgoing call using Radius		
			Bills the account, customer and vendor for the outgoing call
Hangs up			
	Sends accounting information about the incoming telephony call		
			Bills the vendor of the incoming telephony service, unlocks session for this account

Setting up Your Network Components

Please refer to the *Appendice* chapter for the instructions applicable to your specific type of gateway.

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

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 under 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.	[ ]
Network configuration	
Create a node for your gateway.	[ ]
Configure your gateway.	[ ]
Rating configuration	
Create a tariff A, which will be applied to prepaid card users.	[ ]
Insert rates in tariff A for the destinations you plan to call.	[ ]
Create a tariff B, which describes your termination costs.	[ ]
Insert rates in tariff B for the destinations you plan to call.	[ ]
Create your prepaid product.	
Create one accessibility entry for this product, using the node you created and tariff A.	[ ]
Create a vendor.	[ ]
Create a connection for this vendor using tariff B.	[ ]
Account provisioning	
Create a retail customer who owns the prepaid cards.	[ ]
Generate accounts for this customer.	[ ]
Testing	
Try to make a test call.	[ ]

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

PortaBilling Configuration

Please refer to the **PortaBilling100 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

TIP: When the system has just been installed, use username **pb-root** and password **pb-root** to login.

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

Visit **My Company** on 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.

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 set-up. 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 more currencies than one, 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 to insert new destinations into the system:

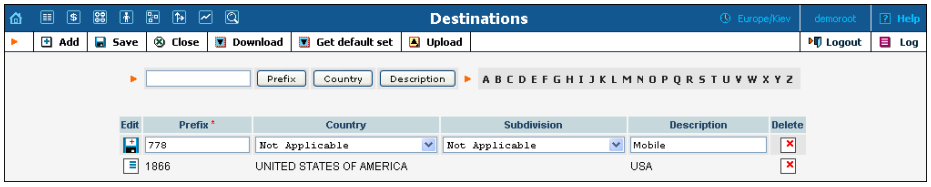
- One-by-one, using the **Add** functionality on the web interface
- A bulk update, by uploading destinations from a file

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.

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

Creating destinations "One-by-One"

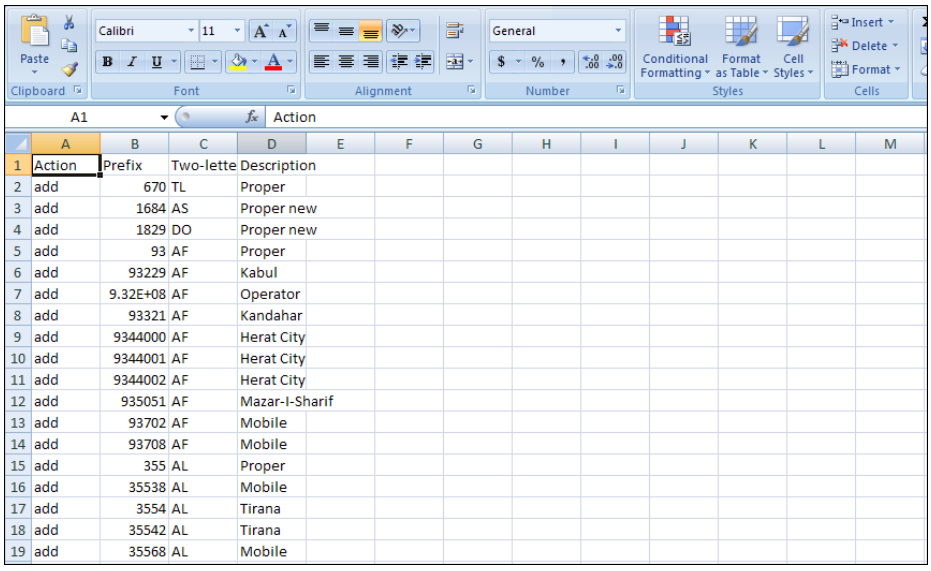
1. In the **Rating** section of Admin-Index, choose **Destinations**.
2. Click on the **Add** button.
3. Fill in the required information. This includes the phone prefix and country. Country subdivision is optional. You can use the **Description** column to store some extra information about the destination (for example, if it is a mobile or fixed number).



4. Click **Save**.
5. Repeat 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.

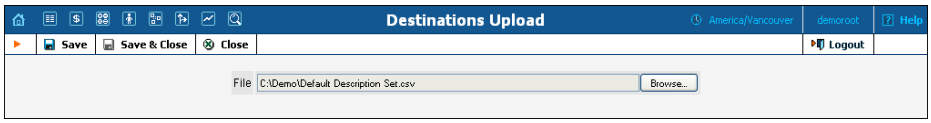


	A	B	C	D
1	Action	Prefix	Two-lette	Description
2	add	670	TL	Proper
3	add	1684	AS	Proper new
4	add	1829	DO	Proper new
5	add	93	AF	Proper
6	add	93229	AF	Kabul
7	add	9.32E+08	AF	Operator
8	add	93321	AF	Kandahar
9	add	9344000	AF	Herat City
10	add	9344001	AF	Herat City
11	add	9344002	AF	Herat City
12	add	935051	AF	Mazar-I-Sharif
13	add	93702	AF	Mobile
14	add	93708	AF	Mobile
15	add	355	AL	Proper
16	add	35538	AL	Mobile
17	add	3554	AL	Tirana
18	add	35542	AL	Tirana
19	add	35568	AL	Mobile

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.

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

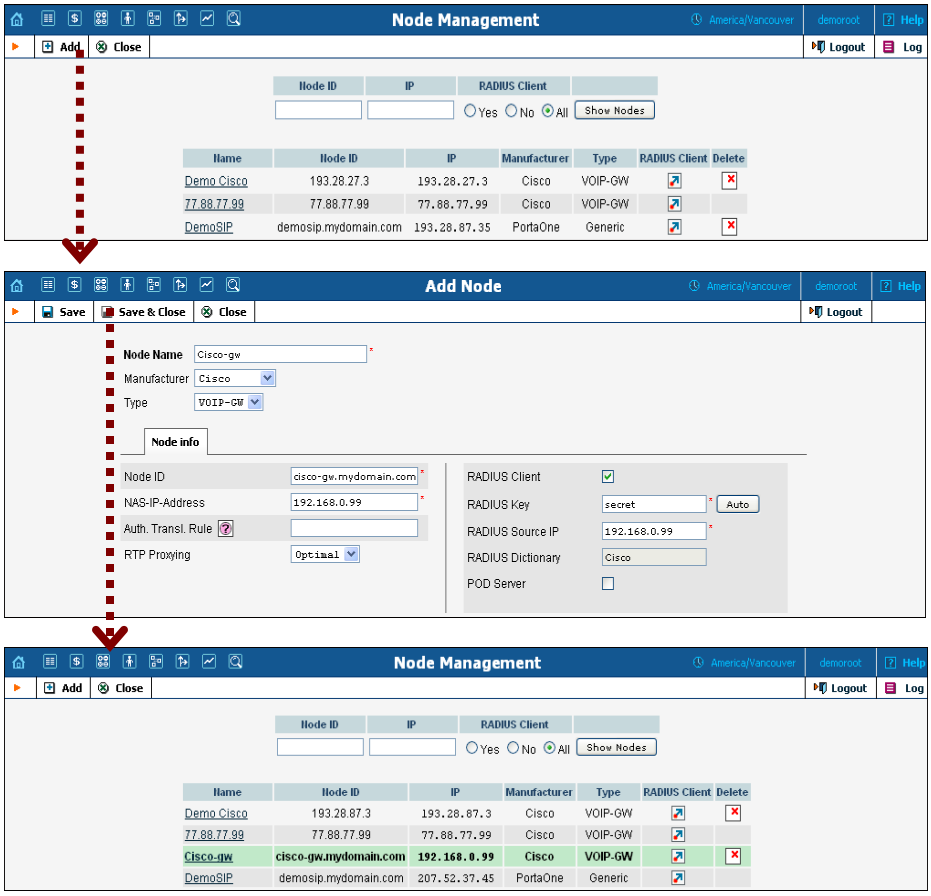
5. Switch back to the PortaBilling web interface, and click **Upload** on the Destinations screen.



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.



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:

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

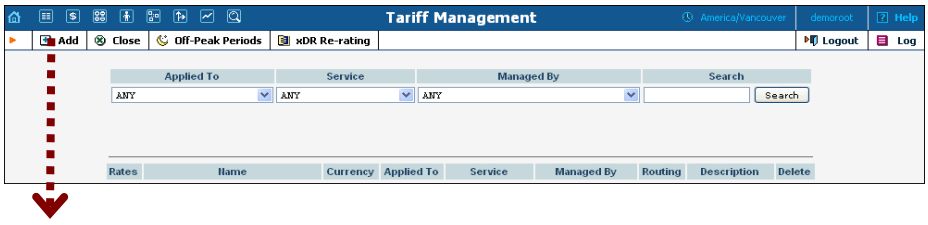
- **Node Name** – A short descriptive name for this node (will be used in the select menus).
- **Manufacturer** - Select **Cisco** or **Quintum**.
- **Type** – VoIP node type; select **VOIP-GW**.
- **Node ID** – h323-id (recommended `hostname.domainname`).
- **NAS-IP-Address** – IP address of the gateway.
- **Auth. Translation rule** – Leave this empty for now; see the **Translation Rules** section of the **PortaBilling Administrator Guide**.
- **RTP proxying** – Leave the default selection (Optimal); for more details regarding NAT traversal, see the **PortaSIP Administrator Guide**.
- **Radius Client** – Select if this node will be communicating with the billing system.
- **Radius Key** – If this node is a radius client, enter the shared secret here; must be the same as that configured in NAS as a **key** in the radius server configuration.
- **Radius Source IP** – See the **Node ID, NAS IP address, and Radius source IP** section of the **PortaBilling Administrator Guide**. Unless your gateway has 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.**
5. Repeat steps 2-4 until all of your nodes have been entered.

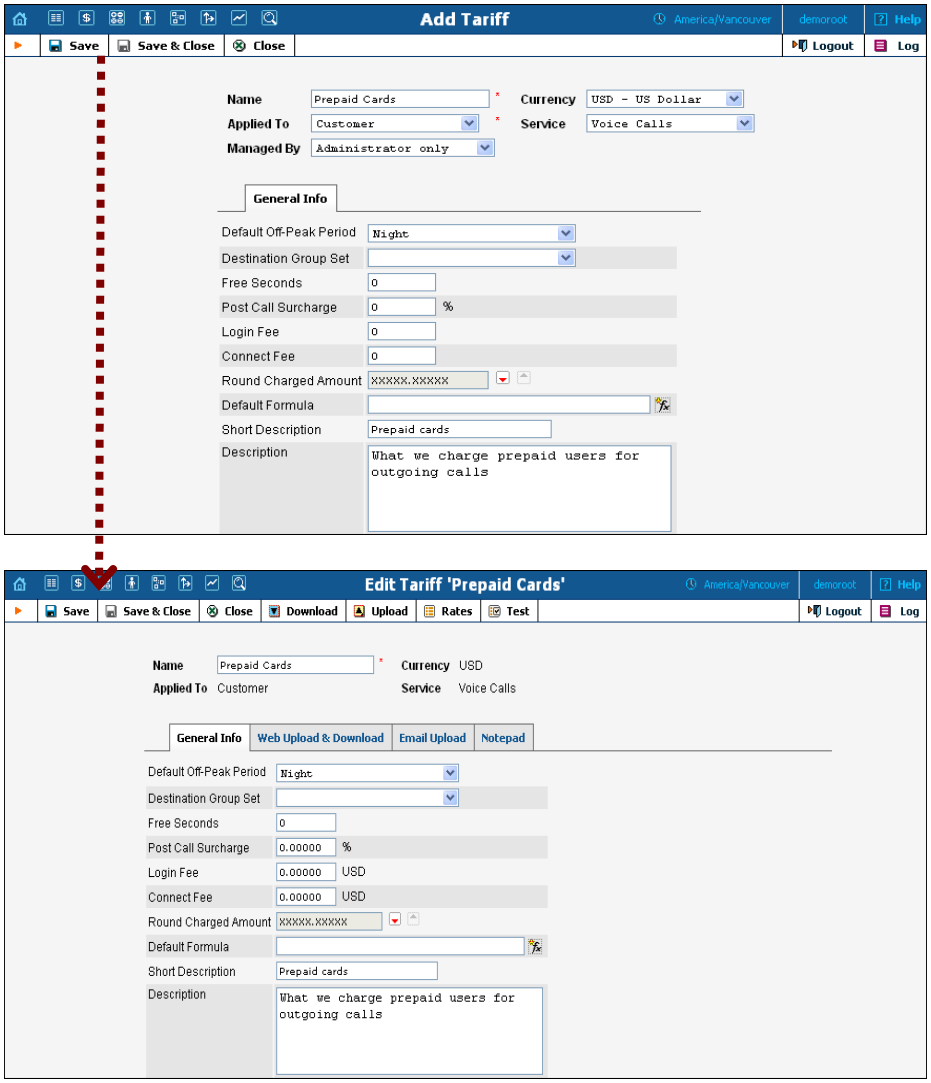
Create a Tariff

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



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



1. In the **Rating** section of Admin-Index, choose **Tariffs**.
2. On the Tariff Management page, choose **Add**.
3. Fill in the **New Tariff** form:
   - **Name** – A short name of the tariff object; this is the name you will then see in the select menus.
   - **Currency** – Indicates in which currency the pricing information is defined. All pricing information for a single tariff must be defined in the same currency.

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

   - **Applied To** – Designates whether this tariff will be used to charge your prepaid customers (in this case, choose a **Customer**) or to calculate costs associated with your vendors (in this case, choose a **Vendor**).
   - **Managed By** – Choose "**Administrator only**" here (this option is only visible after you select **Applied to: Customer** above).

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

- **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. For example, for a tariff named Cust-ABC-Easy Call-1800, the short description will provide better information for your reseller ABC, who will be using this tariff, such as: "EasyCall – via a toll-free number".
- **Description** – An extended tariff description.

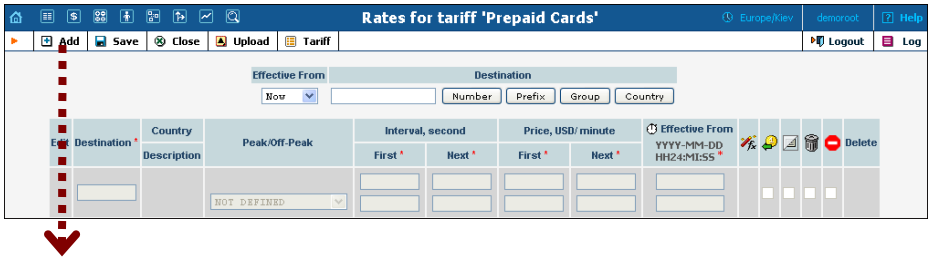
4. Click **Save.**
5. Repeat steps 2-4 until you have entered all of the tariffs.

Enter Rates

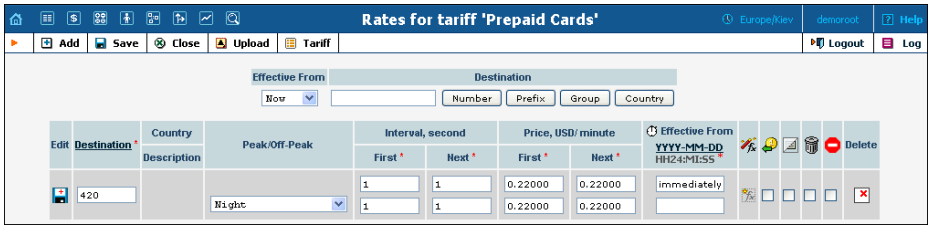
Rates are per-destination prices. Please refer to the *Call Billing Parameters* section in the **PortaBilling Administrator Guide** for more details on billing parameters.

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.



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



1. On the Tariff Management page you will see a list of available tariffs. Click the **Rates** icon previous to 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:
   - **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.

   - **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 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.

   - **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).

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.

   - **Rate Formula Wizard** – Launches the wizard for creating a custom rating formula
   - **Payback Rate, Hidden**, **Forbidden** or **Discontinued** – These flags are optional.

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

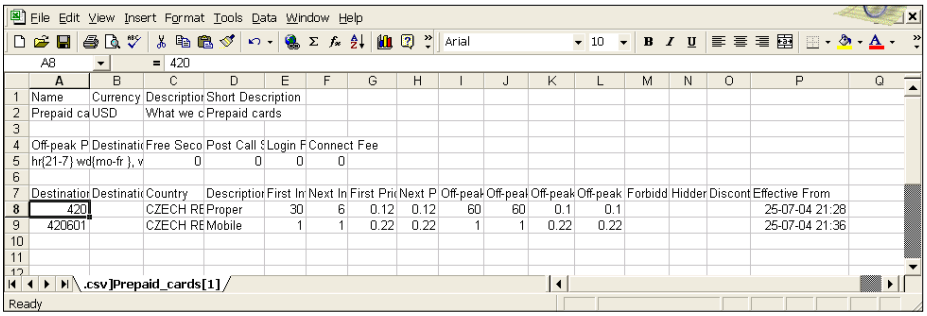
4. Click the **Save** button in the toolbar, or the icon on the left end of the row.
5. Repeat these steps if you need to enter more rates.

Managing rates offline

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 are preparing data in the default PortaBilling format.

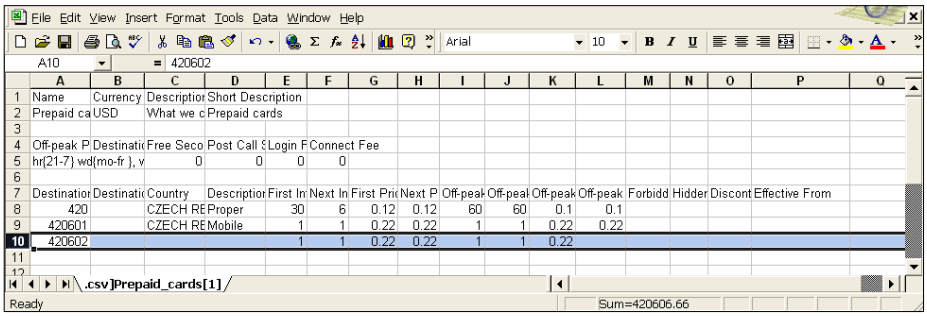
A rates table may be prepared using a spreadsheet processor (i.e. Microsoft Excel) and easily imported into PortaBilling. This is very convenient if you wish to make many changes. For example, you might want to increase all prices by 10%.

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), and will also provide you with an overview of the file structure.
3. You will see the **File Download** dialog and be prompted to save the file or open it from its current location. We recommend that you first save the file to the folder you will be using in the future to store tariff data files, then open it in Excel.
4. You should see something similar to the screenshot below:

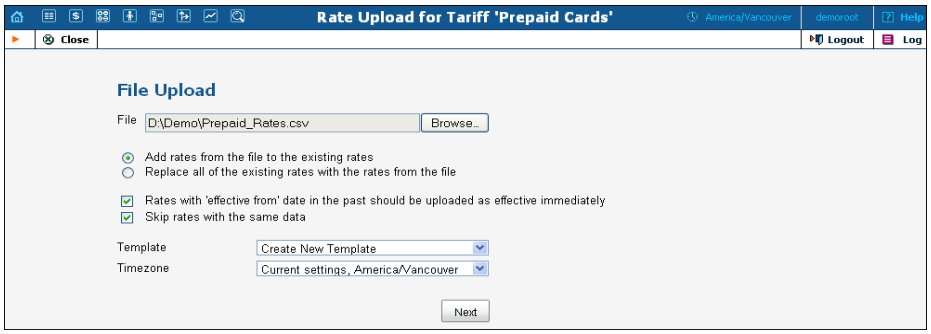


5. Edit the file by adding more rows with rate data, so that it resembles the screenshot below.
6. If you want some of your rates to be effective in the future, enter a future date in the **Effective from** column. If you are retaining past dates, make sure to check the box **Rates with 'effective from' date in the past should be uploaded as effective immediately** when uploading the file (see step 11 below). Otherwise, these rates will fail to upload.

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

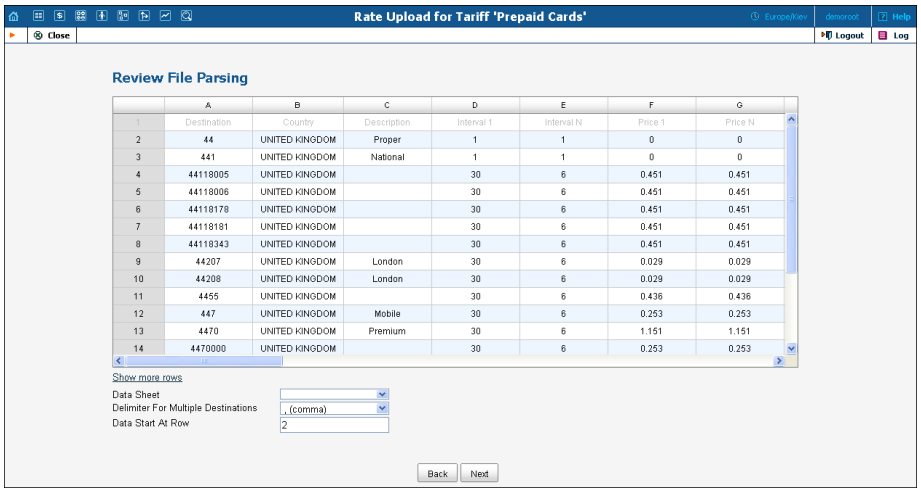


7. Save the file in Excel. You will probably get a warning from Excel that your file "*may contain features that are not compatible with CSV (Comma delimited)*". Ignore this, and choose **Yes** to retain CSV format.
8. Close the file in Excel. If you performed step 6, then disregard the message "*Do you want to save the changes you made*", as this is only due to the fact that your format is not the native Excel XLS format.
9. Go back to the PortaBilling web interface, and then go to the **Edit Tariff** screen.
10. Click on the **Upload** button.
11. Select one of the options on the screen to add rates from the file to the existing ones, or to replace the existing ones, as shown on the screenshot below:

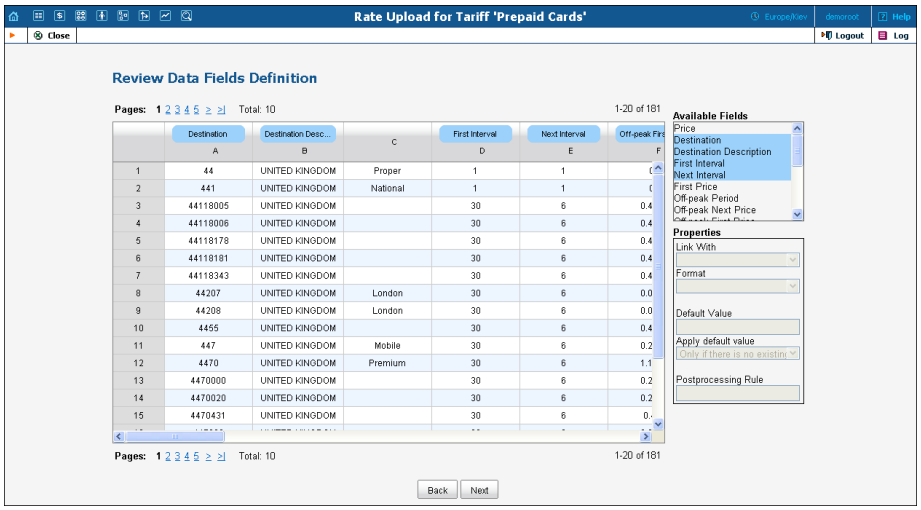


12. Either enter the name of your file manually, or click **Browse…** and choose the file; then click Next.
13. On the Review File Parsing page, you can verify whether the file was parsed correctly and, if necessary, change file parsing parameters such as delimiters.

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

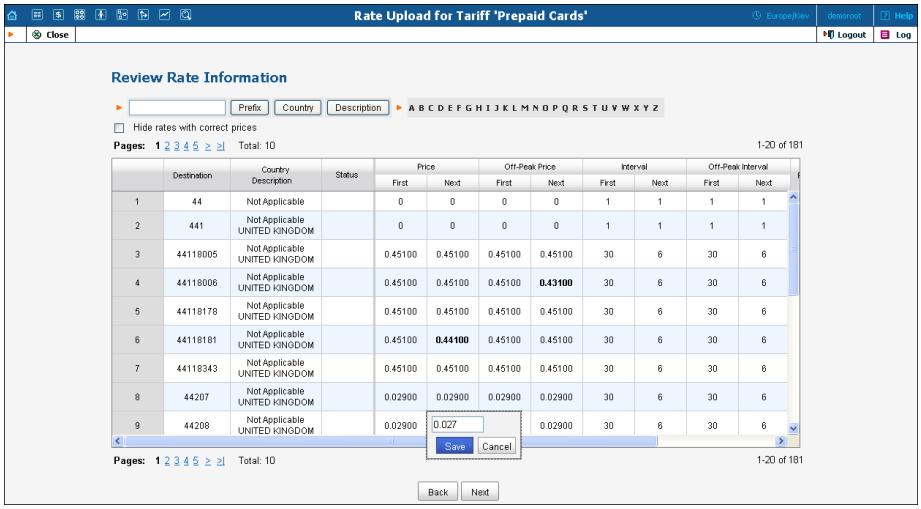


14. On the Review Data Fields Definition page, you can specify where individual data fields (e.g. destination, price or payback rate) are located in the file. In order to associate a certain column in the file with a specific data field, drag and drop that field from the list on the right onto the column header.

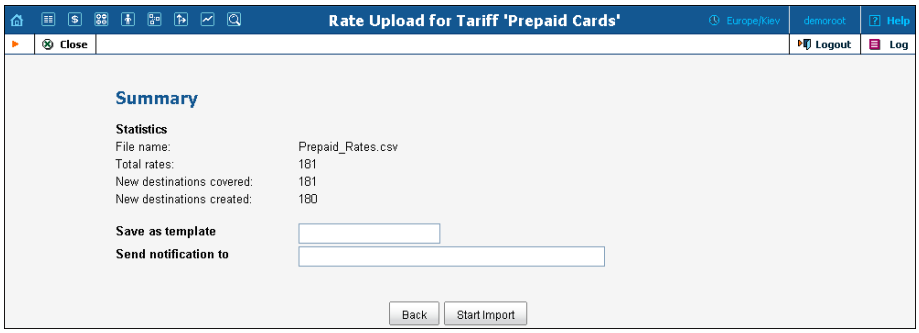


15. On the Review Rate Information page, you can view information about rates, adjust the value of prices (just point your mouse at the window you want to change, click to modify the value, and press Save; the changed value will be in bold) and mark the desired rates as Payback.

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



16. On the Create New Destinations page, you can assign a country and destination group to destinations that were not in the system before, and which will be automatically created now.
17. On the Summary page, you can find information about the number of rate records to be processed. You can also save the rate import options you have defined as a template, so that you can re-use them in the future.



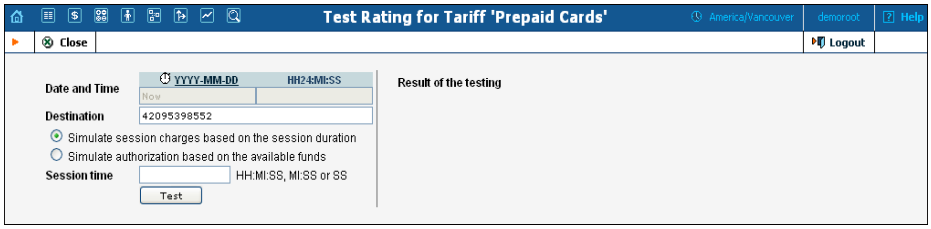
18. Click Start Import. You will receive an email confirmation of the tariff upload. If any operations have failed, you will receive a notification about the error.

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).

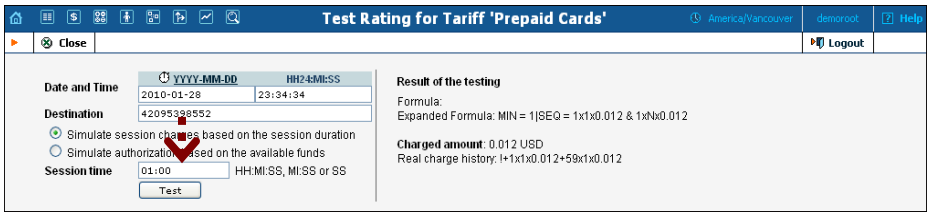
Test Rate Configuration (Optional)

1. While in the **Edit Tariff** window, click on the **Test** button to go to the Test Rating screen.

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



2. Type in the phone number for which you would like to test the rating, as well as the estimated call duration, then click on the **Test** button.



3. You will now see the estimated amount charged for this call, as well as a detailed explanation of the rating process.
4. Press the **Close** button to return to the **Edit Tariff** window.

Create All Required Tariffs

Repeat the *Create Tariff* and *Enter Rates* steps until you have created:

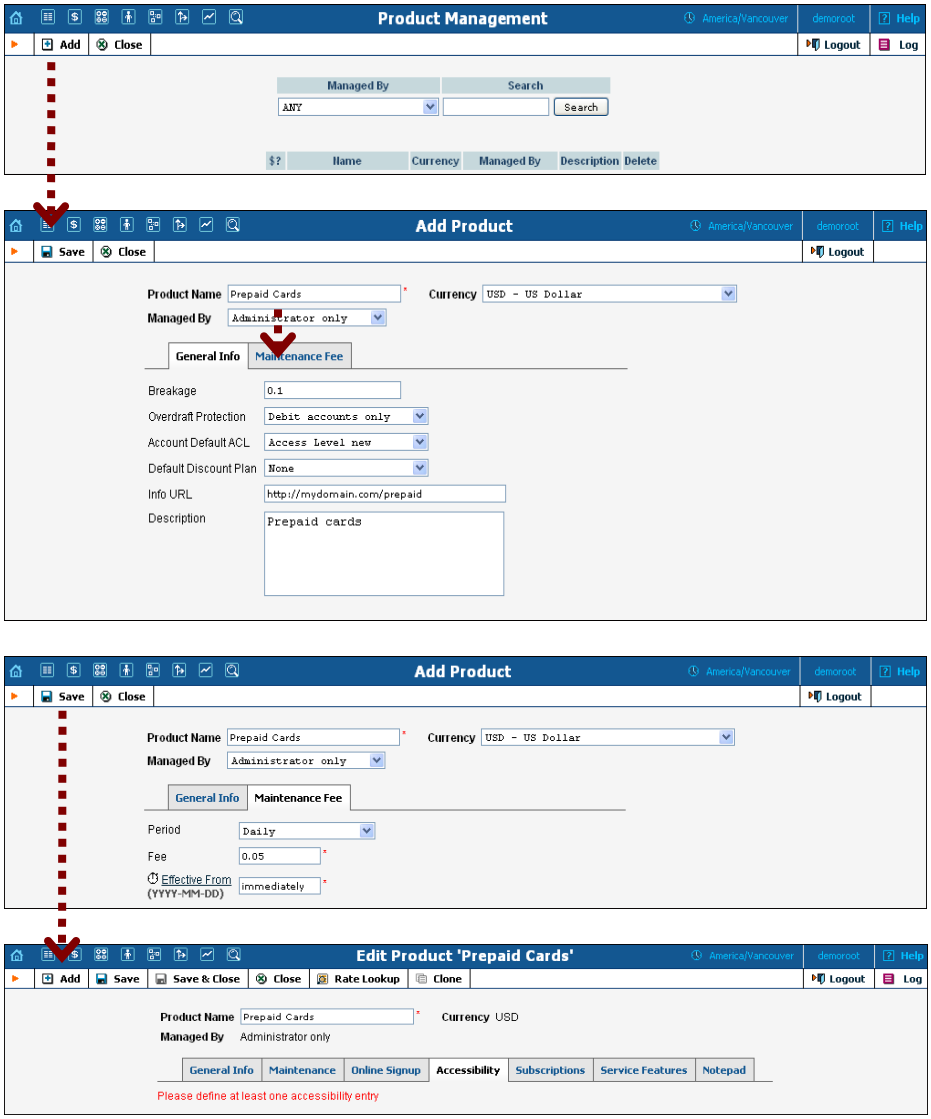
- A tariff for each account's billing scheme, these tariffs are created as "Applied to: Customer". For example, if you plan to charge your customers more when they access toll-free lines instead of local ones, you need two tariffs, i.e. "Normal" and "Using Toll-free line".
- A tariff with the termination costs for each termination partner you have, these tariffs are created as "Applied to: Vendor".
- If you have resellers, you should also create tariffs that you will use 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 resellers and then return to this step. Make sure that, when creating these subscriber tariffs, you choose *Managed by NNN* in the menu, where *NNN* is the name of the corresponding reseller. For more details, see the *Setting up a prepaid card reseller service* section.

Create a Product

Prepaid cards will be issued for a specific product. Products are a powerful feature that defines different ways to bill an account. Product

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

definition is always done in two steps: product definition and creation of the accessibility list.



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 accessibility list.
   - **Managed by** – If you want 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.

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

General Info tab

- **Breakage** – Leftover balance which is considered "useless" (for statistical purposes). Accounts with a balance below breakage will be counted as *depleted*. This does not affect account authentication or authorization, so the account can still make calls if there is enough money left to cover at least the first interval.
- **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.

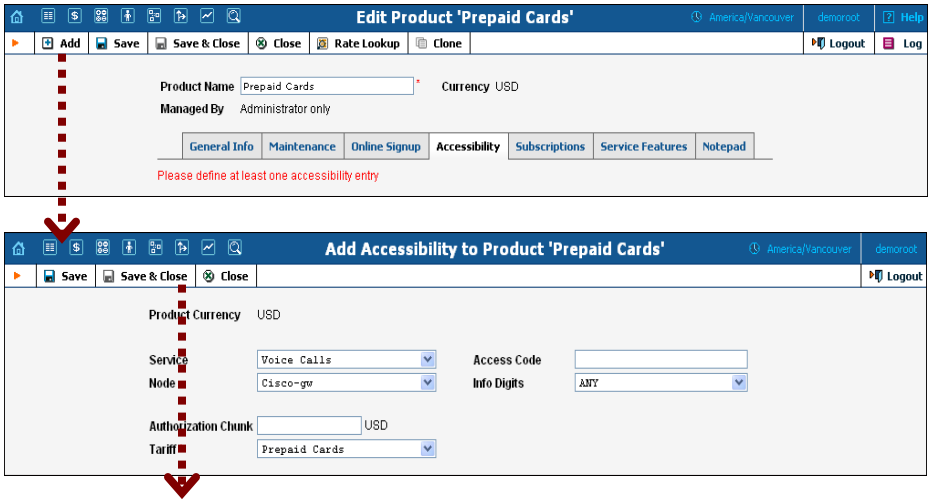
Maintenance Fee tab

- **Period** – Surcharge application interval; will be shown in call history as a separate line each time it is charged. **None** disables the maintenance fees.
- **Fee** – Surcharge amount.
- **Effective from** – Apply the specified maintenance fee only after a certain date (no fees assessed until then); choose **Immediately** to start applying charges as soon as possible.

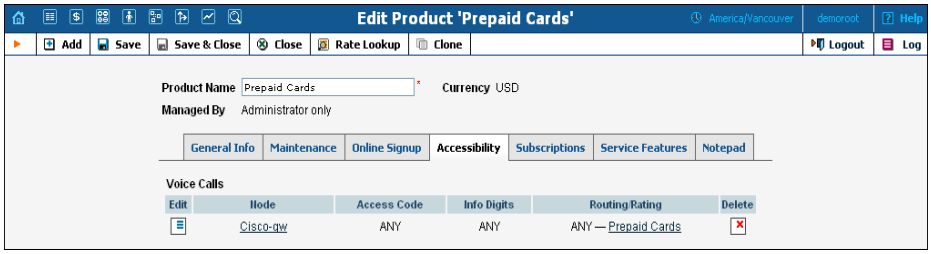
4. Click **Save.**
5. Click on the **Accessibility** tab to edit this product's accessibility.

Enter Node and Tariff in 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.



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



1. When the Accessibility tab is selected, click on the **Add** icon.
2. Choose **Voice Calls** in the **Service** select menu.
3. In the **Node** select menu, select the node where your IVR will be running.
4. You can also use an access number for Accessibility in the **Access code** field. For example, if you have a node with two access numbers, local (12345) and toll-free (1800 12345), you can set up the product's accessibility in such a way that if a customer calls via a toll-free line, he will be billed using a different tariff (one which includes surcharges).

NOTE: The Access Code feature requires modification of Cisco platform application scripts. For more information about this feature, see the System Concepts section of the **PortaBilling Administrator Guide**. The Access Code feature on the Quintum platform requires the ACCESSCODE feature (available in the recent firmware).

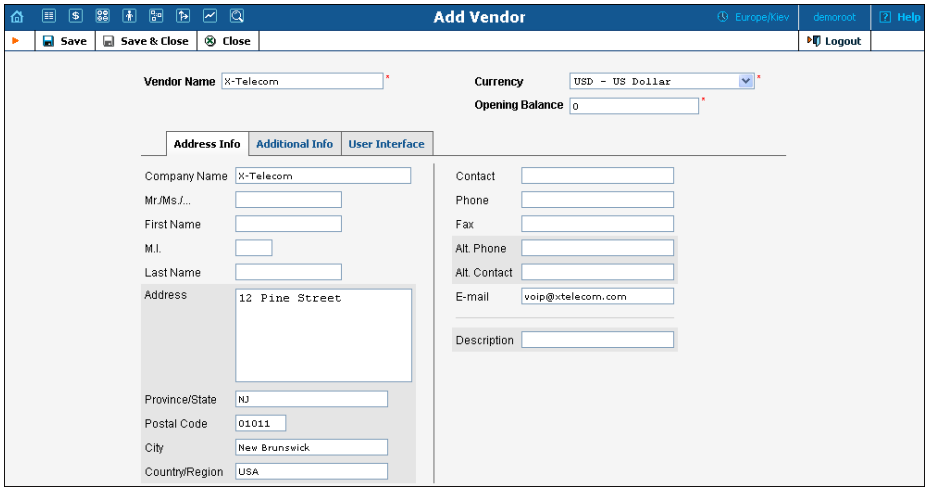
5. The **Info Digits** menu allows you to apply different tariffs depending on the type of line from which your customer originates a call. If you are unsure whether your telecom sends such information, leave the default value ANY.
6. In the **Tariff** menu, select the tariff that will be applied to your prepaid calling card customers.
7. Click **Save&Close** to save this accessibility entry.
8. Repeat steps 1-7 if you want to define more accessibility entries.

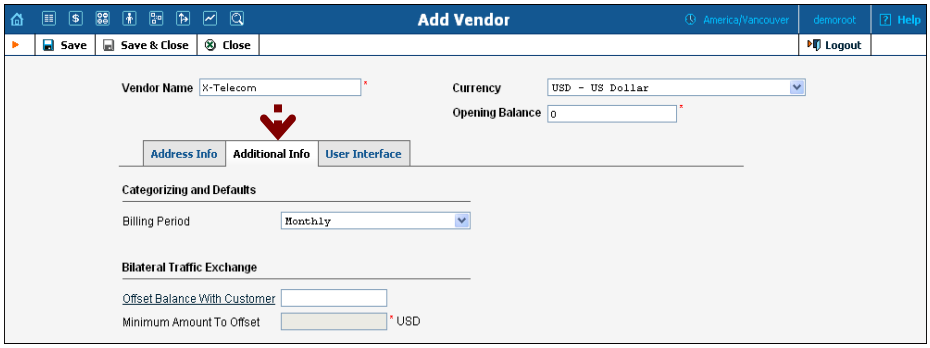
Create Vendors

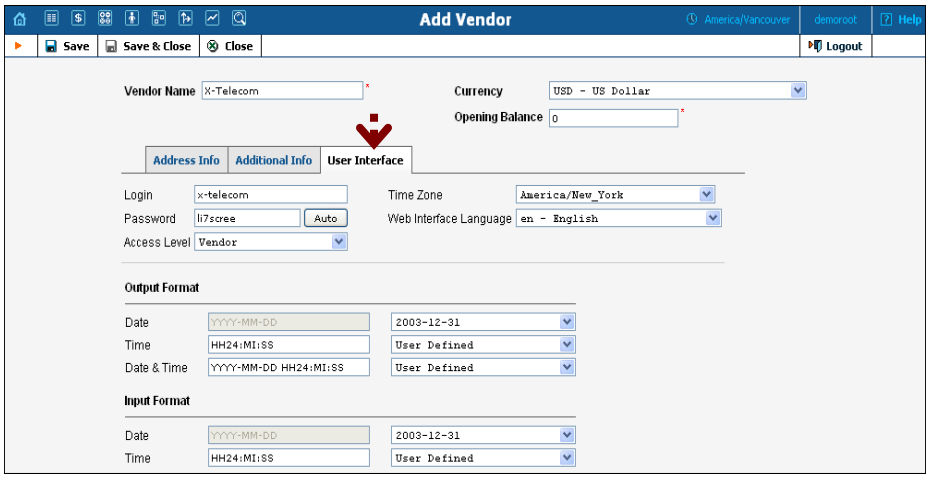
This step is only required if you have not entered information about your vendors into the system before. Vendors are your termination partners or the providers of incoming toll-free lines.

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

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







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; will be used on the web interface.
- **Currency** – The currency in which this vendor charges you.

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

- **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 (when sending you an invoice). Statistics will be divided into periods according to this time zone.

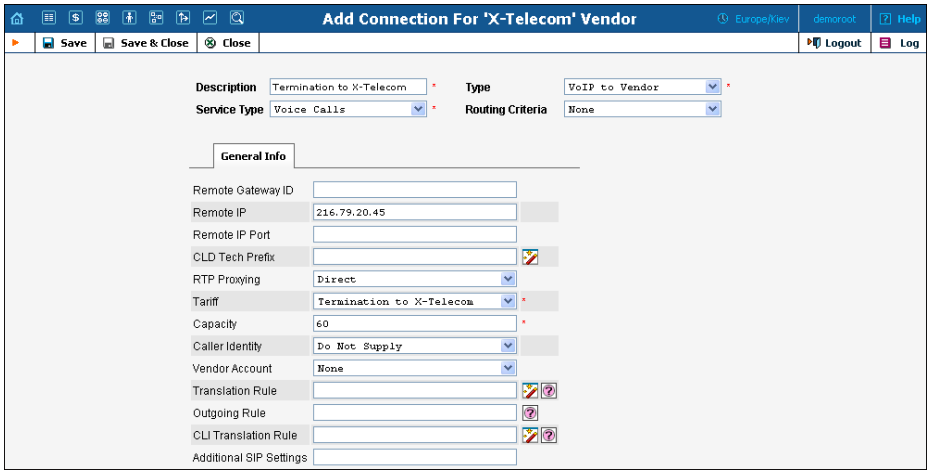
4. Click **Save&Close**.
5. Repeat steps 2-4 to add all of your vendors.

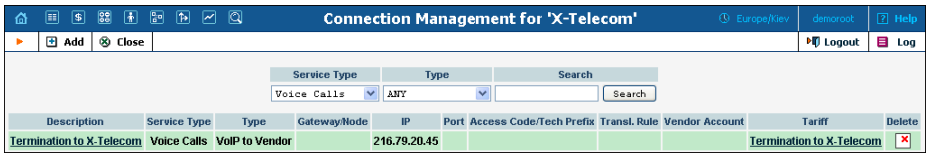
Define Connections

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.

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

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



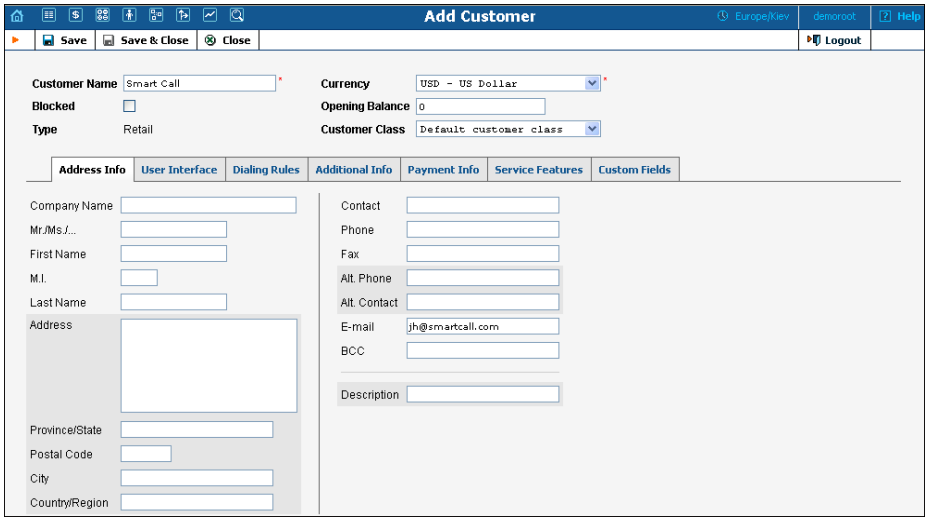


3. Press **Add** to add a new connection.
4. Fill in the connection information. If you send traffic to the vendor via telephony, choose the node and enter an optional port pattern. If you send traffic via VoIP, enter the remote IP address. Choose the tariff which defines your termination costs for this connection/vendor. **Description** and **Capacity** are mandatory for all connection types.
5. Click **Save&Close**.
6. Repeat steps 3-5 to add more connections to the same vendor, then click **Close** in order to exit to the **Vendor Management** screen.
7. Repeat steps 2-6 to add connections for other vendors.

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. Even if your company owns and distributes all of its prepaid cards, you will need at least one customer object to maintain all of the prepaid card accounts organized in one location.

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



In the **Participants** section of Admin-Index, choose **Customers**.

1. On the Customer Management page, click **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)). Normally, most of your customers would be retail customers.
2. 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; will be used on the web interface.
- **Currency** – The currency in which this customer will be billed.
- **Opening balance** – Starting balance for the customer; default is zero.
- **Customer Class** – Choose the customer class you created in the previous step.

Address info tab

- **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.

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

Additional info tab

- **Billing period** – Frequency of distribution of accounting information. For more details about different available billing periods, see the **PortaBilling Administrator Guide**.
- **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 tab

- **Credit limit** – If left empty, there is no credit limit for this customer.

User Interface tab

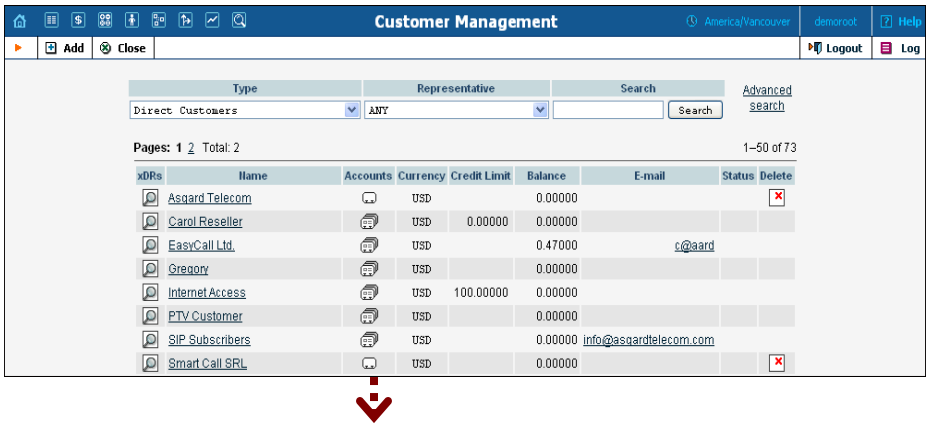
- **Time zone** – The time zone in which the customer will see his xDRs, and also that which defines his billing period. For example, if you choose **America/New_York** here and the billing period is **Monthly**, this means the billing period will start on the first day of the month at 00:00 New York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

3. Click **Save&Close.**

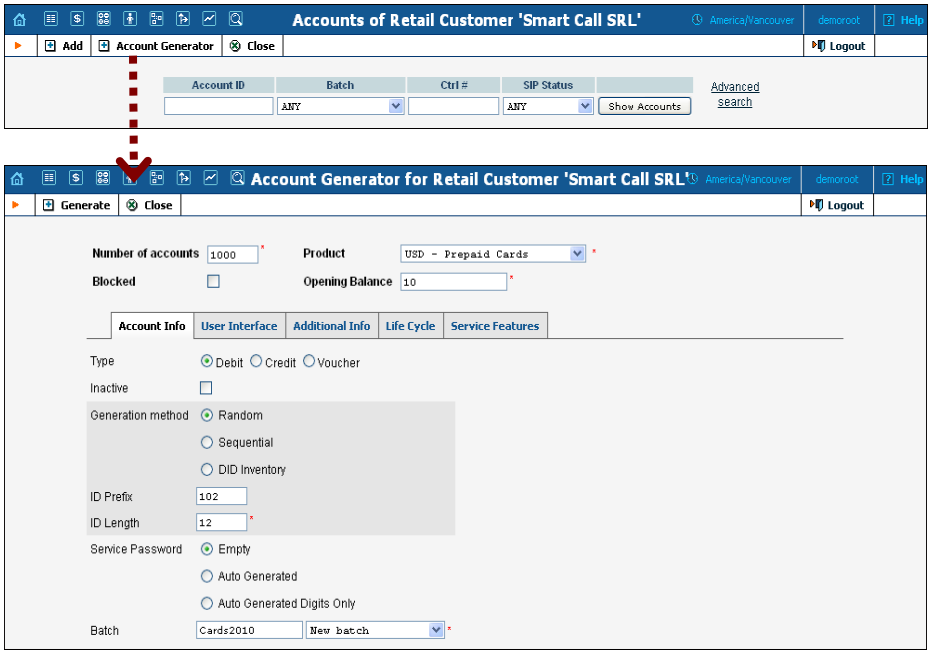
Generate Accounts

NOTE: Before generating accounts for a production system, read the section on "Provisioning prepaid accounts".

1. Go to the **Customers** screen (the screen which contains a list of customers). It should resemble the screenshot below:



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



2. Next to the customer name, click on the Account or icon (the one in the **Accounts** column), which will take you to the account management for that customer.
3. Click on the **Account generator**.
4. Fill in the "Account generator" form:
   - **Number of accounts** – Number of accounts (prepaid cards) to be generated.
   - **Product** – Choose the product which you would like your accounts to have.
   - **Blocked** – It is normal practice to generate all your prepaid cards as blocked, so they cannot be misused before being sold to the dealer or end customer. You can always unblock the whole batch of cards or an individual card later.
   - **Opening balance** – The initial balance on the card.

Account info tab

- **Account type** – Account type; select **Debit** for prepaid service.
- **Inactive** - Check this if you want to generate the accounts as initially inactive.
- **Generation method** – Choose **Random** here; this will assign every account a unique, randomly-generated PIN.
- **ID prefix** – If you would like all of the generated accounts to start with the same digit string (e.g. **102**), enter it here. Thus, if you enter 102 and an ID length of 10, account IDs (PINs) will look like this: 102NNNNNNN, where N = random digits.
- **ID length** – All account IDs (PINs) will be numerical and of the specified length. In order to avoid problems with the prepaid card print-shop, PortaBilling will not generate account numbers

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

with a leading zero. Also, PortaBilling will only allow generation of a batch with feasible parameters, e.g. it is impossible to generate a batch of 1,000 accounts with ID length 4 and ID starting at 55.

- **Starting ID** – Enter the initial digit set you would like the generated accounts to start with. Thus, if you enter 5553000, the account IDs (PINs) will look like this: 5553000, 5553001, 5553002 and 555300N, where N = subsequent digit. (This is only available in Sequential generation, and is always numeric.)
- **Service Password** – To improve security, you can use an account password during authentication, in addition to a PIN. Not all IVRs support this feature. If you choose **Empty**, no password will be assigned to the account, and the password check will be switched off during authentication. Choosing **Empty** is recommended by default. If you decide to use passwords, then please use the **Auto-generated digits only** option, since then the password can be entered in the IVR via phone keys.
- **Batch** – Accounts are grouped into batches. If a new batch name is provided in the text field, all accounts will be placed into a new batch with the given name. Otherwise, an existing batch should be selected from the drop-down list.

User Interface tab

- **Login** – If you choose **Account ID** (default), your customer will use his account ID (PIN) to login to the self-care pages. If you choose **Empty**, the account owner will not be able to use the self-care pages at all until a login has been assigned for his account.
- **Password** – **Auto-generated** means that a random password for web access will be assigned for each account (these passwords will be included in the .CSV file with the account information). **Empty** means that no password will be assigned, so account owners will be able to login to the web interface simply by providing their account ID (PIN).
- **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.

Additional Info tab

- **E-Commerce Enabled** – If checked, this will allow your debit card owners to make online payments via the PortaBilling web interface. (Leave unchecked.)
- **Discount Plan** – Applies a specific discount plan to this group of accounts. (Leave as **Product Default**.)

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

- **Distributor** – You can assign a specific distributor to this group of accounts.

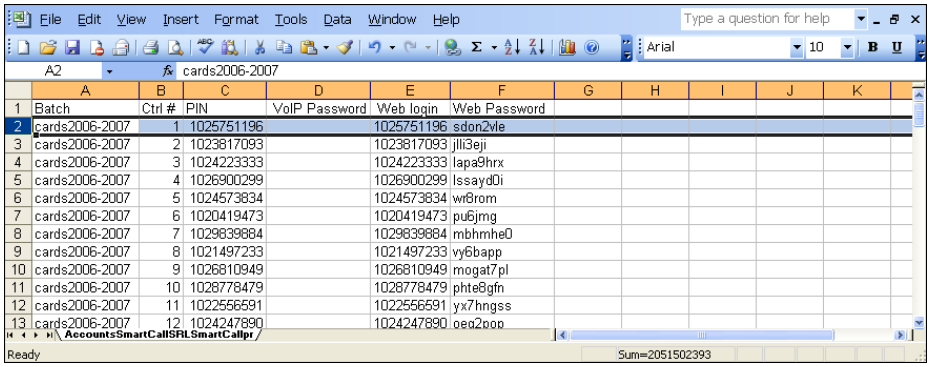
Life Cycle tab

- **Activation Date** – Account activation date.
- **Expiration Date** – Account expiration date.
- **Life Time** – Relative expiration date; account will expire on "first usage date" + "life time" days. If you do not want to use this feature, leave the field blank.

5. Click **Generate**; a confirmation screen will indicate that your information has been accepted.
6. Click **Close** to return to the account administration page.

NOTE: Account generation tasks are executed every few minutes, and it may take a while to generate large numbers of accounts.

Notification about the generated cards will be sent by email to the user who created them. A CSV file with information about the new accounts will be attached.



	A	B	C	D	E	F	G	H	I	J	K
1	Batch	Ctrl #	PIN	VoIP Password	Web login	Web Password					
2	cards2006-2007	1	1025751196		1025751196	sdon2vle					
3	cards2006-2007	2	1023817093		1023817093	jlli3eji					
4	cards2006-2007	3	1024223333		1024223333	lapa9hrx					
5	cards2006-2007	4	1026900299		1026900299	lssayd0i					
6	cards2006-2007	5	1024573834		1024573834	wr8rom					
7	cards2006-2007	6	1020419473		1020419473	pu6jmg					
8	cards2006-2007	7	1029839884		1029839884	mbhmhe0					
9	cards2006-2007	8	1021497233		1021497233	vy6bapp					
10	cards2006-2007	9	1026810949		1026810949	mogat7pl					
11	cards2006-2007	10	1028778479		1028778479	phte8gfn					
12	cards2006-2007	11	1022556591		1022556591	yx7hngss					
13	cards2006-2007	12	1024247890		1024247890	oeq2pop					

Tip: In case the original email message was lost or accidentally deleted, the file containing generated accounts is stored on the slave PortaBilling server in the user **porta-admin** home directory, sub-directory ***cards***.

Test Everything Together

1. Start Radius debug on GW.
2. Make sure the PortaBilling radius server is running.
3. Try to make a call and use one of the accounts.
4. Browse information using **BE Log Viewer**.

Example of a normal debug session:

```
Jun 05 18:04:54: Processing request (BE ver1.245.2.4,pid85499):
```

There is a copy of all the incoming attributes in the log.

```
NAS-IP-Address                  = '193.28.87.3'
NAS-Port-Name                   = 'ISDN 2:D:23'
NAS-Port-Type                   = 'Async'
```

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

```
User-Name                       = '59153211058'
```
The User-Name attribute contains the PIN number entered by the user.
```
Calling-Station-Id              = '14257891107'
Service-Type                    = 'Login-User'
h323-conf-id                    = '465F5B2B F42F11DA 8274BDD0 75CFFB2D'
```
h323-conf-id is the unique ID for every call.
```
Password                        = ''
h323-ivr-out                    = 'PortaBilling_Original_CLD:4041234567'
```
This is a special PortaBilling attribute which reports the original access number on the gateway used by the customer to access the IVR.
```
h323-ivr-out                    = 'transactionID:361'
NAS-Port                        = '0'
```
This is an **authentication** request (also called **first authentication**), since there is no **Called-Station-ID** attribute. The purpose is to verify that such an account really exists in the database, and to return account attributes such as account balance.
```
Jun 05 18:04:54: h323-conf-id=465F5B2B F42F11DA 8274BDD0 75CFFB2D/4, call-id=
Jun 05 18:04:54: Found a call in cache with such id
Jun 05 18:04:54: PrepareNexecute 'AccountAuth'
Jun 05 18:04:54: Found Account: 59153211058[96,debit,balance=10.00000] of
customer SmartCall SRL [20,balance=0.00000,limit=none]
```
The line above confirms that such an account has indeed been found in the database.
```
Jun 05 18:04:54: Account 59153211058 is not logged in yet
Jun 05 18:04:54: Account has an empty password, skip the password check
Jun 05 18:04:54: Attempt to charge account with a login fee
Jun 05 18:04:54: Logging in account '59153211058'(96) to '465F5B2B F42F11DA
8274BDD0 75CFFB2D'
Jun 05 18:04:54: Account '59153211058' logged in, setting call lifetime to 1800
sec
```
Since this is a **debit** account, the session is locked and the call lifetime is increased to prevent multiple login attempts.
```
Jun 05 18:04:54: Updating account usage of '59153211058' with 'Mon Jun  5
18:04:54 2006'
```
The first use date for the account is updated.
```
Jun 05 18:04:54: PrepareNexecute 'UpdateAccountUsage'
Jun 05 18:04:54: Authentication acknowledge response
```
Here is an overview of all the information sent back to the gateway:
```
h323-credit-amount              = 10.00
h323-billing-model              = 1
h323-ivr-in                     = Tariff:SmartCall Prepaid
h323-ivr-in                     = PortaBilling_AccountBalance:10.00000
h323-ivr-in                     = PortaBilling_ProductBreakage:0.10000
h323-ivr-in                     = available-funds:10.00
h323-return-code                = 0
h323-currency                   = USD
h323-preferred-lang             = en
Jun 05 18:04:54: ...Done.
```
This completes processing for the request.

```
Jun 05 18:06:13: Processing request (BE ver1.245.2.4,pid85499):
NAS-IP-Address                  = '193.28.87.3'
User-Name                       = '59153211058'
Called-Station-Id               = '16046282508'
```
Called-Station-Id contains the destination number dialed by the user.
```
Calling-Station-Id              = '14257891107'
Service-Type                    = 'Login-User'
h323-conf-id                    = '465F5B2B F42F11DA 8274BDD0 75CFFB2D'
Password                        = ''
h323-ivr-out                    = 'PortaBilling_Seed:10649791024'
h323-ivr-out                    = 'PortaBilling_Original_CLD:4041234567'
h323-ivr-out                    = 'transactionID:362'
```

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

Since **Called-Station-ID** is present, this is an **authorization** (or **second authentication**) request. The purpose is to determine whether the account is allowed to call this phone number and what the maximum allowed call duration is.

```
Jun 05 18:06:13: h323-conf-id=465F5B2B F42F11DA 8274BDD0 75CFFB2D/4, call-id=
Jun 05 18:06:13: Found a call in cache with such id
Jun 05 18:06:13: Copied account: 59153211058[96,debit,balance=10.00000] of
customer SmartCall SRL [20,balance=0.00000,limit=none] from '193.28.87.3' into
the current request
```

Thanks to the PortaBilling call cache, you do not need to look up the account in the database once again.

```
Jun 05 18:06:13: Checking if this call comes through a VoIP from vendor
connection
Jun 05 18:06:13: No VoIP from vendor connections were found
Jun 05 18:06:13: Account 59153211058 is already logged in, same session
Jun 05 18:06:13: Account has an empty password, skip the password check
Jun 05 18:06:13: Applying override translation rule on CLD ...
Jun 05 18:06:13: Translation 's/^\*3164\*//' applied: '16046282508' unchanged
```

Internal PortaBilling number translation.

```
Jun 05 19:34:28: Applying customer dialing translation rule on CLD ...
Jun 05 19:34:28: Translation 'local_to_e164($_,{cc=>'420',ip=>'00'});#% cc=420
ip=00' applied: '0016046282508' -> '16046282508'
```

The customer's translation rule is now applied, i.e. the number is converted from the format the customer dialed (with 00) into E.164 format.

```
Jun 05 18:06:13: Setting up a new charge with tariff 'SmartCall Prepaid' ...
Jun 05 18:06:13: Checked 2006-06-06 03:06:13 Europe/Prague against 'hr{21-7}
wd{mo-fr }, wd{sa su }': 1
Jun 05 18:06:13: Start of call is peak level 1
```

Off-peak period check: yes, off-peak rates will be applied to this call.

```
Jun 05 18:06:13: PrepareNexecute 'GetPricePerDestination*'
Jun 05 18:06:13: Compute maximum call duration for leg Account 59153211058 to
destination with funds 10.00000 (account funds 10.00000)
```

Based on the account's current balance, the maximum call duration is calculated.

```
Jun 05 18:06:13: Maximum call duration: 9840 announced as 12000
(!+0.1+164x60x0.05+0*20%) by rate 93 using 10649831771 as seed
```

Because the rate uses tricky options, the announced call duration is different from the real call duration.

```
Jun 05 18:06:13: Limited call duration for Debit account - enhance call
lifetime with 9900s to Mon Jun  5 20:51:13 2006
Jun 05 18:06:13: Enhance lifetime with 1800s to Mon Jun  5 20:51:13 2006
Jun 05 18:06:13: Authentication acknowledge response
h323-billing-model              = 1
h323-ivr-in                     = Tariff:SmartCall Prepaid
h323-ivr-in                     = PortaBilling_CLI:14257891107
h323-ivr-in                     = PortaBilling_CompleteNumber:16046282508
h323-ivr-in                     = DURATION:9840
h323-return-code                = 0
h323-currency                   = USD
h323-credit-time                = 12000
h323-preferred-lang             = en
Jun 05 18:06:13: ...Done.
```

This completes processing for the request.

```
Jun 05 18:09:03: Processing request (BE ver1.245.2.4,pid85499):
NAS-IP-Address                  = '193.28.87.3'
NAS-Port-Name                   = 'ISDN 2:D:23'
NAS-Port-Type                   = 'Async'
User-Name                       = '59153211058'
Called-Station-Id               = '16046282508'
Calling-Station-Id              = '14257891107'
Acct-Status-Type                = 'Stop'
Service-Type                    = 'Login-User'
h323-gw-id                      = 'begemot.'
h323-call-origin                = 'answer'
h323-call-type                  = 'Telephony'
```

Call origin and call type define which call leg you are receiving information about.

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

```
h323-setup-time                 = '04:04:44.226 EEST Tue Jun 6 2006'
h323-connect-time               = '04:04:44.238 EEST Tue Jun 6 2006'
h323-disconnect-time            = '04:09:03.223 EEST Tue Jun 6 2006'
```

The three attributes above define call initiation, call connect and call disconnect time, respectively.

```
h323-disconnect-cause           = '10'
```

This call was disconnected normally (the user hung up).

```
h323-voice-quality              = '0'
h323-conf-id                    = '465F5B2B F42F11DA 8274BDD0 75CFFB2D'
Acct-Session-Id                 = '0000063E'
Acct-Input-Octets               = '129836'
Acct-Output-Octets              = '272020'
Acct-Input-Packets              = '7387'
Acct-Output-Packets             = '8398'
Acct-Session-Time               = '259'
Acct-Delay-Time                 = '0'
h323-incoming-conf-id           = '465F5B2B F42F11DA 8274BDD0 75CFFB2D'
subscriber                      = 'RegularLine'
gw-rxd-cdn                      = 'ton:0,npi:0,#:4041234567'
calling-party-category          = '9'
transmission-medium-req         = '0'
h323-ivr-out                    = 'PortaBilling_Session:unlock'
h323-ivr-out                    = 'Tariff:Unknown'
release-source                  = '4'
gw-rxd-cgn                      = 'ton:0,npi:0,pi:1,si:0,#:14257891107'
gw-collected-cdn                = '16046282508T'
charged-units                   = '0'
disconnect-text                 = 'normal call clearing (16)'
peer-address                    = '14257891107'
info-type                       = 'speech'
peer-id                         = '710'
peer-if-index                   = '218'
logical-if-index                = '126'
acom-level                      = '20'
coder-type-rate                 = 'g729br8'
noise-level                     = '4294967237'
voice-tx-duration               = '136050 ms'
tx-duration                     = '154970 ms'
Acct-Authentic                  = 'RADIUS'
NAS-Port                        = '0'
Exec-Program-Log                = 'porta-billing.pl'
Jun 05 18:09:03: h323-conf-id=465F5B2B F42F11DA 8274BDD0 75CFFB2D/4, call-id=
Jun 05 18:09:03: Found a call in cache with such id
Jun 05 18:09:03: Copying access CLD '4041234567' into request's
PortaBilling_Original_CLD attribute
Jun 05 18:09:03: Copied account: 59153211058[96,debit,balance=9.7] of customer
SmartCall SRL [20,balance=0.00000,limit=none] from '193.28.87.3' into the
current request
Jun 05 18:09:03: PrepareNexecute 'GetActiveLegIdByAcct'
Jun 05 18:09:03: PrepareNexecute 'DeleteActiveLeg'
Jun 05 18:09:03: Force unlock requested by NAS
Jun 05 18:09:03: Scheduling 59153211058 for logout, call lifetime reduced to 15
```

For the answer/telephony call leg, the account (debit card) session is unlocked, since the customer hung up the incoming session; thus there will be no more outgoing calls.

```
Jun 05 18:09:03: Set lifetime with 15s to Mon Jun  5 18:09:18 2006
Jun 05 18:09:03: Looking up vendor/connection
Jun 05 18:09:03: Trying to match connection for call
Jun 05 18:09:03: Looking for a connection Telephony/answer
```

Checking for a PSTN from Vendor connection.

```
Jun 05 18:09:03: Telephony, matching by the node IP '193.28.87.3', port 'ISDN
2:D:23' and CLD '4041234567'
Jun 05 18:09:03: Unknown node IP or no telephony connections for this node
Jun 05 18:09:03: Connection to vendor not found
Jun 05 18:09:03: No connection from vendor
```

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

```
Jun 05 18:09:03: Accounting response
Jun 05 18:09:03: ...Done.
```
This completes processing for the request.

```
Jun 05 18:09:03: Processing request (BE ver1.245.2.4,pid85499):
NAS-IP-Address                  = '193.28.87.3'
User-Name                       = '59153211058'
Called-Station-Id               = '16046282508'
Calling-Station-Id              = '14257891107'
Acct-Status-Type                = 'Stop'
Service-Type                    = 'Login-User'
h323-gw-id                      = 'begemot.'
h323-call-origin                = 'originate'
h323-call-type                  = 'VoIP'
h323-setup-time                 = '04:06:19.533 EEST Tue Jun 6 2006'
h323-connect-time               = '04:06:24.481 EEST Tue Jun 6 2006'
h323-disconnect-time            = '04:09:03.211 EEST Tue Jun 6 2006'
h323-disconnect-cause           = '10'
h323-voice-quality              = '16'
h323-conf-id                    = '465F5B2B F42F11DA 8274BDD0 75CFFB2D'
call-id                         = '7F2FD63F-F42F11DA-8277BDD0-
75CFFB2D@193.28.87.3'
Acct-Session-Id                 = '00000640'
Acct-Input-Octets               = '158500'
Acct-Output-Octets              = '129836'
Acct-Input-Packets              = '7925'
Acct-Output-Packets             = '7387'
Acct-Session-Time               = '159'
Acct-Delay-Time                 = '0'
h323-incoming-conf-id           = '465F5B2B F42F11DA 8274BDD0 75CFFB2D'
subscriber                      = 'RegularLine'
session-protocol                = 'sipv2'
gw-rxd-cdn                      = 'ton:0,npi:0,#:444444444'
h323-ivr-out                    = 'PortaBilling_Original_CLD:444444444'
h323-ivr-out                    = 'PortaBilling_Seed:10649791024'
h323-ivr-out                    = 'PortaBilling_Session:unlock'
h323-remote-address             = '70.68.128.186'
release-source                  = '4'
remote-media-address            = '70.68.128.186'
gw-rxd-cgn                      = 'ton:0,npi:0,pi:1,si:0,#:14257891107'
gw-collected-cdn                = '16046282508T'
gw-final-xlated-cdn             = 'ton:0,npi:0,#:16046282508'
gw-final-xlated-cgn             = 'ton:0,npi:0,pi:1,si:0,#:14257891107'
charged-units                   = '0'
disconnect-text                 = 'normal call clearing (16)'
peer-address                    = '16046282508'
info-type                       = 'speech'
peer-id                         = '910'
peer-if-index                   = '225'
logical-if-index                = '0'
codec-bytes                     = '20'
coder-type-rate                 = 'g729br8'
ontime-rv-playout               = '154850'
remote-udp-port                 = '5060'
remote-media-udp-port           = '35422'
vad-enable                      = 'disable'
receive-delay                   = '57 ms'
round-trip-delay                = '364 ms'
hiwater-playout-delay           = '97 ms'
lowater-playout-delay           = '57 ms'
gapfill-with-interpolation      = '0 ms'
gapfill-with-prediction         = '610 ms'
gapfill-with-redundancy         = '0 ms'
```

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

```
gapfill-with-silence            = '20 ms'
early-packets                   = '14'
late-packets                    = '23'
lost-packets                    = '2'
Acct-Authentic                  = 'RADIUS'
Exec-Program-Log                = 'porta-billing.pl'
Jun 05 18:09:03: h323-conf-id=465F5B2B F42F11DA 8274BDD0 75CFFB2D/4, call-
id=7F2FD63F-F42F11DA-8277BDD0-75CFFB2D@193.28.87.3/4
Jun 05 18:09:03: Found a call in cache with such id
Jun 05 18:09:03: Copied account: 59153211058[96,debit,balance=10.00000] of
customer SmartCall SRL [20,balance=0.00000,limit=none] from '193.28.87.3' into
the current request
Jun 05 18:09:03: PrepareNexecute 'GetActiveLegIdByAcct'
Jun 05 18:09:03: PrepareNexecute 'DeleteActiveLeg'
Jun 05 18:09:03: Force unlock requested by NAS
Jun 05 18:09:03: Scheduling 59153211058 for logout, call lifetime reduced to 15
Jun 05 18:09:03: Logging out account '59153211058'(96) from '465F5B2B F42F11DA
8274BDD0 75CFFB2D'
Jun 05 18:09:03: Set lifetime with 15s to Mon Jun  5 18:09:18 2006
Jun 05 18:09:03: Looking up vendor/connection
Jun 05 18:09:03: Trying to match connection for call
Jun 05 18:09:03: Looking for a connection VoIP/originate
Jun 05 18:09:03: Outgoing VoIP, matching by the remote IP address
'70.68.128.186' (env 4)
Jun 05 18:09:03: Found connection 3 'X-Telecom Termination' to vendor 'X-
Telecom'
```

Connection found, so the call should be billed.

```
Jun 05 18:09:03: Found vendor/connection
Jun 05 18:09:03: Charging call ...
Jun 05 18:09:03: Checked 2006-06-06 03:06:24 Europe/Prague against 'hr{21-7}
wd{mo-fr }, wd{sa su }': 1
Jun 05 18:09:03: Start of call is peak level 1
Jun 05 18:09:03: End of call is peak level 1
```

Verifying whether peak or off-peak rate should be applied.

```
Jun 05 18:09:03: Can reuse the already initialized charge.
Jun 05 18:09:03: Calculating account's charge by tariff 'SmartCall Prepaid'
Jun 05 18:09:03: Call to '16046282508' with duration 159 seconds will be
charged for 180 seconds and cost is 0.3 (0.1+3x60x0.05+20%) by rate 93 using
10649831771 as seed
```

The account charge is calculated; note that, in addition to normal per-minute charges, a connection fee and a post-call surcharge have been applied.

```
Jun 05 18:09:03: Setting up a new charge with tariff 'Termination to X-Telecom'
...
Jun 05 18:09:03: Using peak rate, since no off-peak is defined
Jun 05 18:09:03: PrepareNexecute 'GetPricePerDestination*'
Jun 05 18:09:03: Calculating vendor's charge by tariff 'Termination to X-
Telecom
```

Now your termination costs to the vendor are calculated.

```
Jun 05 18:09:03: Call to '16046282508' with duration 159 seconds will be
charged for 162 seconds and cost is 0.064 (1x30x0.02+22x6x0.02) by rate 92
using 10649831771 as seed
Jun 05 18:09:03: Charging account for the call
Jun 05 18:09:03: Inserting CDR
Jun 05 18:09:03: PrepareNexecute 'InsertAccountCDR'
Jun 05 18:09:03: Charging debit account 59153211058 0.3
Jun 05 18:09:03: PrepareNexecute 'UpdateDebitAccountBalance'
```

The CDR is inserted and the account's balance is modified.

```
Jun 05 18:09:03: Debit account of retail customer, bill only the account
```

Since this is a debit account, the customer's balance is not affected.

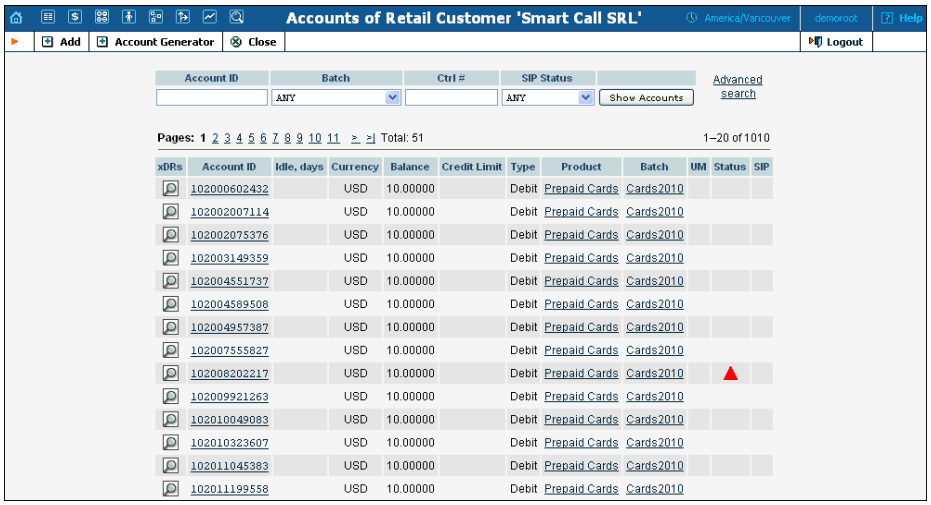
```
Jun 05 18:09:03: Charging vendor for the call
Jun 05 18:09:03: Charging vendor 3 'X-Telecom' 0.064
Jun 05 18:09:03: Inserting CDR
Jun 05 18:09:03: PrepareNexecute 'InsertVendorCDR'
```

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

```
Jun 05 18:09:03: PrepareNexecute 'UpdateVendorBalance'
```
The CDR is inserted and the vendor's balance is modified.
```
Jun 05 18:09:03: Accounting response
Jun 05 18:09:03: ...Done.
```

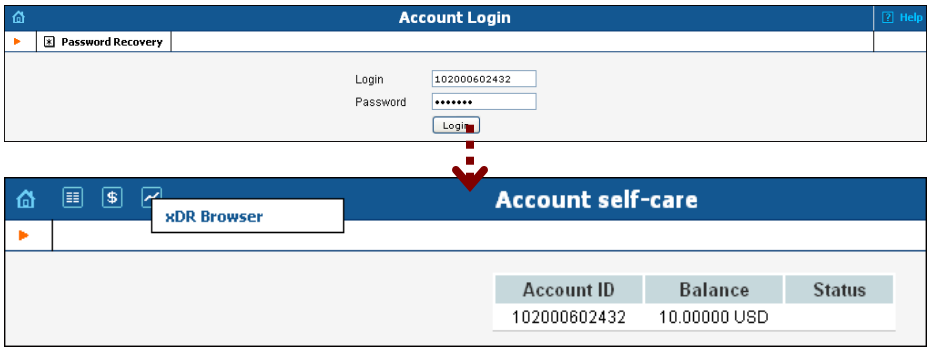
Verify Call History for Account

To view the xDR of an account, go to Customers, select the Customer owning the accounts, and click on the Accounts icon; or, alternatively, select **Account Info** in the Help Desk section of the Admin-Index page.

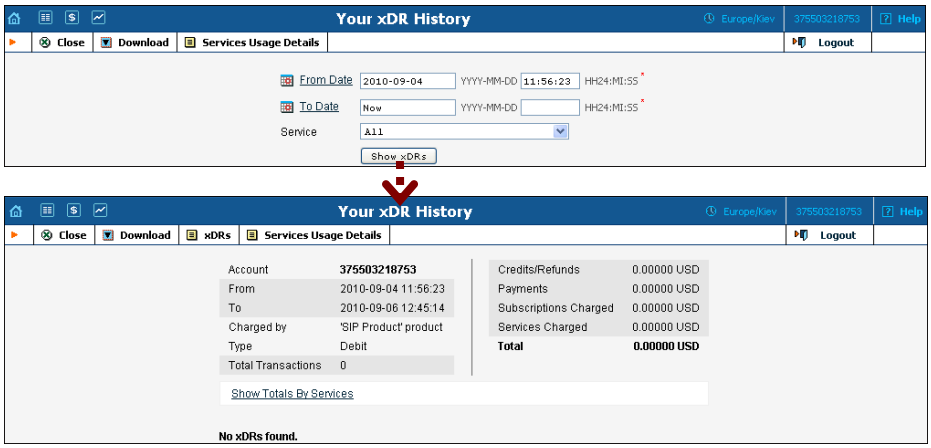


You can also go to the account self-care page (accessible via the **Accounts** menu item in the **Home** popup menu). The only difference is that account's owner does not have the option of seeing incomplete (failed) calls when using the self-care pages.

Login with the account's web access login and password. After that you will be able to see the account's dashboard interface with functional drop-down menus upper left. On the **Statistics** menu, click **xDR Browser**.



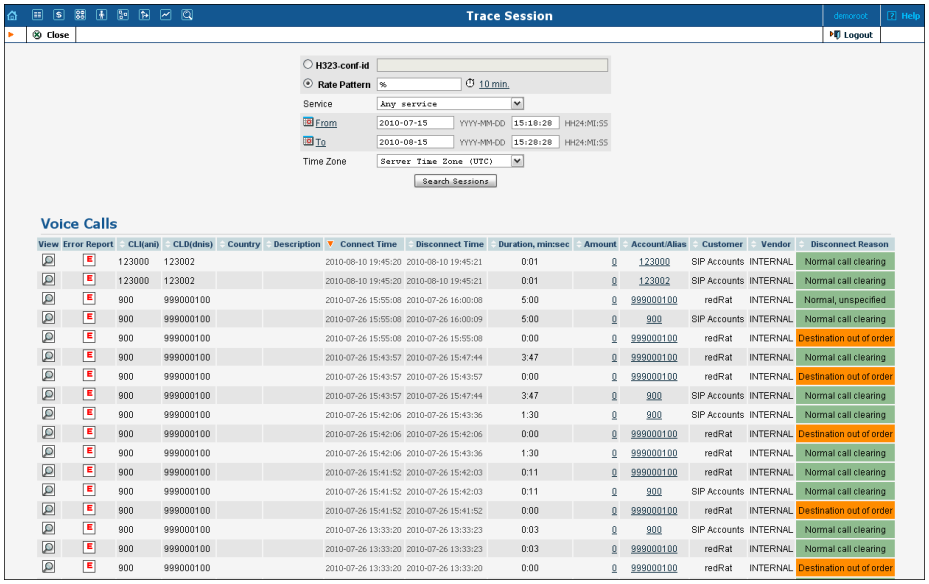
© 2000-2011 PortaOne, Inc. All rights Reserved. www.portaone.com



Choose the date range for which you want to see a list of calls, and click **Show xDRs.** In the results table you will see call charges and other fees, such as maintenance fees or refunds (if any). The report can be also downloaded by clicking the **Download** icon.

Check Call History

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



- 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 the h323-conf-id here; otherwise leave this empty.

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

  - **Rate Pattern** – The phone number you are looking for or a destination pattern (first digits and a percent sign, for example **420%**).
  - **From, To Date –** The date range.
- Click **Search Sessions**.

The advantage of this method is that you can see all call attempts, including unsuccessful calls, with disconnect reasons displayed. Also, you can see the billing history for a call.

For the administrator's convenience, account xDRs can be also reached from the Account Management window by clicking the **xDRs** icon for an account.

Common Symptoms/Problems

Common Symptom / Problem	Description / Solution
Radius debug on GW shows requests, but PortaBilling Radius debug does not.	There are several reasons why communication may be unsuccessful: 1. Wrong radius server IP configuration in GW. Verify and correct. 2. Wrong radius port(s) configuration in GW. Verify and correct. 3. IP network problems. Verify that your network is configured correctly, including cables and firewalls.
PortaBilling Radius debug shows requests arriving but says "request from unknown client".	Verify and correct Node IP address in PortaBilling. Consider any propagation delay, which may require 15 minutes.
Arriving PortaBilling Radius debug showing requests displays a "failed to decrypt" message.	Verify if PortaBilling Node Radius key configuration is the same as GW radius key (shared secret).
PortaBilling replies with authentication reject.	Verify product accessibility list and account status.
Debug session looks normal but GW hangs up (or says nothing) after receiving authentication confirmation.	The most common reason for this is the lack of a particular prompt on IVR prompt servers. This situation may occur only for specific monetary or time values.
Account balance not decreased after successful call, and call does not appear in call history.	Verify that the GW is transmitting stop accounting records. Set `accountingtype 2` for Quintum or `gw-accounting h323 vsa` for Cisco.

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

Advanced Prepaid Service with Roaming

Deploying prepaid card products with roaming is easy with PortaBilling. Just install additional gateways in different geographical locations and enter the corresponding nodes in PortaBilling. Then create tariffs which reflect your service charges for different geographical locations, and extend the product accessibility list using new nodes and tariffs.

Provisioning Prepaid Accounts

PortaBilling account management is based on batches and control numbers. A batch is a named set of accounts. By giving descriptive names to batches you can keep your accounts well organized. (Examples of batch names: "FLEX CARD 10$", "EASY CALL 5$".) Accounts in each batch are automatically numbered by control numbers, starting with one. If you are generating more accounts for an existing batch, PortaBilling will continue control number assignment from the next available number in the sequence.

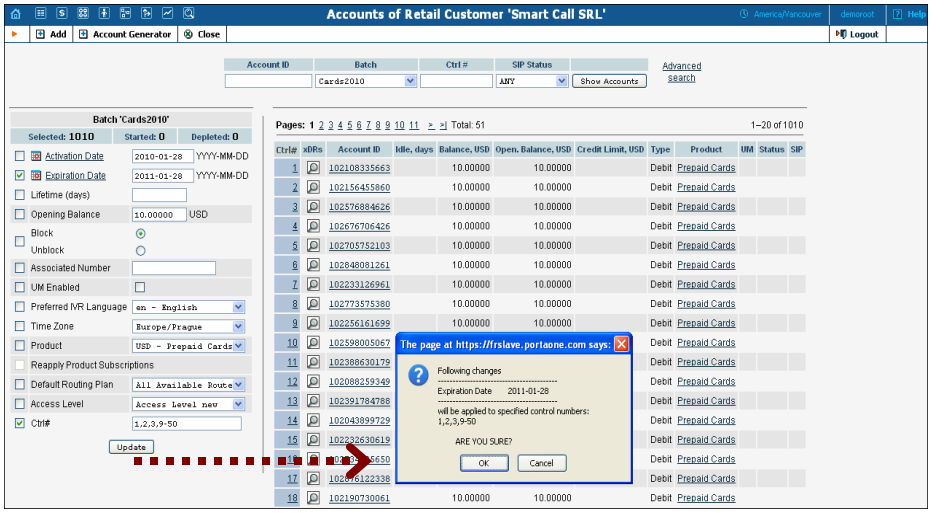
Available account management options:

- Single account
- Whole batch
- batch + list of control numbers
- batch + range of control numbers

It's a good idea to print the batch and control number on the prepaid card and keep a card distribution register, so that later you can block some specific cards in case of fraud, or give extra promotional credit to some customers. You can also distribute all of your cards as blocked, so that the dealer will call your support and request card activation only once the card is sold to a customer. Of course, the dealer should not be able to see the PIN at any time – this is why we need an alternate way of identifying a card, i.e. by batch and control number.

In the **Participants** section of Admin-Index, choose **Customers**, click the View accounts icon next to the customer, and then select the batch name from the select menu. Or, alternatively, you can go to **Account info** in the main menu and choose the customer and batch you want to work with. You should then see a batch operation screen similar to the one below:

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



1. On the left side of the screen, click the checkbox next to the fields which you would like to update, and enter the new values.
2. You can update a whole batch, or only update individual accounts, by entering their control number (or control number range) in the **Ctrl#** field.

TIP: If you click on the control number (leftmost column), it will be automatically inserted into the **Ctrl#** field.

3. Let us assume you would like to unblock accounts and add $5 to their balance. You should then click the checkboxes next to **Opening Balance** and **Block/Unblock**, enter the balance adjustment value, and pick the new account status.
4. Click the **Update** button.
5. Confirm **OK** in the popup window.

NOTE: Balance adjustment will be reflected in call history as a separate line.

PortaOne Calling Card Application Special Features

Here is a list of features not available in Cisco's standard calling card application (`app_debitcard.2.0.2.8 a.tcl`), including information on how they can be configured in the PortaOne IVR.

Credit Account Support

PortaOne's IVR application can work with both debit and credit accounts. For credit accounts, the amount of available funds, computed by PortaBilling as `(credit_limit - balance)`, is played. So for an

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

account with a credit limit of $100 and a balance of $75, the amount of available funds is $25. If both an account and a customer have been assigned a credit limit, then the available funds for the account and customer will be computed according to this same formula, with the smaller amount returned to the IVR.

ANI Authentication

PortaOne's IVR application can perform authentication using the ANI number of an incoming call leg. If authentication is successful, the IVR does not ask for a PIN, and starts with the balance announcement.

Configuration syntax:
```
call application voice <app-name> ani-authentication <yes|no>
```

Example:
```
call application voice porta ani-authentication yes
```

Normally, if ANI authentication fails the IVR will prompt the user to enter a PIN number. However, this may be disabled so that the script is then used to provide ANI-only service.

Configuration syntax:
```
call application voice <app-name> card-authentication <yes|no>
```

Example:
```
call application voice porta card-authentication no
```

Number Translation and Abbreviated Dialing Expansion

As a part of the authorization process, the IVR application receives a translated destination number from PortaBilling and then initiates an outgoing call to this number (instead of the one originally dialed by the customer). This permits the following:

- Applying various number translation schemes on the billing side, e.g. the same access number and the same IVR application can be used for customers with different dialing habits. Customer A may dial the phone number as 0114202123456, while customer B dials it as 004202123456. PortaBilling will apply the respective customer's translation rules and return the normalized number 4202123456. This significantly simplifies configuration of outgoing dial-peers on your Cisco gateway, since outgoing calls are always in the same format.
- Translating short dialed numbers (e.g. 101) into complete phone numbers according to a list of dialing abbreviations defined for the customer.

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

Multi-Currency Support

The default Cisco application will always play only one currency, e.g. that associated with the specific language. You can change the TTS module configuration so that "dollars" will be played for English and "crowns" for Czech, but you cannot allow customers with balances in dollars and pounds to access the same gateway and work with the English IVR, as some of them are bound to hear the wrong currency name.
PortaOne's IVR application, in tandem with PortaOne TTS modules, can dynamically switch the currency announced based on the currency code (`h323-currency`) for a particular account supplied by the billing. This allows you to use the same access number for products in different currencies.

Configuration syntax:
```
call application voice <app-name> multi-currency <yes|no>
```
(the default setting is no)

Example:
```
call application voice porta multi-currency yes
```

Balance Announcement Suppression

This allows you to disable announcement of an account's current balance, and instead proceed to prompt for the destination number.

Configuration syntax:
```
call application voice <app-name> balance-suppression <yes|no>
```

Example:
```
call application voice porta balance-suppression yes
```

Time Announcement Suppression

This allows you to disable announcement of the maximum allowed call duration, and instead just start connecting the call.

Configuration syntax:
```
call application voice <app-name> time-suppression <yes|no>
```

Example:
```
call application voice porta time-suppression yes
```

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

Last Number Redial

The customer may redial the last number by simply pressing the star key (*) when beginning to enter the destination number.

NOTE: Once you have already entered some digits of the destination number, the star key may be used to reset the current entry and start entering the phone number from the beginning.

Configuration syntax:
```
call application voice <app-name> redial-enable <yes|no>
```

Example:
```
call application voice porta redial-enable yes
```

Disallow Calls When Balance Is Too Low

If an account's current balance is lower than the breakage threshold specified in the product configuration, the IVR may disable outgoing calls. There are two ways to block outgoing calls:

- Play an announcement and disconnect the incoming call leg.
- Allow the user to dial the destination number, but do not actually initiate the outgoing call, giving just a fast busy signal instead.

Configuration syntax:
```
call application voice <app-name> check-low-balance
<disconnect|nocalls|no>
```

Example:
```
call application voice porta check-low-balance nocalls
```

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

2. Prepaid Calling Cards (Using PortaUM)

Sometimes an incoming call for a prepaid card service will arrive to your network via IP. For instance, say you bought an access number in a country where you do not own any network infrastructure; so instead of using E1 or T1 lines, a telco in that country will forward calls to you using SIP. In this case using a Cisco GW may be cumbersome, since you first have to convert the IP call to PSTN and then send it back via IP. Instead, you can run the built-in prepaid application on PortaUM which, combined with a PSTN access number delivered directly to PortaSIP via IP, allows you to offer a purely IP-based solution for prepaid calling card services.

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

Setting up Prepaid IVR on PortaUM

Before you proceed with the instructions, provided further in this chapter – please set up UM services as per the instructions, provided in the *Setting up and Using UM Services* chapter of the **PortaSwitch Handbook: Unified Communications**, and verify that they are working properly.

Checklist

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

Operation	Done
General configuration	
General configuration has already been performed according to the instructions in the *Prepaid Calling Cards (Using a Gateway)* chapter.	[ ]
Network configuration	
The PortaUM node has been created and unified messaging service has been provided according to the instructions in the *PortaSwitch Handbook: Residential VoIP and IP Centrex services*.	[ ]
Configure the vendor that provides the IVR access number.	[ ]
Configure a "VoIP from Vendor" connection to that vendor that provides the IVR access number.	[ ]
Define your access number and associate the prepaid calling application with it.	[ ]
Configure the parameters of the prepaid card application.	[ ]
Rating configuration	
Perform the standard configuration for the prepaid services as described in the *Prepaid Calling Cards (Using a Gateway)* chapter.	[ ]
In the accessibility list (of the prepaid product) include an entry that will contain your PortaUM node and tariff containing the prepaid calling rates.	[ ]

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

General PortaBilling Configuration

You should perform the billing configuration according to the instructions in the *Prepaid Calling Cards (Using a Gateway)* earlier in this document, the only exception being that you will use your PortaUM node instead of a gateway.

Configure Access from PSTN

Since the main purpose of this service is to give your customers access to your prepaid application from PSTN (by dialing your access number from their landline or mobile phone), your have to ensure that calls to that access number are delivered properly to your network and then handed over to PortaUM.

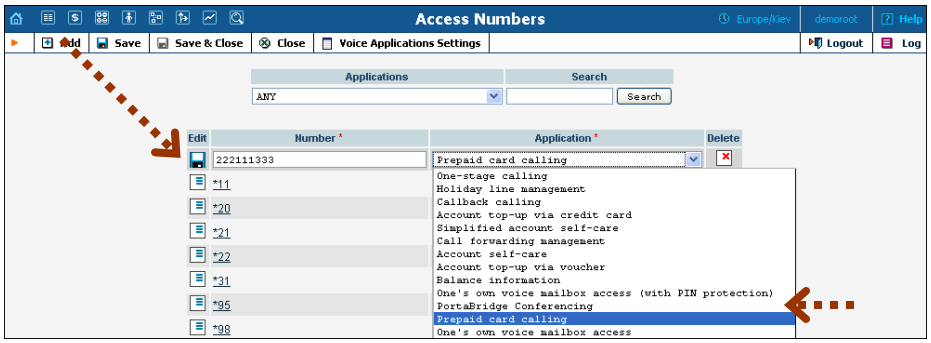
Please refer to the instructions in the *Incoming Calls from PSTN* chapter of the **PortaSwitch Handbook: Residential VoIP and IP Centrex Services** for complete details about how to set up the vendor and the connection.

Configure the IVR Access Number

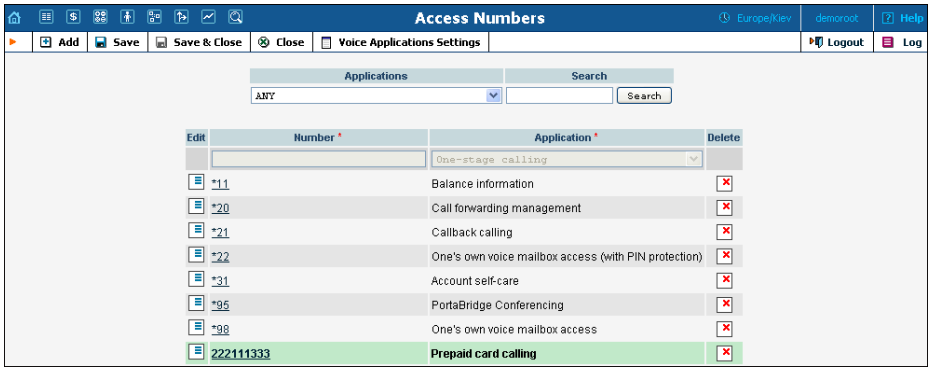
First you need to define that when a call is made to the access number for you prepaid calling card service, it will be routed to PortaUM and the corresponding IVR application will be launched then.

Set up the access number

Set up the access number for the virtual PortaBilling environment where you use this application



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

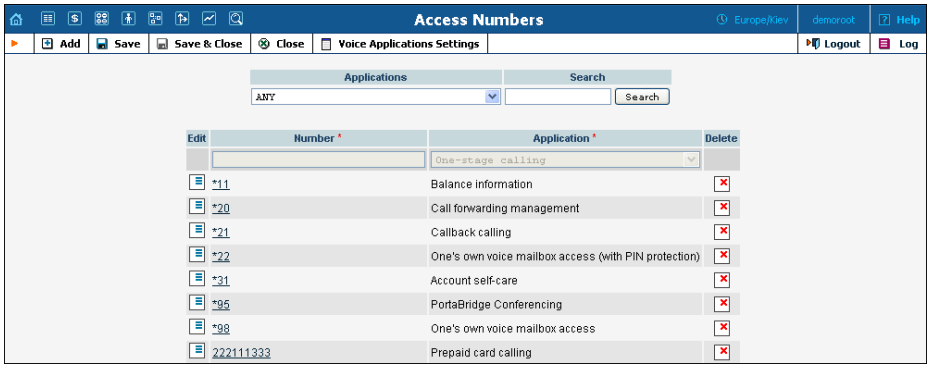


1. In the **Routing** section of Admin-Index, choose **Access Numbers**.
2. Click on the **Add** button.
3. In the **Number** field, enter your prepaid calling card access number. In the **Application** drop-down box, select **Prepaid card calling.**
4. Click **Save**.

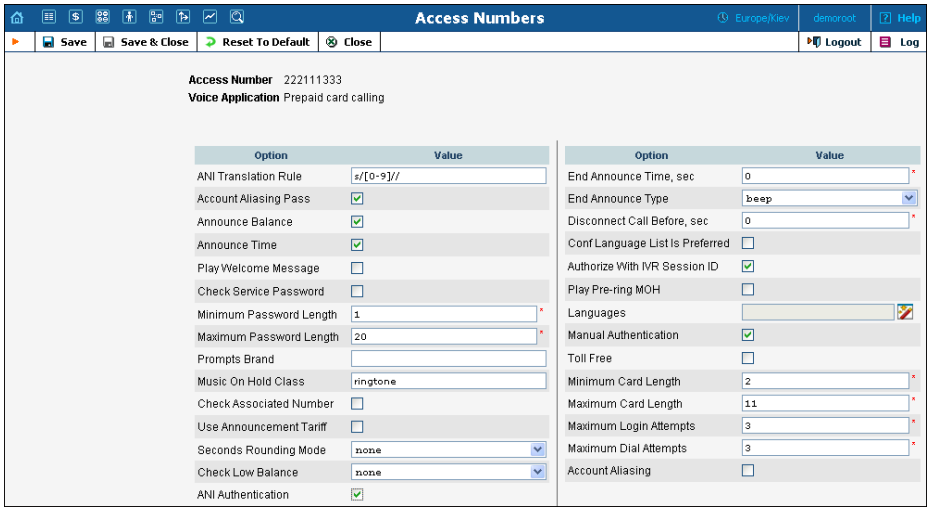
Of course, you can create multiple entities in order to register the prepaid application for more than one access number. This allows you to customize the application parameters (such as IVR languages or whether ANI authorization is performed), according to your requirements.

Customize the parameters of the IVR application

You may further customize the parameters that affect the IVR flow and enable features of your prepaid card application.



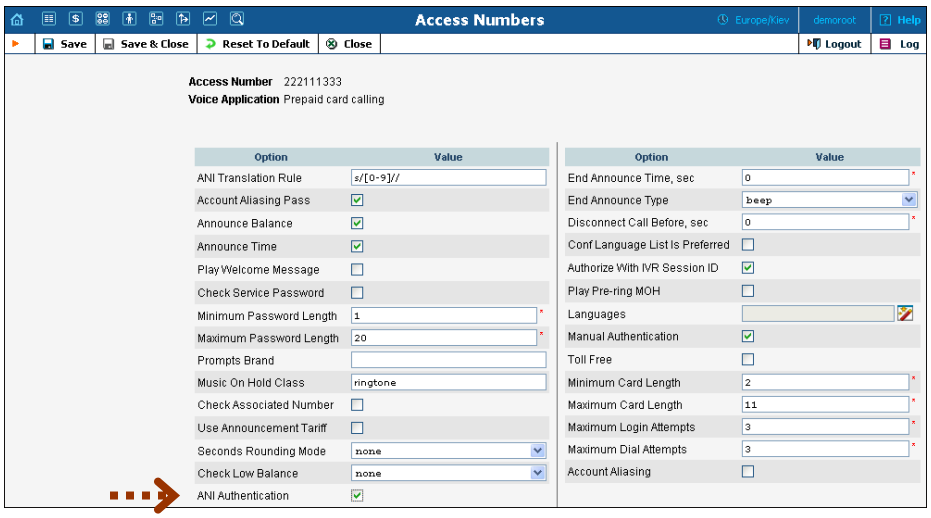
© 2000-2011 PortaOne, Inc. All rights Reserved. www.portaone.com



1. In the **Routing** section of Admin-Index, choose **Access Numbers**.
2. Click on the access number to access the parameters of the prepaid card application that is launched when a customer calls this particular access number.
3. Change the parameters.
4. Click **Save&Close**.

ANI authentication (PINless dialing)

In order to support PIN-less dialing, the prepaid application should have the ANI Authentication feature enabled. Then if the ANI number of the incoming call matches the ID of an account, this account is the one placing the call (and will be charged when the call is completed). The customer will immediately be asked to enter a destination, skipping the PIN entry step.



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

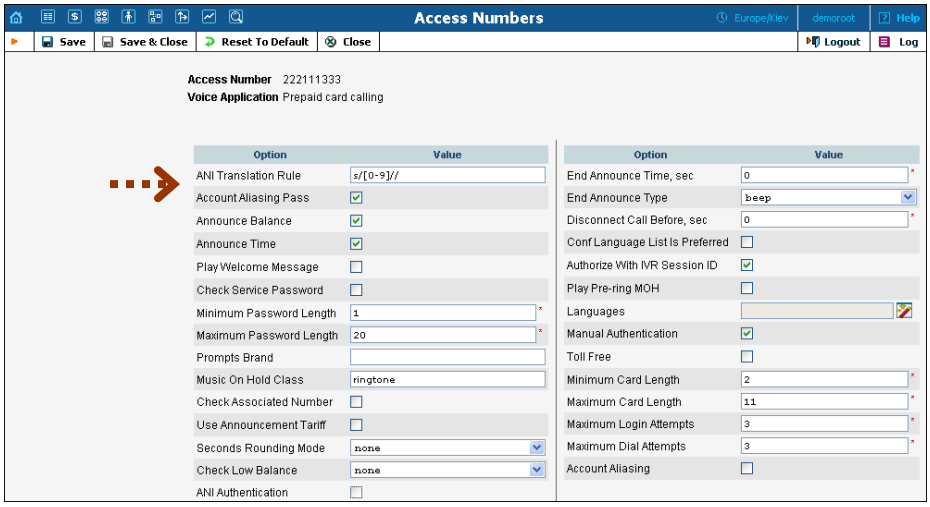
When you provide both residential VoIP and PINless dialing services, you will have two types of accounts in the system, and the account ID will contain the phone number:

- "Normal" SIP accounts. When someone in your network dials the number, the system will recognize that the call should be delivered to one of the IP phones connected to PortaSwitch – and will never be sent out to the PSTN.
- ANI accounts. The situation here is exactly the opposite: when someone in your network dials this number, the call will be sent out to the PSTN.

In order to avoid confusion between these two types of accounts (which may result in calls being routed improperly), it is recommended that you adopt a naming convention that allows both your administrators and the PortaBilling routing engine to clearly distinguish between ANI accounts and regular SIP accounts.

One suggested naming convention that does all of this uses the prefix 'ani' for your ANI authentication accounts (naturally, you can choose a different prefix as well). For example, if you would like to allow your customer to use his cell phone with ANI 16041112222 for ANI authentication, you would create the account ani16041112222 for this customer.

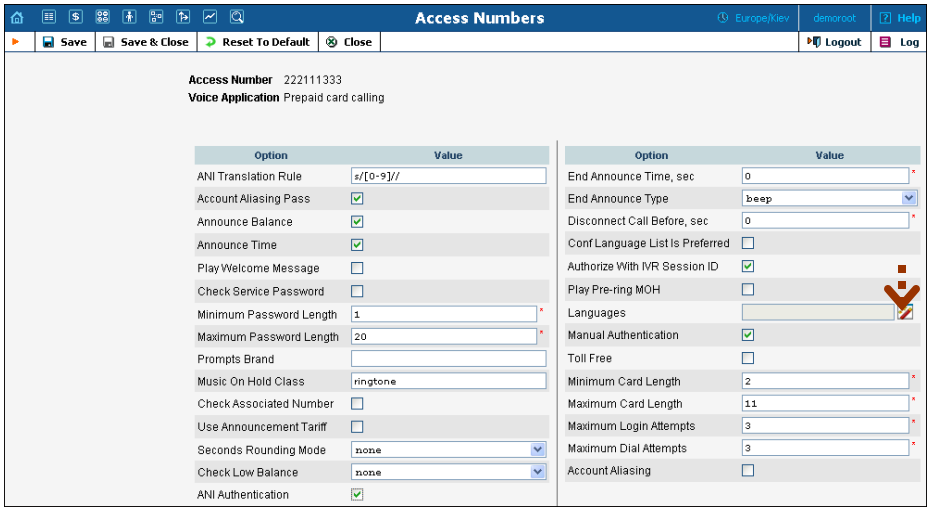
You can also set up the ANI translation rule in the **ANI Translation Rule** field. This field contains a regular expression – please refer to the **PortaBiling Web Reference** for more details and examples on composing regular expressions.

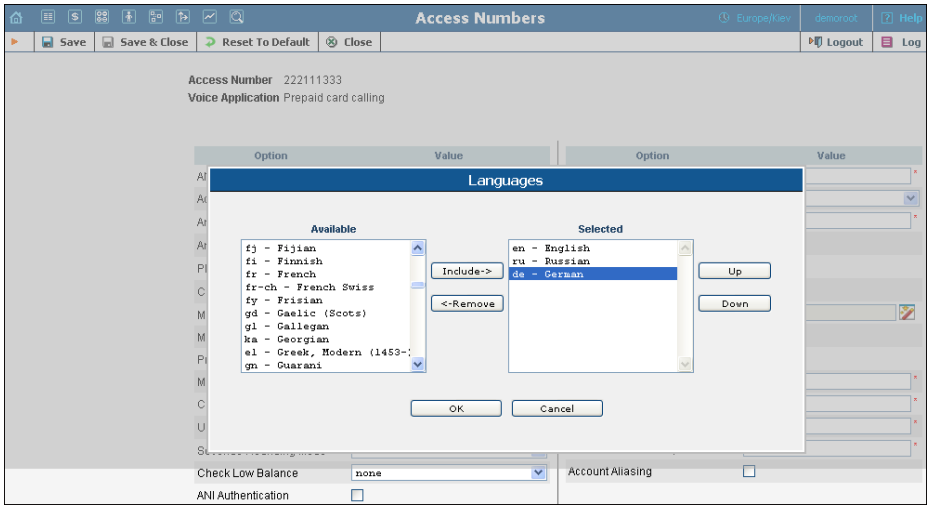


© 2000-2011 PortaOne, Inc. All rights Reserved. www.portaone.com

IVR languages

Configure in which languages the IVR will communicate with the customer.





1. Click on icon near the **Languages** field to launch the window for the language selection.
2. In the **Available** languages box, select the language (or several languages) you wish to use for voice prompts. In this case, the IVR's first prompt will be the language selection prompt "Please press 1 for English, 2 for Russian, 3 for German, etc." To choose all languages at once, select the line **All available** on top. Then click the **Include->** button. The selected languages will appear in the **Selected** box. You can also change the language order using **Up** and **Down** buttons.
3. Press **Ok** to save finalize the language selection.

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

Prepaid Card IVR Configuration Parameters

The following parameters are available to further customize the behavior of the prepaid calling card application.

Parameter	Description
Maximum Card Length	Maximum length of card number; default: 11.
Minimum Card Length	Minimum length of card number; default: 11.
ANI Authentication	Is ANI authentication enabled? Default: no.
Manual Authentication	Is manual authentication enabled? Default: yes.
Maximum Login Attempts	Maximum number of attempts to enter a card number; default: 3.
Maximum Dial Attempts	Maximum number of dial attempts within one session; default: 3.
Toll Free	If this check-box is unchecked, the prepaid application will exit immediately if the account has insufficient funds. Default: unchecked.
Announce Balance	Should card balance be announced? Default: yes
Announce Time	Should credit time be announced? Default: yes
Play Welcome Message	Should welcome prompt be played? Default: no
End Announce Type	Choose the type of "time left" warning: • beep – play "beep" sound • say – say the remaining time
End Announce Time, sec	Remaining call time before "time left" warning is played.
Check Low Balance	When account's balance is less than product breakage and disconnect is defined, it plays the "insufficient funds" voice prompt and disconnects the call.
Conf Language List Is Preferred	If the box is checked, then the conf language list has a higher preference than the account's preferred language.
Authorize With IVR Session ID	By default PortaUM sends all authorization requests with the original conf-id. Also PortaUM can generate a new h323-conf-id for every authorization request. This allows PortaSIP to recover individual routing info.
Play Pre-ring MOH	Play special ringing MOH after the call is placed and RINGING signaling is not

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

	received.
Prompts Brand	Specifies the directory where custom IVR prompts files are located. PortaUM will look for the prompt files in that folder first and if found – use them, otherwise it will use default files.
Seconds Rounding Mode	This option controls the way the seconds portion of "available time" is announced to the customer: • **none** – there is no routing, so the time as announced including seconds, e.g. "5 minutes and 49 seconds" • **up** – the time is rounded up to the nearest minute, so 5:49 will be announced as "6 minutes."
Use Announcement Tariff	When a customer enters the destination number, the first authorization request will be sent with the "ANNOUNCE+DNIS" access code. A tariff without any "billing tricks" included will be associated with this access code in the accessibility list of the product. Then the second authorization request will be sent, this time containing the actual access code. The user hears the time announced according to the first tariff, but the call is actually authorized and rated according to the second tariff.

Note: There is a helpful tool-tip for each option. Just point your mouse to the desired option to invoke it.

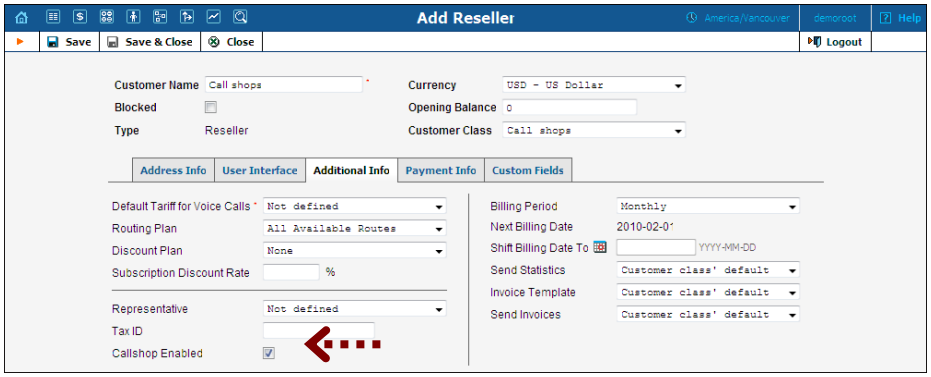
© 2000-2011 PortaOne, Inc. All rights Reserved. www.portaone.com

3. Callshop Services

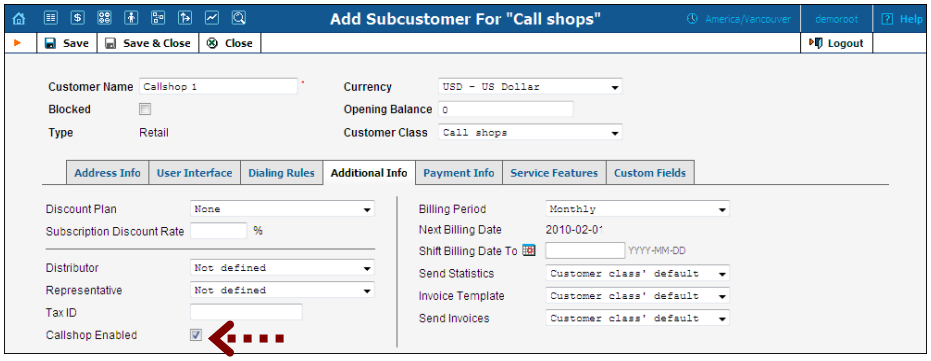
© 2000-2011 PortaOne, Inc. All rights Reserved. www.portaone.com

Callshop Services

The callshop owner is your reseller. He pays you for all outgoing calls, and wants to keep track of calls made by individual accounts (phone booths) so that he can charge his customers. The only difficulty here is that many different customers will use the same phone booth (account) during the day, and each of them must receive his own bill.

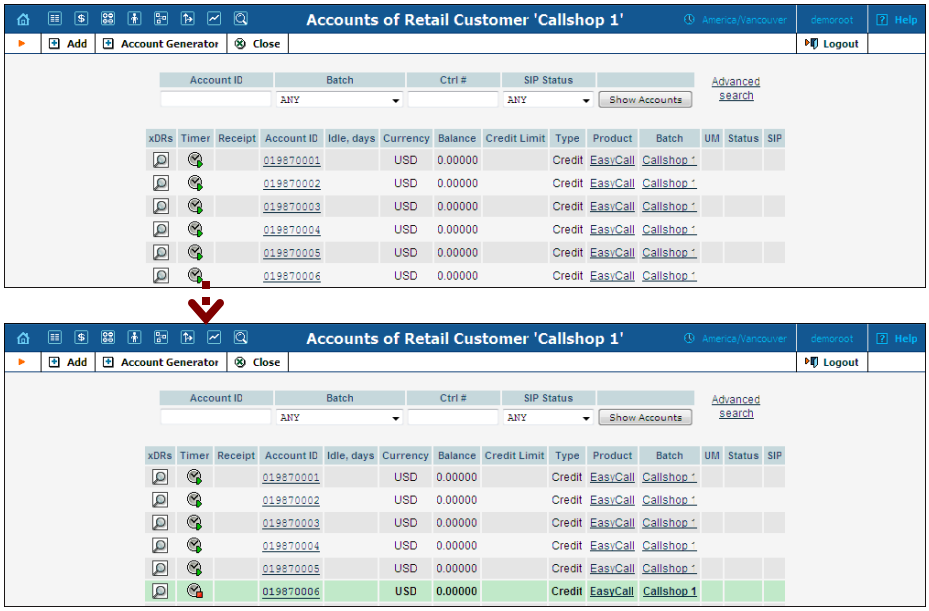


First of all, make sure that the callshop functionality is enabled for this reseller (**Callshop enabled** checkbox on the **Additional Info** tab in customer info). After that, the administrator or reseller himself can turn on/off callshop functionality for specific subcustomers who represent individual callshops.

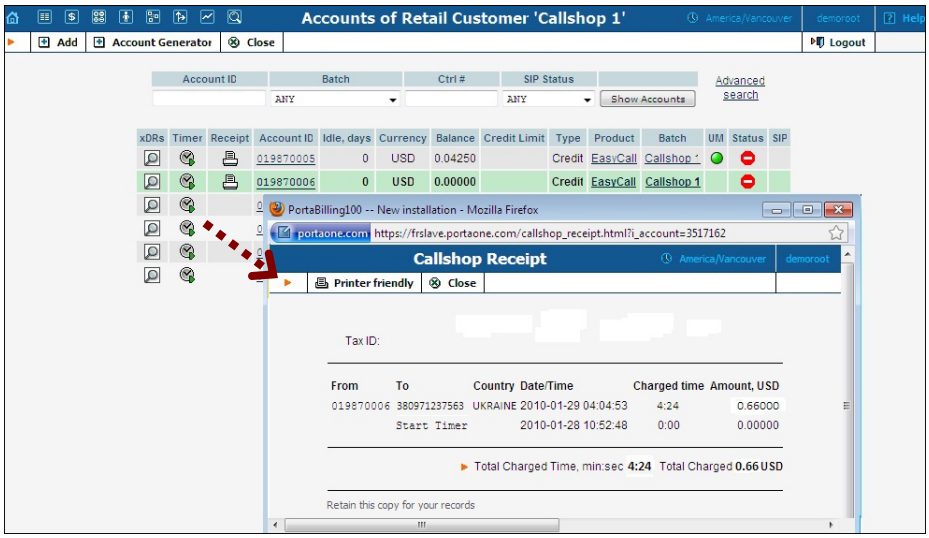


Thus the callshop owner will create an account for each of the phone booths. When a customer enters the booth, the callshop operator will activate the timer (this also unblocks the account).

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



After the customer exits the booth, the callshop operator stops the timer for that booth. This blocks the account so that no one can use the booth unnoticed while the operator is dealing with the previous customer's payment.



Finally, by simply clicking the Receipt button, the operator can obtain a receipt containing a list of all the calls made by the customer and the total amount charged. This receipt can also be easily printed.

If a reseller (callshop owner) has several callshop operators, it is not advisable to give each one of them access to the reseller's self-care interface. Instead, each should be created as a CC Staff account, and should use the CC Staff interface to activate timers and so on.

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

4. Appendices

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

Prepaid Billing Features

Tricky vs. honest charges

Should surcharges affect the time announced to the user? For example, if an account has a $10 balance, and the price per minute is 0.10 but there is a 0.20 connection fee (or 5% post-call surcharge), should the customer hear: "You have 100 minutes"? Should he be allowed call for 100 minutes, or less? PortaBilling® allows calculation of two call durations during call authorization:

- The call duration to be announced to the customer (`h323-credit-time`). This is a default parameter, and historically has been used to limit the maximum call duration as well.
- The actual call duration (when the call should be disconnected – `h323-ivr-in DURATION`).

So the difference between the "honest" and "tricky" charge is that the former affects both values for call duration, while the latter only affects the "actual" call duration. So, in our example above ($10 balance, rate 0.10/min):

- if the fixed charge 0.20 is honest, then the customer will hear "You have 98 minutes", and will be disconnected after 98 minutes.
- if the fixed charge 0.20 is tricky, then the customer will hear "You have 100 minutes", but will still be disconnected after 98 minutes.

You are free to use either honest or tricky charges, depending on how your business model is set up. Please note that it is your responsibility to make a proper disclaimer to customers when using tricky charges.

NOTE: In order to implement this functionality, your gateway / IVR should be able to work with two call duration values. This feature is available in recent releases of the Quintum firmware. For the Cisco platform, you will have to use the PortaOne prepaid IVR TCL script.

Random charges

When using the tricky charges described above, one problem is that customers may still discover that they are being charged over and above the per-minute rate by comparing the amount deducted from their account to the estimated charges. PortaBilling® allows you to make this detection much more difficult, by applying special charges only randomly. As a result, special charges will apply not to all calls, but rather only to some of them, which makes it virtually impossible to "reverse-engineer" your system of charges.

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

In creating a rating formula, you may assign a probability to each surcharge (fixed or relative). This parameter defines the chance of this surcharge being applied, e.g. a probability of 25% percent means that there is a one in four chance of its being applied when calculating the total charged amount for a call, such that, in the final analysis, this surcharge will, on average, be applied to every fourth call. Another example is the random charges configuration shown below:

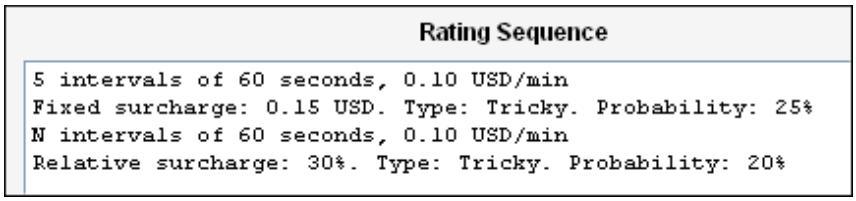


Figure 4-1

Since every random charge is evaluated independently, this formula will produce the following result (an average calculated based on a large number of calls):

- in 60% of calls, no surcharges will be applied at all
- in 5% of calls, both the fixed surcharge and relative surcharges will be applied
- in 15% of calls, the post-call surcharge will be applied
- in 20% of calls, the fixed surcharge will be applied

Random disconnects

Since fees such as the connect or disconnect fee are applied once per call, it is obvious that you will earn more profits on many short calls than on a few long ones. Also, you may not wish to allow your customers to make too long calls, as this occupies incoming phone ports on your gateway. So your goal is to disconnect some calls so that customers will have to redial. If the disconnect occurs at a certain moment in time (e.g. the 20th minute of a conversation), it will be very easy for the end-user to notice. Therefore, the disconnect should be made to appear as if it had happened naturally, that is, randomly.

The random disconnect element in the PortaBilling® rating formula allows you to specify a certain probability according to which calls will be disconnected at a random moment of time during a certain period (for instance, between the 10th and 20th minute). The interval during which the disconnect should occur is called dispersion.

Let's take a look at the example below:

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

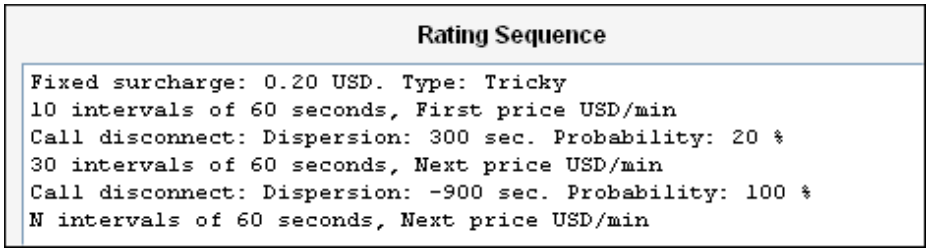


Figure 4-2

There are two call disconnect elements. The first one specifies, with a probability of 20%, that the call should be disconnected within 5 minutes (300 seconds) **after** this element is entered into the formula, i.e. the disconnect will happen sometime between the 10th and 15th minute of the call. The second element specifies that the call will **always** be disconnected (100% probability) 15 minutes (900 seconds) **before** this element is entered into the rating formula (i.e. the dispersion parameter is negative); so the disconnect will occur sometime between the 25th and 40th minute of the call. Thus, when this formula is applied in the actual tariff, the result will be that there are no calls longer than 40 minutes, i.e. every call will be cut off at some random instant between the 25th and 40th minute, while some calls will even be disconnected earlier (between the 10th and 15th minute).

Add duration

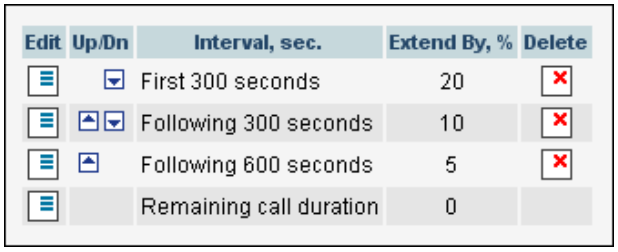
This feature is similar to the "relative surcharge" discussed earlier, but works in a different way. The main disadvantage of post-call surcharges is that the time charged does not correspond to the officially-quoted price per minute.

For instance, if you are using 30-second rounding, a 0.10/min rate and a 10% post-call surcharge, and the customer makes a call for 4 minutes and 52 seconds, he will be charged 10*(30/60)*0.10 + 10% = 0.55. However, on the CDR this will be represented as "charged time: 5:00 minutes, charged amount: 0.55" - which might lead to a dispute, since you have quoted the customer a rate of 0.10/min.

The add duration feature allows you to increase the call duration before any other charges are applied, so it will look as if the call was actually made for the longer duration. Thus, taking the example above, what will happen if we replace the relative surcharge with an add duration of 10%? First of all, the call duration will increase by 10%, becoming 5:21. Then this call will be rated using 30-second intervals, i.e. it will be rated 11*(30/60)*0.10 = 0.55, and the CDR will read: "charged time: 5:30 minutes, charged amount: 0.55" - therefore it will be perfectly in line with your quoted rates.

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

A flexible add duration ratio is possible, since calls can be split into any number of segments and the duration of each segment increased according to a different ratio. For instance, the first 5 minutes could be "stretched" by 20%, the following 5 minutes increased by 10%, and the next 10 minutes increased by 5%, with the remaining call duration unchanged. This allows you to avoid the problem of a 20% increase applied to the entire duration of a long call, which is easily noticeable.



Edit	Up/Dn	Interval, sec.	Extend By, %	Delete
		First 300 seconds	20	
		Following 300 seconds	10	
		Following 600 seconds	5	
		Remaining call duration	0	

This produces the following results:

- A call 4 minutes in duration will be charged as 4:00 + 4:00*20% = 4:48
- A call 6 minutes in duration will be charged as 6:00 + 5:00*20% + 1:00*10% = 6:00 + 1:00 + 0:06 = 7:06
- A call 12 minutes in duration will be charged as 12:00 + 5:00*20% + 5:00*10% + 2:00*5% = 12:00 + 1:00 + 0:30 + 0:06 = 13:36
- A call 30 minutes in duration will be charged as 30:00 + 5:00*20% + 5:00*10% + 10:00*5% = 30:00 + 1:00 + 0:30 + 0:30 = 32:00
- A call 45 minutes in duration will be charged as 45:00 + 5:00*20% + 5:00*10% + 10:00*5% = 45:00 + 1:00 + 0:30 + 0:30 = 47:00

As you can see, the increase mainly affects short calls (or the initial portion of long calls), but does not increase drastically with the total call duration.

Using "billing tricks"

Please note that you are responsible for finding out which call rating features are allowed in your business and providing your customers with the required disclaimer.

Cisco Gateway Configuration Guidelines

Obtain the debitcard script

The default Cisco debitcard application is provided free of charge to all users who have a valid Cisco support contract (CCO). Obtain the latest version of the script (2.0.2.8a). Please note that this script does not support any billing tricks, such as:

- Announced and real call duration

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

- Different rates based on the access number
- Special rates for the account's first call

Please contact PortaOne TCL support at **tcl-support@portaone.com** for assistance in implementing these features in your script.

NOTE: According to the Cisco licensing agreement, PortaOne may not distribute the Cisco debitcard application (neither the original nor a modified version). Please contact your Cisco representative to obtain the script.

Place the debitcard script and all the required prompts on your TFTP server. For your convenience, the TFTP server is already pre-configured in the directory `/tftpboot` on the PortaBilling100 slave server. Do not send a copy of the script to PortaOne!

Basic router configuration

The latest telephony IOS and DSP firmware is highly recommended. Some of the features (e.g. ability to assign routing plans to prepaid card customers) will only function in IOS 12.4 or later. It is also recommended that the hostname be the same as h323-id.

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

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

NTP

NOTE: It is very important to have reliable time services. Also make sure that the time zone abbreviation is one of the standard ones supported by PortaBilling.

```
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>
```

AAA

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

VoIP interface

```
interface <your interface to the world>
 h323-gateway voip interface
 h323-gateway voip h323-id <h323_id>
```

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

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

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

Outgoing SIP server

```
sip-ua
 aaa username proxy-auth
 sip-server dns:<hostname-of-your-PortaSIP-server>
```

Enable gateway functionality

```
gateway
```

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.

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
```

voice-card

controller

voice-port

Depends on your hardware configuration

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

call application voice & dial-peers

```
call application voice russian tftp://…../app_porta_debitcard.tcl
call application voice russian pin-len 0
call application voice russian language 1 en
call application voice russian language 2 ru
call application voice russian set-location ru 0 tftp://…./tcl/prompts/ru/
call application voice russian set-location en 0 tftp://…./tcl/prompts/en/
call application voice czech tftp://…../app_porta_debitcard.tcl
call application voice czech pin-len 0
call application voice czech language 1 en
call application voice czech language 2 cz
call application voice czech set-location cz 0 tftp://……/tcl/prompts/cz/
call application voice czech set-location en 0 tftp://……/tcl/prompts/en/
!
dial-peer voice 201 pots
 application czech
 incoming called-number 201
 port 0:D
!
dial-peer voice 202 pots
 application russian
 incoming called-number 202
 port 0:D
!
dial-peer voice 60 voip
 destination-pattern .T
 session protocol sipv2
 session target sip-server
!
```

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

Quintum Configuration Guidelines

To configure RADIUS on the Quintum Tenor (first generation), execute the following commands:

```
# config
config# radius
```

To set the authentication port:

```
config radius# authenticationport p 1812
```

To set the accounting port:

```
config radius# accountingport p 1813
```

To set the IP address (replace the IP address with that of the PB-100 master server):

```
config radius# host p 192.168.100.211
```

You must set accounting type to 2 (one accounting record per call leg):

```
config radius# accountingtype 2
```

For more information on these commands, please refer to Section IV: Command Line Reference in the Tenor user manual.

To configure RADIUS on the Quintum CMS gateway, execute the following commands in admin mode:

```
# config
config# ri 1
```

To set the authentication port:

```
config-RadiusInfo-1# set pap 1812
```

To set the accounting port:

```
config-RadiusInfo-1# set pacp 1813
```

To set the IP address (replace the IP address with that of the PB-100 master server):

```
config-RadiusInfo-1# set psipa 192.168.100.211
```

Set accounting type to 2 (one accounting record per call leg):

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

```
config-RadiusInfo-1# set at 2
```

NOTE: Do not configure a RADIUS routing server unless you have one, or else the RADIUS records will not be delivered to PortaBilling.

For more information on these commands, please refer to the Tenor CMS Command Line Interface reference guide.

To configure RADIUS on the new generation of Quintum gateways (AX/DX series), execute the following commands in admin mode:

```
# Ethernet:
EthernetInterface
set IPAddress {IP}
set SubnetMask {NetMask}
StaticIPRouteDir
add 0.0.0.0 NetMask 0.0.0.0 Gateway {RouterIP}
# TimeServer:
TimeServer
set UTCOffset {Hours}
set PrimaryServerIPAddr 192.43.244.18
set SecondaryServerIPAddr 131.188.3.222
# Radius:
RadiusInfo UserServer
set PrimaryServerIPAddr {RadiusIP}
set SharedSecret {SecretKey}
set AccountingType 2
# Unit:
SIte
set Country 1
GateWay
set OutgoingIPRouting 1
DialPlan
set LongDistancePrefix
set CarrierPrefixPattern
set INTernationaLPrefix[1]
set MAXDNlength 20
set MINDNlength 10
SLot SL2
set Online[1] 1
PUBlicNumberingPlan
set CountryCode
set AreaCode
HuntLDNDirectory pub1
add {AccountID}
```

Charge calling card customers XX/min extra when they call a toll-free line

This is very easy to do with PortaBilling®'s **Accessibility** feature:

1. Create two tariffs – one with your normal rates (for example 0.13 dollar/min for calls to Czech Republic) and the other one with

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

"toll-free" rates, including your toll-free costs there (for example, 0.17 dollar/min for calls to Czech Republic).

TIP: When calculating the price for the toll-free line, it is not enough to add together your ordinary price plus the costs of one minute on the toll-free line. In order to make a 3-minute call, the customer will spend about 4 minutes on the line while listening to voice prompts, entering a PIN / destination and waiting for an answer. Additionally, situations where a customer will enter an incorrect PIN or be unable to reach his party at all should be taken into account. Therefore, usually:
TollFree_ Price = Ordinary_Price + X*Toll_FreeCost
where **X** is a ratio between the total duration of incoming toll-free calls and the total duration of outgoing calls.

2. Make sure your IVR script supports the "Access Code" feature (using the "PortaBilling Original CLD" RADIUS attribute). PortaOne's TCL developers can help you add this feature to your application.

3. Create a product for your calling cards and make two entries in Accessibility:
   - one with an **Access Code** equal to your toll-free number and "Toll-free tariff"
   - another with an **Access Code** equal to your local access number and "Ordinary tariff".

Authorize and Bill Customers by the Originating Phone Number (ANI-based Billing)

PortaBilling gives you great flexibility in choosing how you would like to authorize and bill your customers. For ANI-based billing, you only need to do the following:

1. Create a tariff (or tariffs) and a product.

Note: If you are providing both prepaid cards and ANI-based billing, take measures to prevent fraud (e.g., someone could dial your IVR and enter their neighbor's home phone number as the PIN). See the *Prevent an ANI number from being used as a PIN* topic below.

2. Use the corresponding application on your gateway to handle the call. You can use one of the default Cisco applications (clid_*), create your own, or use PortaOne's "Advanced Remote Authenticate" script. The only important thing is that ANI (CLI)

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

must be in the User-Name attribute in the AAA requests which go to the billing.

None of the default Cisco applications support call authorization, so the gateway will not consult billing as to whether the customer is allowed to call this particular destination and what is the maximum allowed call duration. Needless to say, this may lead to abuse of your service; moreover, there are several other drawbacks to the default Cisco applications. In order to avoid all these problems, it is recommended that you use PortaOne's "Advanced Remote Authenticate" script, or (if you need advanced IVR capabilities such as "announce available balance or number of minutes") modify the debit card application.

Here is a sample:

```
aaa new-model
aaa 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 ani tftp://…/portaone.tcl
call application voice ani authenticate-by ani
call application voice ani skip-password yes
call application voice ani authorize yes

!
dial-peer voice 1 pots
 application ani
 incoming called-number .
 port 1:D
!
gateway
!
```

3. Create a customer who will own these accounts.

4. Create accounts with an Account ID identical to the phone number from which the service is to be used.

TIP: Check in which format ANI (CLI) numbers are reported by your gateway. For example, the phone number 42021234567 might be reported as "21234567", "021234567", or something different. You must use exactly the same format for the Account ID (or change your application so as to convert it to the desired format). Only one extra item is required in the application configuration for PortaOne's "Advanced Remote Authenticate" – the translate parameter. The following example assumes that phone numbers arrive in the local format, prefixed by 0, e.g. 021234567 instead of 42021234567:

```
call application voice ani translate "/^0/420/"
```

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

Prevent an ANI number from being used as a PIN

The first method is the easiest one: use different gateways or access numbers for PIN-based and ANI services, and configure product accessibility accordingly. Thus even if a "hacker" calls your access number 12345 for prepaid cards and attempts to enter his neighbor's phone number as a PIN, the call will not be authorized, since, although such an account exists, its product only allows usage with the access number 12346.

However, you might need to create an advanced service in which a single access number can be used for both ANI and PIN-based services. When the customer calls in, the system checks his ANI and, if the ANI is OK, it asks for a destination number. Otherwise, it gives the option of entering either a PIN or a phone number + password. In this case, you must prevent account misuse in a different way:

- ANI accounts should **always** be created with a non-empty VoIP password. Prepaid cards should be created with an empty VoIP password.
- Modify the TCL script, so that when the first authentication by ANI is done, the billing will receive User-Name=ANI and a special flag "skip password". Thus, authentication will be successful if such an account exists, otherwise it will fail and the user will be prompted for a PIN. To activate the "skip password" feature in PortaOne's "Advanced Remote Authenticate" script, simply include the `skip-password yes` configuration parameter for this application.
- When a user enters a PIN, the PIN is provided in the User-Name, and the Password attribute is empty. The system checks for such an account, and since the password is empty for prepaid card VoIP, authentication is successful. If somebody tries to enter an ANI number as the PIN, authentication will fail because the password supplied does not match the one assigned to the account.
- If given the option "enter your registered phone number", the user will then enter both his phone number and password (the latter is required to prevent unauthorized usage of his account), and both will be supplied to the billing. Authentication will be successful only if a correct account ID and password are provided.

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