

Porta  **Switch**™



New Features Guide

Maintenance Release 21

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**PortaSwitch: New Features Guide, August 2010
Maintenance Release 21
V1.21.1**

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

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Preface

This document describes new features found in PortaSwitch Maintenance Release 21.

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 introduced between major 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.

1 . Global Changes in the Product Architecture

Operating System Change

PortaSwitch servers now use the 64bit Oracle Enterprise Linux OS. For additional details and configuration advice, see the *Hardware Recommendations* topic on our website:

<http://www.portaone.com/support/faq/hardware-requirements/hardware-requirements/>

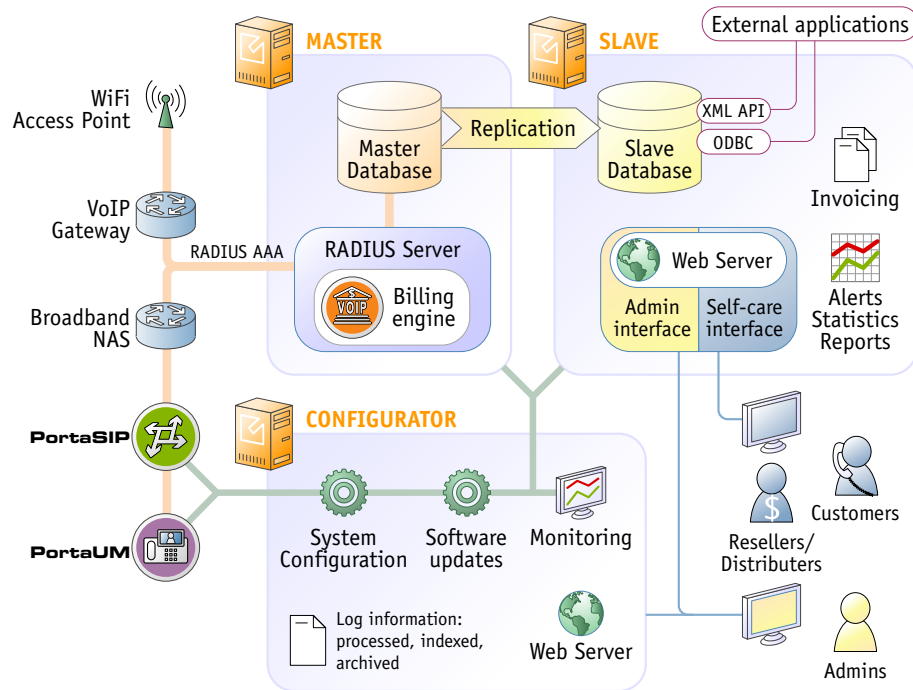
A jumpstart installation DVD is provided for all PortaOne products. This DVD contains installation media for Oracle Enterprise Linux (64-bit version), supplementary packages necessary for convenient system administration and maintenance, and all required software packages. After the installation is complete you will assign roles (e.g. RADIUS, web interface, PortaSIP, PortaUM, etc.) to individual servers using the configuration server tool – this will automatically enable the required software components on each server.

For information about whether particular hardware is supported by Oracle Enterprise Linux from the JumpStart Installation DVD, consult the related document on the Oracle or RedHat website:

<https://hardware.redhat.com/>

Centralized Configuration Management

In order to efficiently maintain large PortaBilling® and PortaSwitch® installations (which may involve 10 or more servers), it is essential to have a unified interface for managing all the configuration data. Tasks such as IP address changes, relocating services to different physical servers, or simply changing an option that affects functionality can then be performed quickly and easily, with a minimal chance of error.



Configuration server carries out exactly this task, providing an interface for the administrator to view the current configuration, create a new configuration and correctly apply it to all servers, or rollback to an old configuration if a problem has been detected. Another important role of the configuration server is that it stores “images” of different versions of the software. Each image is the actual content (in a binary format) of a specific version of the software code (e.g. Maintenance Release 21, build 3). When a specific image is loaded, the server will operate under the corresponding software release.

A New System for Software Updates

PortaSwitch® utilizes an innovative “dual-version” system of maintaining and modifying the software code on each server, allowing you to ensure that you are able to:

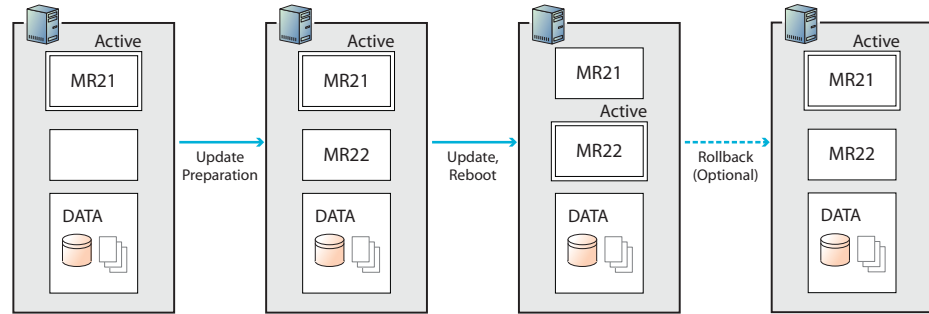
- Migrate quickly to a new maintenance release, without any problems on the way and obtain the system that operates 100% according to how it is intended to operate.
- In case there is something wrong with the functionality of the new release (e.g. you just realized that in order to properly use the new feature you need to train all of your staff, and this would take several days) you can safely rollback to exactly the same version of the software you were using prior to the update.

The disk subsystem on each PortaSwitch® server contains three (3) separate partitions. One of them is used to store the actual application data, i.e., database files, logs and .CSV files with statistics of the customer’s activity, etc. Two (2) other partitions are equal in size and each of them can contain the full set of the software “code” required to operate the server – operating system, third-party libraries and modules (e.g. Apache) and the actual code for a specific application, e.g. PortaSIP®. At any given moment one of these partitions is considered active: this means that upon startup, the server uses this particular partition to boot up and the application code, located within it, is used to operate the service. When the system is being prepared for an update to a new release, the other partition is cleared and the new version of the code is installed there. This is done while the system is still operating under the current version of the software, without any service interruption. Now the server has all the required data to operate with the new release – moreover, since the new release is installed as a set of binary packages, one can be sure that this is exactly the same code (the same version of operating system, the same version of kernel and the same bytes in every single utility or file!) that was used in PortaOne’s labs during the testing period, that was deployed on staging systems during the field testing and that is currently being used by other PortaOne customers worldwide.

After that, the configuration agent updates the “local” files (e.g. “/etc/hosts”) based on the system’s configuration stored in the configuration server: e.g. what IP address each service is working on and which application-specific features are on and/or off, etc.

Finally, at the specific time the new partition is marked as “active” the server is restarted using the new version of the code (these tasks are done automatically by the update agent, controlled by the configuration server). The potential downtime is just a few minutes – the time required to

complete the restart. Nothing is changed in the “old” partition though – so if a rollback is required, it only requires a reboot from that partition and the server is back to the old, “stable” release.



After some time when you wish to update to an even newer release, this partition is wiped clean and the new version of the code is loaded into the recently emptied location. Then the process described above repeats.

The same process is used to update to a new maintenance release or to a newer software build within the current release.

2. New Features in PortaBilling

PortaBilling® 100 Cluster

In addition to the ability to run several RADIUS processes in parallel on the same machine, you can also utilize multiple physical servers to process RADIUS requests. This provides extra performance (incoming requests are distributed for processing among all the available servers) and improved reliability (if one of the servers is down due to hardware failure, the remaining servers will continue operations). RADIUS cluster technology is included in the PortaBilling® Oracularius and PortaSwitch® Procinctus products.

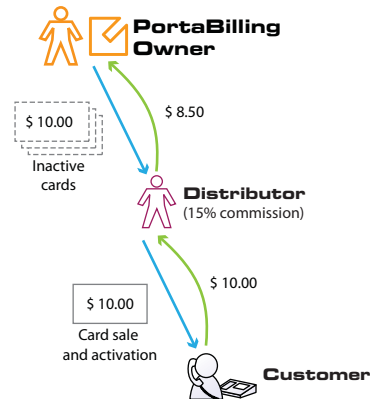
Technical details

Each server in the cluster runs two types of processes: dispatcher and processing engine. The dispatcher receives a RADIUS request from the network and sends it to one of the available processing engines. The actual business logic (e.g. checking whether it is a valid account/customer, calculating allowed session duration, or producing CDRs) is done by the processing engine. Normally there is a single dispatcher and multiple processing engines on each physical server.

One of the dispatchers is always active, while all the dispatchers constantly communicate and thus know which nodes in the cluster are alive. Should the server which runs the active dispatcher go down due to hardware failure, a new active dispatcher will be selected. The active dispatcher places requests into queues for the processing engines, based on their availability and current load. When the processing of a request is finished (meaning that xDRs are inserted in the database, balances are updated, etc.), the dispatcher receives confirmation from the processing engine and relays the response to the network node (this may be a simple accounting confirmation, or could include attributes such as “maximum authorized time”). If one of the servers in the cluster goes down, all requests queued for processing engines on that server are processed by the remaining servers.

Distributors

In addition to resellers, there are also distributors in PortaBilling®. The new distributor model is designed to expand sales activities by engaging additional agents and enlarging the point-of-sale network, without any significant costs or risks.



Customers can purchase new products, settle their invoices or refill their prepaid accounts by paying cash to a distributor (for example, the owner of the grocery shop opposite your house could be a distributor). After the distributor collects the money, he delivers it to the ITSP, minus his commission. PortaBilling® automatically calculates the commission and checks the distributor's balance to keep track of how much he owes the ITSP, and also to verify the distributor's credit limit. This helps to avoid a situation where the distributor would activate too many accounts without first submitting payment for accounts already activated, and thus limits the ITSP's risk of loss in case the distributor goes out of business. A distributor need not have any special technical knowledge or skills. He either delivers to the end-user a tangible product (e.g. calling card) supplied to him beforehand in bulk, or, in the case of an intangible product (e.g. registering a customer's cell phone number so he can make PINless dial calls), he can create accounts/customers using a quick form. All account management operations are done via the web interface.

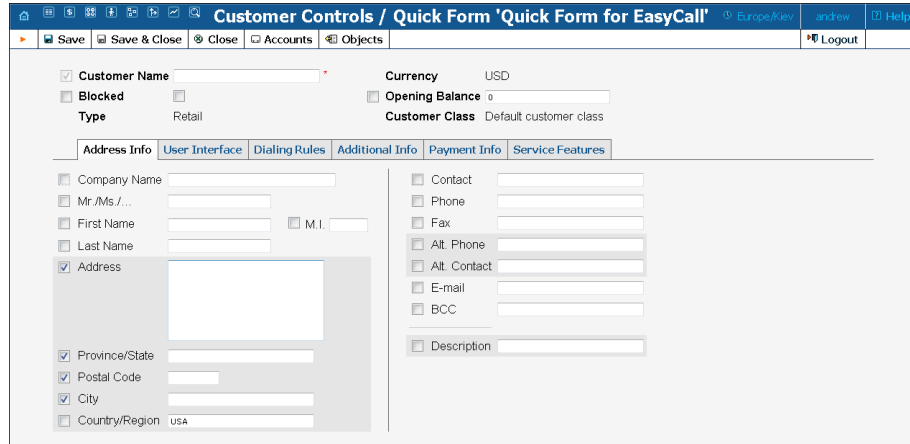
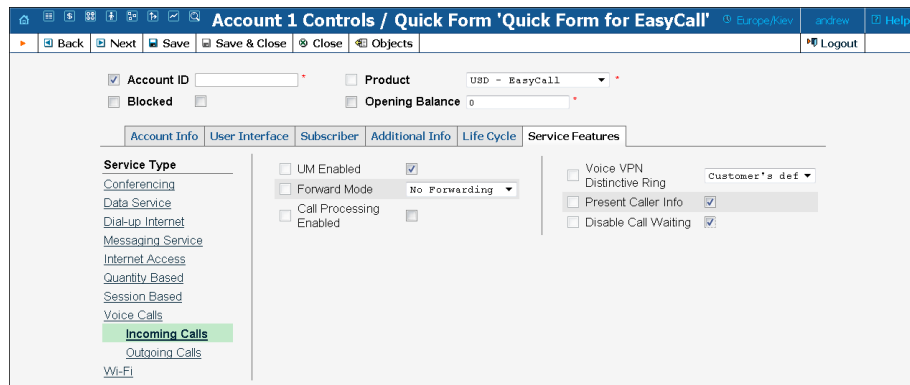
While a distributor might only sell a few new accounts each day, creating accounts in such small amounts at the distributor's request requires too much administrative overhead. Also, when prepaid cards or top-up vouchers are being printed in the print shop, it makes sense to do this for many thousands of cards at once.

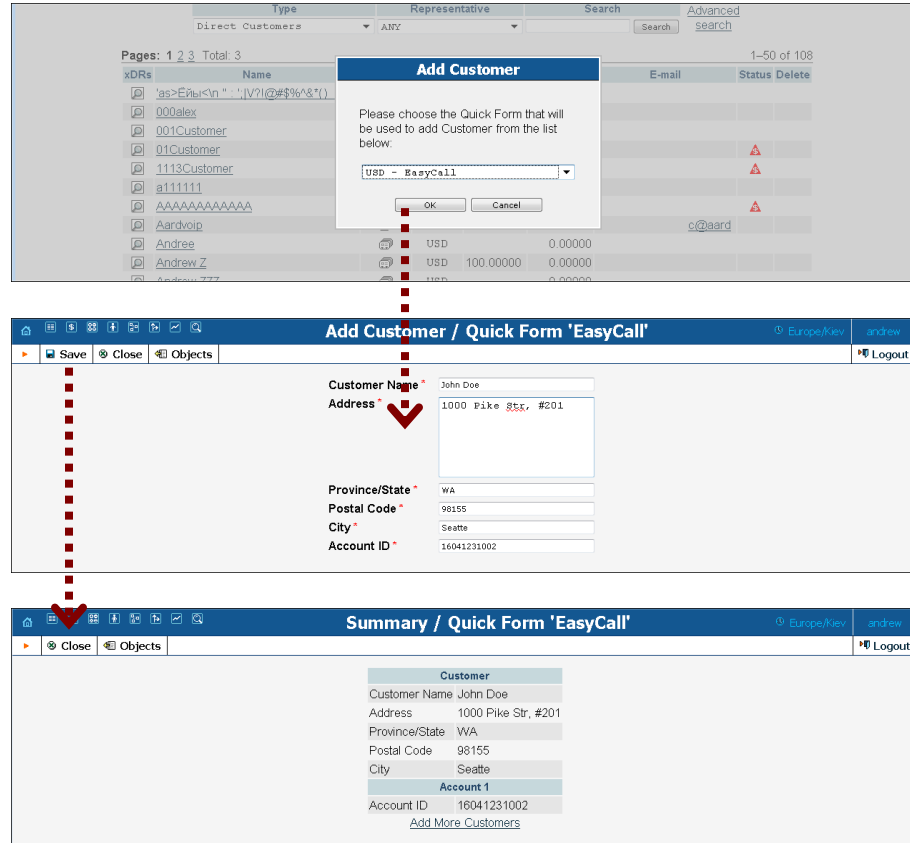
Therefore, the account generator can be used to produce a large batch of accounts so that all the cards can be printed at once. Then later a distributor can be assigned to some of these accounts (i.e. when this distributor receives a portion of cards to sell).

Nonetheless, when some of a batch of cards is delivered to a distributor their total face value could be quite large. So it is risky to allow all of the cards to be active (e.g. if the cards are stolen, they could all be used). Thus cards (accounts) are typically generated and supplied to the distributor in an **inactive** state, and only when the distributor activates the card (account) can it be used to access the service. Likewise, the distributor is only charged when activation is done.

Quick Forms

The **quick form** is used to simplify and make faster the process of creating new customers and accounts and avoid mistakes when filling in parameters. The administrator fills in most of the important parameters (e.g. customer class, currency or product for an account), so that later the person entering data only has to input a few remaining ones (e.g. customer name) to create a customer and an account (or multiple accounts) under it.

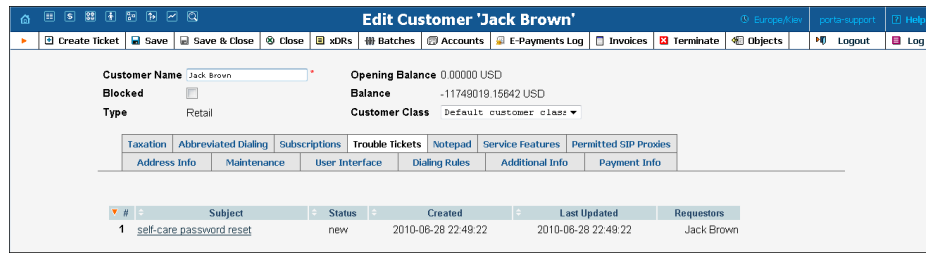





Integrated Trouble Ticketing System

In order to meet customers' expectations for quality of service, it is important to keep detailed information about problems which they currently have or had in the past. In addition to information about the service configuration and rating (stored in PortaBilling), you must also keep track of issues reported by a particular customer and the full history of communication and comments on each issue. This allows you to re-use information obtained earlier about the problem (one of the most frustrating things for customers is being asked the same questions all over again), receive important analytical and reporting data, detect patterns of how problems emerge, and re-use troubleshooting methods successfully applied in the past.

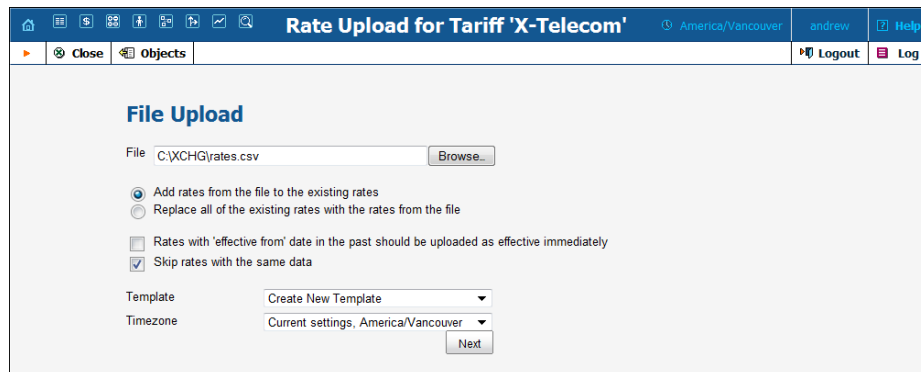
This function is performed by a trouble ticketing system, namely, Best Practical's RT. This is a robust enterprise-grade ticketing system used by many companies worldwide (PortaOne, Inc is one of them). You can find more details about the architecture, functionality and features of RT on Best Practical's [website](http://www.bestpractical.com).



PortaBilling is fully integrated with RT, making it a component part of the overall CRM solution. This means that although RT is installed on a separate server and maintains its own database, there is no need to duplicate the entry of any information or log in into each system separately. Information about administrators (helpdesk) and customers is automatically propagated to RT, while information about a particular customer’s tickets is dynamically retrieved from RT and presented on the PortaBilling web interface. Thus information about an existing ticket may be retrieved, or a new ticket created, with a single mouse click.

Rate Upload Wizard

A user-friendly, interactive process allows you to perform a rate upload and visually review the results at each successive step. Additional functions such as rate change analysis, automatic creation of new prefixes, prefix assignment to destination groups, or rate update notifications save lots of time and manual work for administrators performing rate management.



Rate Upload for Tariff 'X-Telecom' America/Vancouver andrew Help

Close Objects Logout Log

Review File Parsing

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

Show more rows

Delimiter: . (comma)
 Text Qualifier: " (double quotes)
 Delimiter For Multiple Destinations: . (comma)
 Data Start At Row: 1

Back Next



Rate Upload for Tariff 'X-Telecom' America/Vancouver andrew Help

Close Objects Logout Log

Review Data Fields Definition

Pages: 1 2 3 4 > Total: 4 1-20 of 69

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

Pages: 1 2 3 4 > Total: 4 1-20 of 69

Back Next

Available Fields

- First Interval
- Next Interval
- First Price**
- Next Price
- Forbidden
- Hidden
- Discontinued
- Route Category
- Preference

Properties

Link With:

Format:

Default Value:

Apply default value: Only if there is no existin

Postprocessing Rule:

Rate Upload for Tariff 'X-Telecom' America/Vancouver andrew Help

Close Objects Logout Log

Review Rate Information

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

Pages: 1 2 3 4 5 Total: 5 1-20 of 81

	Destination	Country Description	Status	Price		Interval		Preference	
				First	Next	First	Next		
1	93	AFGHANISTAN Proper	↑ +0.02(9.09%)	0.24000	0.24000	1	1	8	
2	355	ALBANIA Proper		0.18000	0.18000	1	1	5	
3	213	ALGERIA Proper	↓ -0.02(-6.67%)	0.28000	0.28000	1	1	5	
4	376	ANDORRA Proper		0.12000	0.12000	1	1	5	
5	244	ANGOLA Proper		0.21190	0.21190	1	1	5	
6	1264	ANGUILLA Proper		0.22040	0.22040	1	1	5	
7	1268	ANTIGUA AND BARBUDA Proper		0.13590	0.13590	1	1	5	
8	54	ARGENTINA Proper	↓ -0.00(-2.22%)	0.01320	0.01320	1	1	5	
9	5411	ARGENTINA		0.00520	0.00520	1	1	5	

Pages: 1 2 3 4 5 Total: 5 1-20 of 81

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Rate Upload for Tariff 'X-Telecom' America/Vancouver andrew Help

Close Objects Logout Log

Create New Destinations

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

Hide destinations with assigned groups
 Hide destinations with assigned countries

Pages: 1 Total: 1 1-13 of 13

	Destination	Country	Description	Destination Groups		
					Other	
<input type="checkbox"/>	551692	BRAZIL	BRAZIL CELLULAR	X-Telecom		
<input type="checkbox"/>	553392	BRAZIL	BRAZIL CELLULAR	Brasil-Mobile		
<input type="checkbox"/>	551580	BRAZIL	BRAZIL CELLULAR			
<input type="checkbox"/>	552286	BRAZIL	BRAZIL CELLULAR			
<input type="checkbox"/>	559888	BRAZIL	BRAZIL CELLULAR			
<input type="checkbox"/>	6014	MALAYSIA	MALAYSIA			
<input type="checkbox"/>	57562957	COLOMBIA	COLOMBIA CARTAGENA			
<input type="checkbox"/>	575681	COLOMBIA	COLOMBIA CARTAGENA			
<input type="checkbox"/>	57566	COLOMBIA	COLOMBIA CARTAGENA			
<input type="checkbox"/>	57591564	COLOMBIA	COLOMBIA CARTAGENA			

Pages: 1 Total: 1 1-13 of 13

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Rate Upload for Tariff 'X-Telecom' America/Vancouver andrew Help

Close Objects Logout Log

Summary

Statistics

File name:	rates.csv
Total rates:	81
New destinations covered:	77
New destinations created:	13

Save as template

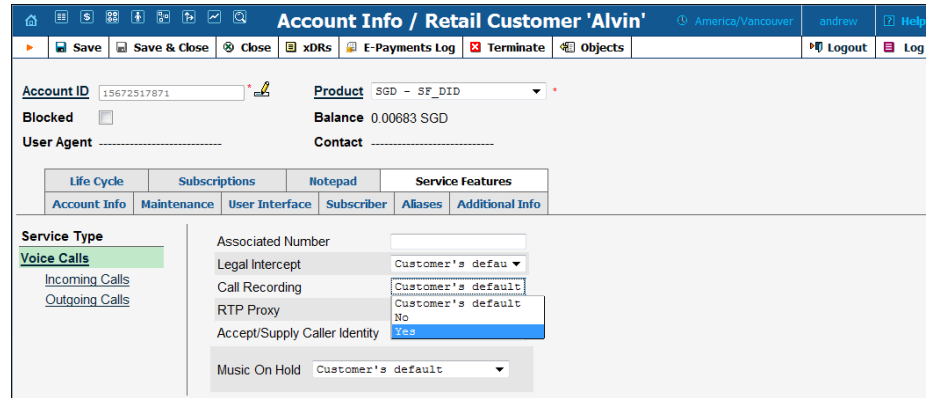
Send notification to

Back Start Import

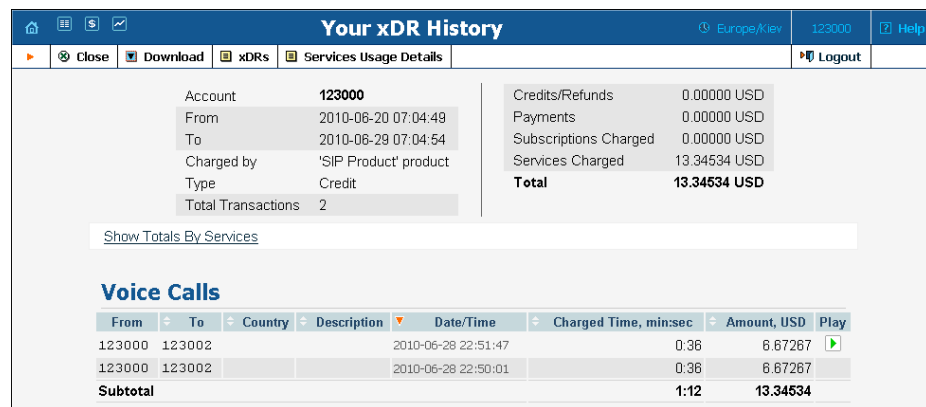
3. New Features in PortaSIP

Call Recording

Users of IP Centrex services on PortaSwitch can record phone conversations for their extensions, to be played back later.



When the call recording feature is activated for a phone line, PortaSIP will write a copy of the RTP stream for each incoming or outgoing call to a local disk. After that the media stream is passed to a voice conversion server (a dedicated server is required, since voice conversion is a resource-intensive task) where it is transformed into .WAV format, playable on any computer or smart phone. When the conversion is completed (this may take a few minutes), a link for the conversation playback is available on the CDR browser screen.



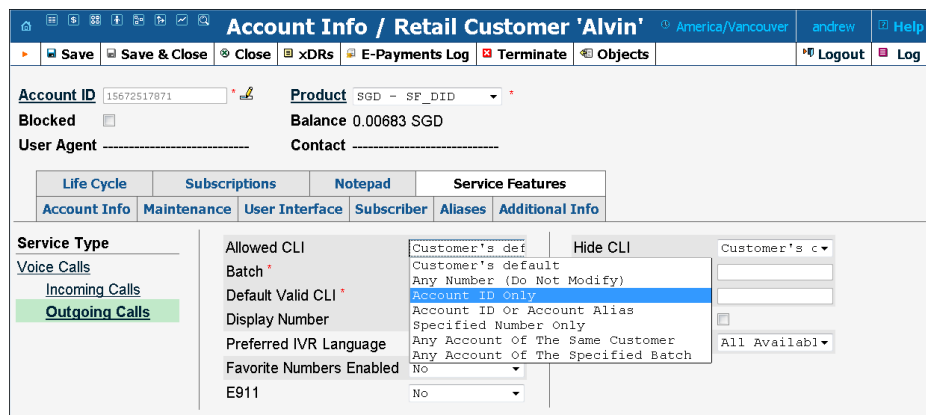
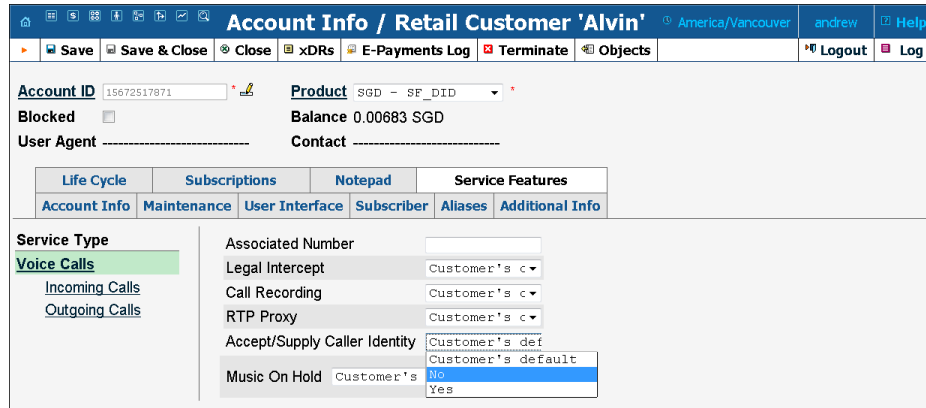
SIP over TCP support

PortaSIP is now able to communicate with IP phones via TCP connections (in addition to the standard UDP). This adds new models of IP PBXes (such as Microsoft OCS) and SIP phones to the list of devices that PortaSwitch can interconnect with.

SIP Identity

With the growing popularity of VoIP services such as residential VoIP or business SIP trunking, the question of user identity becomes increasingly important, since the only critical piece of identity in a phone call is the caller number (also known as the CLI or ANI), and it is extremely easy to be forged. There is nothing that prevents an IP phone or IP PBX from placing a string into the “From:” SIP header that corresponds to the “Caller number.” When one receives a phone call that displays the caller number, for example, as 12065551234 – is it really the person who owns that phone number calling – or is it a fraudulent scam? The question of identity becomes more complex when a call traverses networks of several different service providers. Within this chain, only the first telco (the one the subscriber is directly connected to) can verify the end-user’s identity; the other service providers must rely on the information that is provided as a part of the call data – so it is extremely important to know who your trusted contacts are. In many countries, strict regulations govern the responsibilities of service providers in regard to establishing the identities of their customers and passing this information on to the national telephony network or other telcos.

PortaSIP now supports RFC 3325 and provides all required tools to conform to the requirements regarding the handling of the user identity.



Support for History-Info header (RFC 4244)

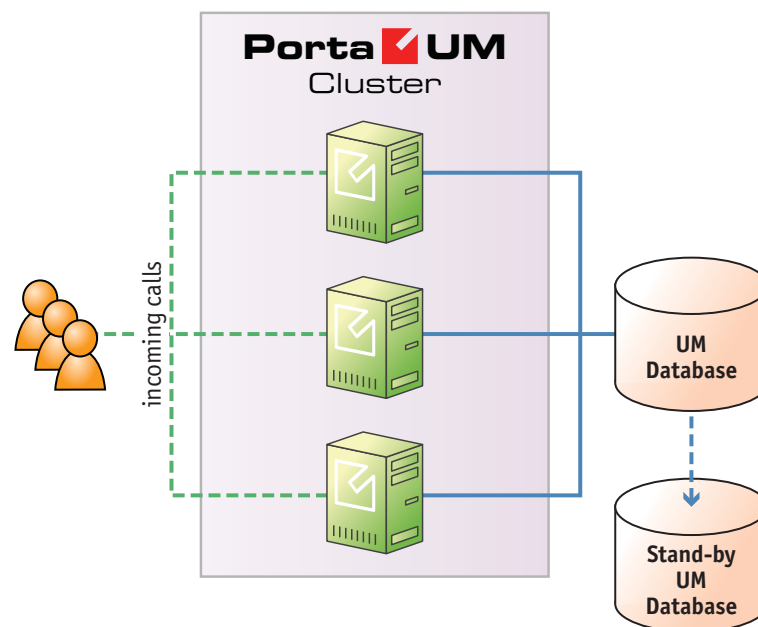
This header provides information about the originator of a call, in case it cannot be determined by the CLI/ANI number (for instance, in case an incoming call is forwarded somewhere else – then the CLI is that of the original caller). This is needed in order to comply with the interconnect and regulatory requirements of telco operators around the world.

4 . New Features in PortaUM

PortaUM Clustering

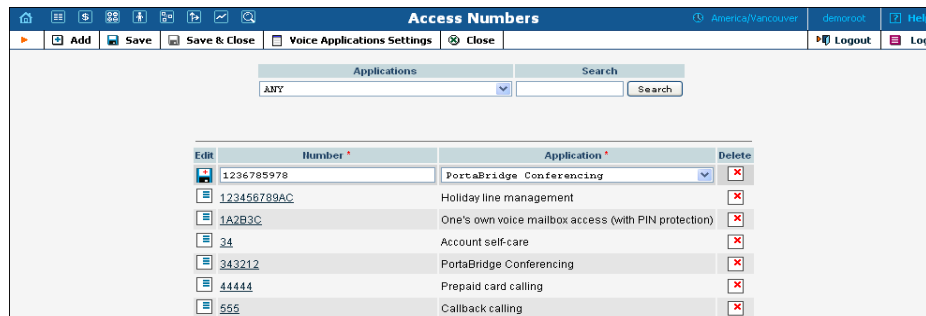
When multiple PortaUM servers are installed as part of your PortaSwitch system, they all connect to the same database which contains IVR application settings, voice mailboxes, auto-attendant menus and all other data required to operate a unified communication service. Thus the function of a media server (playing voice prompts to the user, collecting DTMF input, establishing an outgoing call, etc.) can be performed by any server in the cluster. Incoming calls will be distributed among all of the available PortaUM servers – this provides the ability to perform load sharing and increase your total IVR capacity. If one of the servers is down because of a hardware failure, the remaining servers will continue processing the call.

To enable quick service recovery on the IVR service in case the database is down – a stand-by database server can be used (similar to the PortaBilling stand-by configuration).



Managing IVR application via Web GUI

Using PortaBilling100 web interface administrators can quickly and conveniently define how users access IVR applications by dialing phone numbers. Your customers would dial a phone number from the PSTN network or their IP phone to access a specific IVR application; for instance, *98 for voicemail, 12125551234 to access a prepaid calling card IVR, or 18005559876 to access the audio conferencing facility. So when PortaSwitch receives a call and matches the destination number with one of the access numbers - the call will be forwarded to PortaUM. PortaUM then will launch the specific IVR application associated with that access number.



Application options

Administrator can also customize properties of the application that is running on a specific access number.

