

PortaSwitch

New Features Guide

67

MAINTENANCE
RELEASE



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Preface

PortaSwitch® Maintenance Release 67 is the next leap-forward release, consistent with our “fast releases, precisely on time” ideology.

Where to get the latest version of this guide

The hard copy of this guide is updated upon 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 actions that must be taken for proper configuration.

NOTE: Notes contain additional information to supplement or accentuate important points in the text.



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



Archivist explains how the feature worked in previous releases.



Gear points out that this feature must be enabled on the Configuration server.



Tips provide information that might help you solve a problem.

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Graceful Shutdown of PortaSIP Servers for Update

When preparing to update either the whole system or an individual server (e.g. for a server hardware upgrade), the administrator's goal is to make it as seamless as possible for end users, so that they continue to use the services as if nothing is happening. This release provides the solution to that.

The administrator can now shut down PortaSIP® servers deployed in the installation, gracefully, and perform a system update with zero downtime (ZDU). This means that the dispatching SBC starts to send new call and registration attempts to the secondary site, and the main site's PortaSIP® servers gradually switch to maintenance mode. This enables users registered with the main site to complete their active calls without any interruption.

As soon as all active calls are completed, the system begins to update the main site. When maintenance on the main site finishes, the system updates the dispatching SBC instances sequentially. After the main site is activated and the data from the secondary site is synchronized, the same update flow is performed on the secondary site: the system shuts down PortaSIP® servers gracefully and begins to update the secondary site.

By default, the waiting time for active calls to be completed is 60 minutes. If there are still some active calls after 60 minutes have passed, the system forcefully disconnects them.

NOTE: On the main site, extend your PortaSIP® capacity to include the dispatching SBC instances.

The administrator can also gracefully shut down a single PortaSIP® server within the cluster to perform maintenance (e.g. replace the hardware). After the server is up and running, the dispatching SBC engages it for call processing.

This solution brings the update procedure to a new level, ensuring uninterrupted service provisioning for all customers and thus increasing customer experience and loyalty.

Unified Interface for Real-Time Data Retrieval from External Systems

Let's say you use PortaBilling® for customer management and a NMS (Network Management System) for monitoring network performance, circuit management and configuration, etc. When checking customer information (e.g. during troubleshooting) you must login to both PortaBilling® *and* to the NMS.

So now, instead of managing two systems separately, you can integrate the NMS with PortaBilling®. Create an integration plugin, install it in PortaBilling® and operate with the NMS from the PortaBilling® web interface.

Each time you open customer data, PortaBilling®:

- dynamically retrieves the network information related to the customer from the NMS via the API, and
- displays the consolidated data on the web interface.

The NMS data is then displayed on the custom panel.

When you modify the information (e.g. change bandwidth limits or reconfigure a router), the data is automatically sent to the NMS.

An integration plugin is a set of application files that contain the logic for a new custom panel (e.g. fields, types, default values). While installing the plugin, specify whether the panel appears in the main navigation menu or at a specific entity level (e.g. customer, reseller). Upon installing the plugin, the custom panel for system operation appears in PortaBilling®. This way, you can integrate PortaBilling® with any external system that supports the REST API.

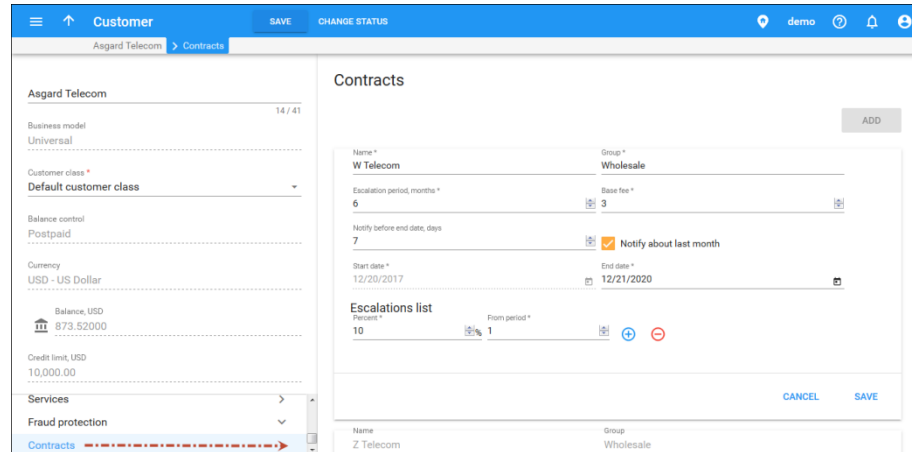
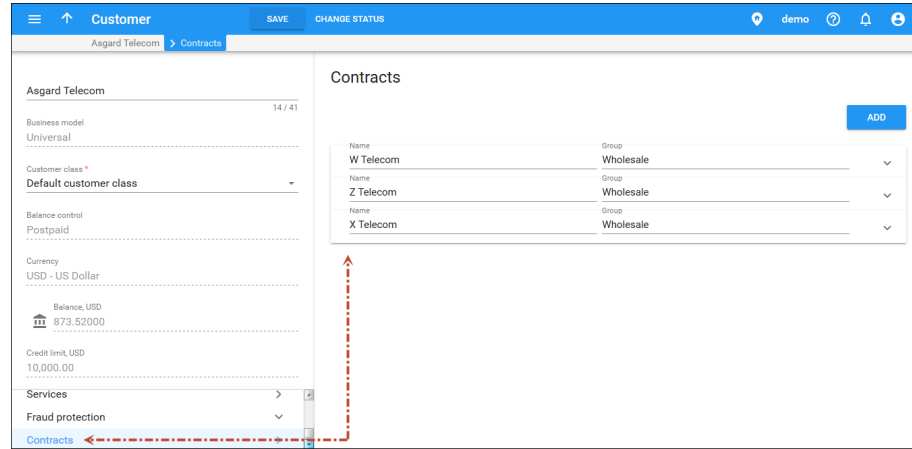
Consider the following example:

Asgard Telecom has a contract management system (CMS) to store and manage customer contracts. They require:

- real-time interaction between the CMS and PortaBilling®, and
- the ability to manage the contracts (e.g. Contracts feature) via the PortaBilling® web interface.

Asgard Telecom implements a plugin for the Contracts feature. After the plugin installation, a new Contracts panel is available at the customer level. It permits the customer contract details to be managed. When an administrator saves a contract, the plugin pushes the data to the CMS via

the API. Each time an administrator opens the Contracts panel, the data is retrieved from the CMS.



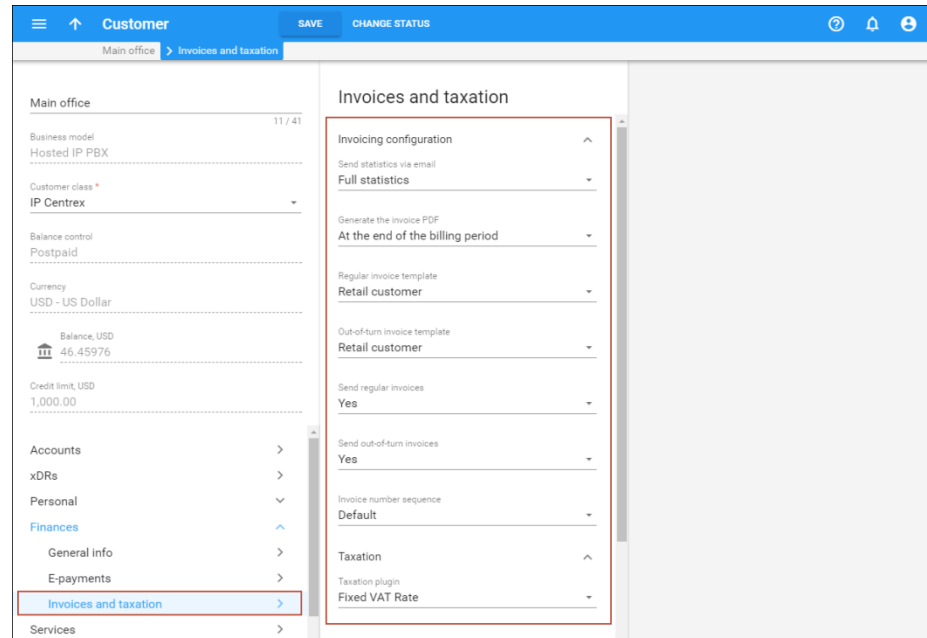
This solution allows you to integrate PortaBilling® with the external systems and manage all of the data from a single place. Aside from improving workflow, it gives you additional flexibility with introducing individual business solutions using PortaBilling®.

Please contact the PortaOne® support team for assistance with how to install integration plugins.

Consolidated Invoice for Linked Customers

Let's say a company has a main office and a group of branch offices. All of the offices share the same IP Centrex environment so that personnel can communicate across all of the offices via extensions and make calls to other offices' huntgroups. With this release, the company owner can pay the communication charges for all their offices in a single bill.

An administrator creates a Main Office (HQ) customer and a group of Branch Office (site) customers, and links them together. Then the administrator enables both statistics and invoice generation, and defines the taxation settings for the Main Office (HQ) customer. The billing period must be the same for all linked customers in the group.

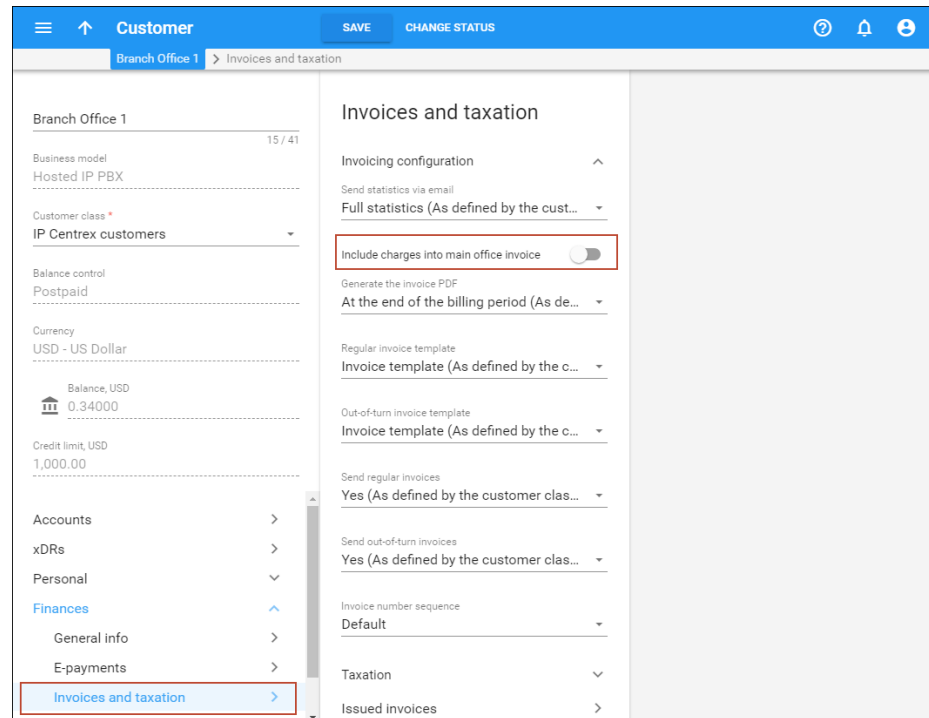


At the end of the billing period, the system generates a consolidated invoice for the Main Office (HQ) customer. This invoice includes the total charged amount for all of the company offices. The Main Office (HQ) customer also receives statistics reports generated for each branch office.

The system generates consolidated invoices in accordance with the time zone defined for the Main Office (HQ) customer. If Branch Office (site) customers are located in different time zones, you may need to postpone invoice generation until their billing periods are closed. In that case, use the customer class option **The billing period is closed**.

This allows service providers to consolidate all of their communication charges on a single bill for their customers that have distributed infrastructure, so that a customer can pay for the total service usage charge in a single operation.

To generate an individual invoice for a branch office, disable the **Include charges into main office invoice** option for the corresponding Branch Office (site) customer.



Important notes:

- Administrator can configure an individual credit limit / spending plan for each linked customer in the group.
- If the Main Office (HQ) customer is blocked, suspended or has exceeded its individual credit limit, Branch Office (site) customers may continue using the services unless their individual credit limits / spending plans have been reached. At the end of the billing period a consolidated invoice is generated.
- If the Main Office (HQ) customer has been exported, or provisionally or permanently terminated, Branch Office (site) customers may continue using the services unless their individual credit limits / spending plans have been reached. At the end of the billing period, a consolidated invoice is not generated and the Branch Office (site) customers' charges are not moved to the Main Office (HQ) customer's balance.

Entities for Common Use by the Administrator and Resellers

To expand their service offerings to other spheres of business, ITSPs introduce the branded reseller program. In this program, the ITSP staff does all the service configuration and management while the resellers only deliver services to customers. This enables companies that lack deep technical knowledge to enter the telecommunications market and offer

bundled solutions to customers under their name (e.g. banks to resell a mobile application to their customer base).

To begin to offer the service, each reseller must have their own set of tariffs, products, subscriptions, etc. In case of a distributed reseller chain, this imposes an additional load on the administrator. Thus, to simplify reseller management, the administrator can now share their own configurations with the resellers.

When the administrator marks the entity as shared, it becomes visible for all top-level resellers to use in their service provisioning. Since only the administrator manages the shared entity, the resellers see it as read-only.

The list of entities to share includes the following:

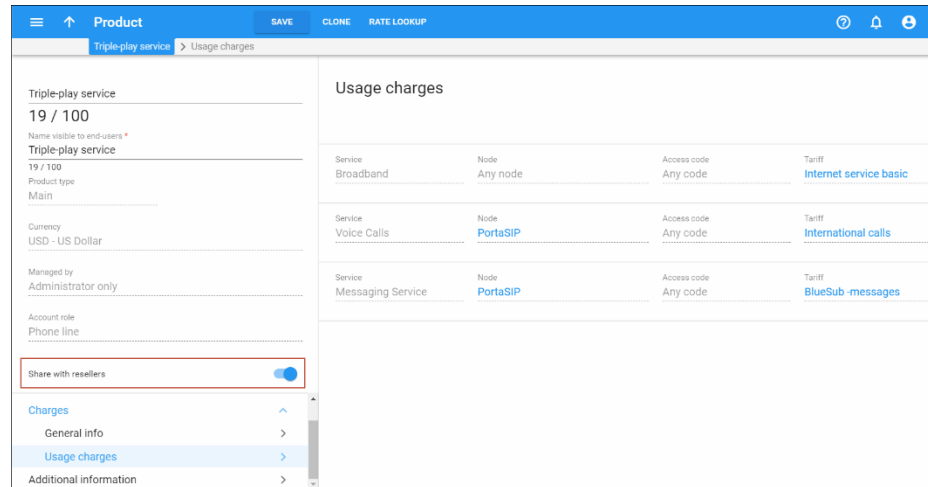
- Products,
- Tariffs,
- Volume discount plans,
- Subscriptions,
- Customer classes,
- CPE profiles,
- CPE.

Of course, a reseller can also create their own entities (e.g. subscriptions, CPE profiles, customer classes) and use them along with the shared ones.

Consider the following example:

The bank Openbank wishes to attract more premium customers. They introduce a Platinum service package that includes a personal bank officer, a premium credit card with a \$100,000 limit and even a travel SIM card for discounted service usage when roaming. Then they sign a contract with EasyCall to become their reseller.

EasyCall has several similar kinds of contracts with different companies. Therefore, EasyCall's administrator, John Doe, configures the Triple-play product and marks it as **Shared with resellers**.



John Doe configures the reseller record for Openbank and grants them access to the system via the reseller self-care interface. Now Openbank has all the tools they need to sell services to customers and realize additional profit.

With the introduction of shared entities, service providers can easily manage their branded reseller chain and cooperate with companies from different business areas.

Other Features and Enhancements

- **Data and VAS import from TAP3** –Mobile operators exchange information about roaming service usage in the TAP3 format. TAP3 CDRs contain information about the roaming country and operator, types of services used, charges incurred for this usage, etc.

Now an MVNO can import raw TAP3 files sent by the MNO in PortaBilling® and bill users for voice calls, SMS, MMS, Internet services, etc., used both within a home network and also while roaming.

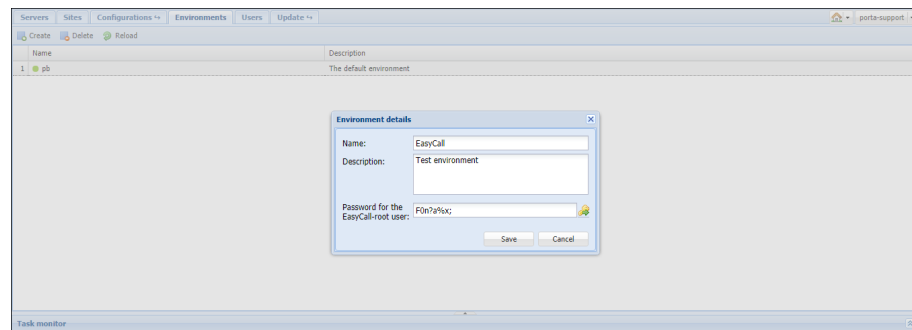
During import, PortaBilling® recognizes the types of services used, and parses and transforms the fields to produce xDR records with charges for this service usage. If a user is roaming, charges are calculated using special rating codes, as agreed upon with your MNO. Roaming information reflected in xDRs can also be used in reporting.

The ability to import TAP3 files speeds up billing for roaming services and extends the range of services an MVNO can provide.

- **Import of direct carrier billing xDRs** – Direct carrier billing (DCB) allows mobile subscribers to pay for goods and services using their phone (e.g. to pay for car parking, make movie payments, charity, etc.) and add these charges to their monthly phone bill.

The host MNO stores the information for DCB in the OperatorSpecificInformation attribute in TAP3 CDR. Now PortaBilling® can import and properly process these TAP3 records, enabling you to provide this DCB option to your subscribers. This increases your competitiveness at the mobile market.

- **Generate a password for a new environment “root” user** – With this release, when administrators create a new environment, a random password is automatically generated for a default “root” user. Administrators use this password to access the admin interface for the first time and they are requested to change it after they log in.



This increases system security when accessing the admin interface for the first time.

- **Cleanup of exported customer data** – In dual-version PortaSwitch® you may need to remove exported customer data in order to transfer this data again later. For example, if you migrated some customers to the new system for testing purposes and later wish to return them to the main system.

To do this, use the Cleaner tool, available with this release. Cleaner has a script that collects customer data and all its dependent entities and then deletes their records from the database. You can run Cleaner from either system in dual-version PortaSwitch®, however, you must define beforehand where the data is to be removed from.

Thus, with Cleaner you can remove the following entities:

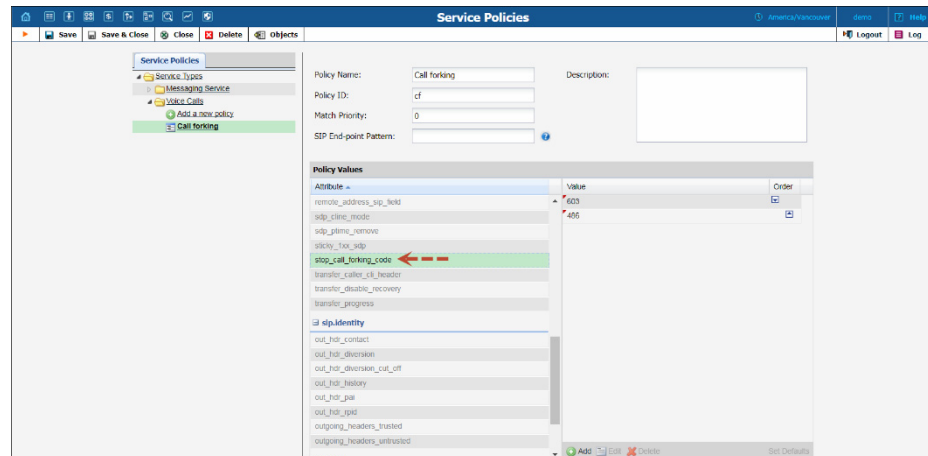
- Customers,
- Distributors,
- Products,
- Resellers,
- Tariffs,
- Vendors,
- Access levels,
- DID numbers,
- SIM cards, and
- CPE.

Similar to Porter, Cleaner allows you to delete entities one by one or several at a time. This ability to delete unnecessary data facilitates troubleshooting and optimizes the overall management of dual-version PortaSwitch®.

Cleaner is designed to remove only data that has been transferred. Therefore, do not use it for simple system cleaning.

- **Stop call forking if a user rejects the call** – Call forking functionality enables a user to provision the same account on multiple devices and thereby receive incoming calls on all of them (e.g. on a SIP phone, a mobile app and on a tablet). The administrator defines how the users' devices ring: one by one according to their priority, simultaneously or grouped, i.e. devices of the same priority ring simultaneously.

Now the administrator can additionally fine-tune call forking per user so that PortaSIP® stops sending the call to other devices when the user is either busy or declines the call. To do this, the administrator configures the service policy, defines the respective SIP response codes (486 and / or 603) for the **stop_call_forking_code** attribute and assigns the service policy to the customer's account.




When a customer rejects an incoming call, PortaSIP® receives one of the defined response codes and stops forking the call to other devices. This functionality applies to call forking that is configured as either “one_by_one” or “grouped.”

With this enhancement, the administrator has greater flexibility for customizing the call forking service according to a customer’s requirements. This results in a better customer experience.

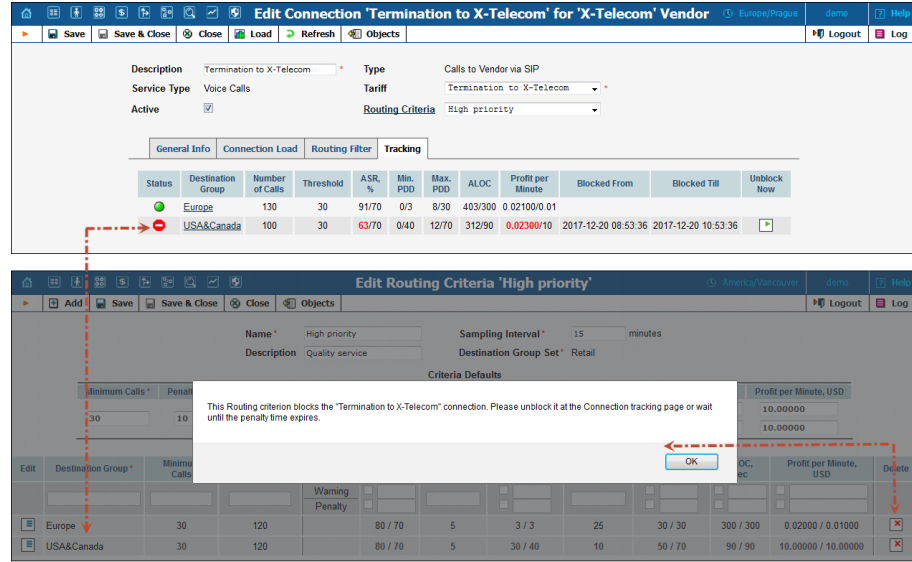
- **Modify more properties during rate upload** – With this release, administrators can select a previously configured off-peak period for any destination they need and / or edit the uploaded values for the **Forbidden**, **Hidden**, or **Discontinued** fields when they review rate information.

Off-Peak Interval		Payback Rate	Forbidden	Hidden	Discontinued	Effective From	Preference		Peak Route Category
First	Next						Peak	Off-Peak	
1	1	No	No	No	No	2017-12-06 11:39:20	5	0	Default
1	1	No	No	No	No	2017-12-06 11:39:20	5	0	Default
30	6	No	No	No	No	2017-12-06 11:39:20	5	0	Default
30	6	No	No	No	No	2017-12-06 11:39:20	5	0	Default
30	6	No	No	No	No	2017-12-06 11:39:20	5	0	Default
30	6	No	No	No	No	2017-12-06 11:39:20	5	0	Default
30	6	No	No	No	No	2017-12-06 11:39:20	5	0	Default
30	6	No	No	No	No	2017-12-06 11:39:20	5	0	Default
30	6	No	No	No	No	2017-12-06 11:39:20	5	0	Default
30	6	No	No	No	No	2017-12-06 11:39:20	5	0	Default
30	6	No	No	No	No	2017-12-06 11:39:20	5	0	Default

This allows administrators to change rate properties for multiple destinations in a single place. That also saves them time from having to edit each rate after upload.

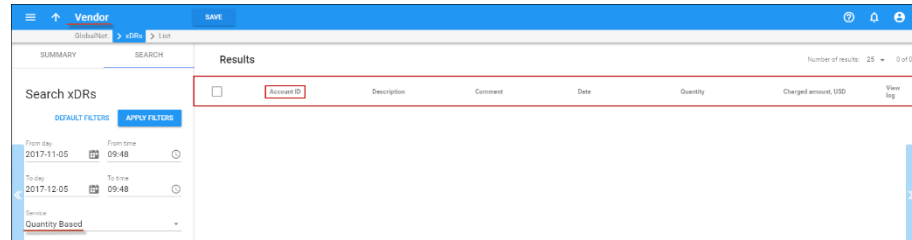
- **Removing routing criteria for blocked connections** – Routing criteria allow you to manage call routing for specific destination groups. The system analyzes calls that pass via a particular connection to correspond to defined quality parameters such as average success rate, post-dial delay, etc. and then adjusts the routing accordingly. When a vendor fails to meet the quality criteria, the connection is blocked (shows  Blocked status).

To help facilitate consistent routing management, an administrator can now remove the routing criterion only for an active connection. To remove the routing criterion for a blocked connection, the administrator must manually unblock it on the **Connection Tracking** page or wait until the penalty time expires.

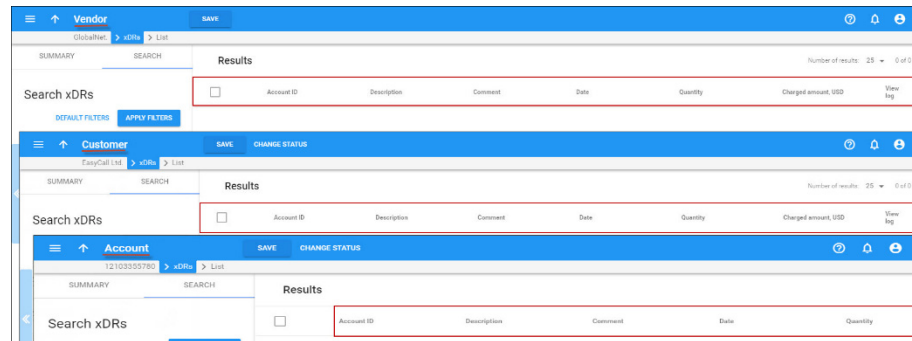


Web Interface Changes

- **Unified xDR list display** – Now administrators see the account ID information for quantity-based services when they browse the vendor xDR history.



This unifies the xDR browser layout for vendors, customers and accounts and allows administrators to understand their costs and revenues more quickly and easily.



Important Upgrade Notes

- **Correlation between roles and ACLs when operating with PortaBilling® via the API** – One of the key features of the new web GUI is its new role-based access control system. Like an ACL on the old web interface, a role is a set of permissions that define user access to a system's components (e.g. customers, accounts and products). During the transition period both access control systems operate in parallel to provide backward compatibility. Thus, when a user logs in to the new web GUI the system checks their role permissions. When the user accesses the old web interface, his ACL permissions are checked before they is granted access to the system.

The same logic is in place when operating with the system via the API. The components that were already moved to the new web GUI are covered by role permissions. This means that when an API user sends a request to retrieve a customer list or edit a product, the system checks the user's role permissions before executing the request. If the user wishes to modify the component that is still in the old web interface, the system checks the user's ACL permissions.

During a system update, users with system default ACLs are automatically assigned roles to access the new web GUI. Corresponding roles are created for users with custom ACLs, though an administrator must assign them to users.

- **Python-based number translation rules for IVR applications** – In calls to IVR access numbers, caller information typically arrives at PortaSIP® in a vendor-specific format (e.g. without a country code). To transform this into a unified E.164 format, PortaSIP® uses number translation rules.

Previously, PortaSIP® utilized Perl-based regular expressions to translate ANI numbers during user authentication. Now it uses Python-based regular expressions. Python syntax for regular expressions is similar to that of Perl; however, you must use backslashes to express backreferences: `\\1`, `\\2`, etc.

Thus, verify your existing translation rules for IVR applications and adjust them accordingly to ensure proper call processing. For example, the translation rule that strips the leading zeros and adds an `@ani` suffix to an ANI number looks like this in Python:

```
s/^00(.*)/\\1@ani/
```

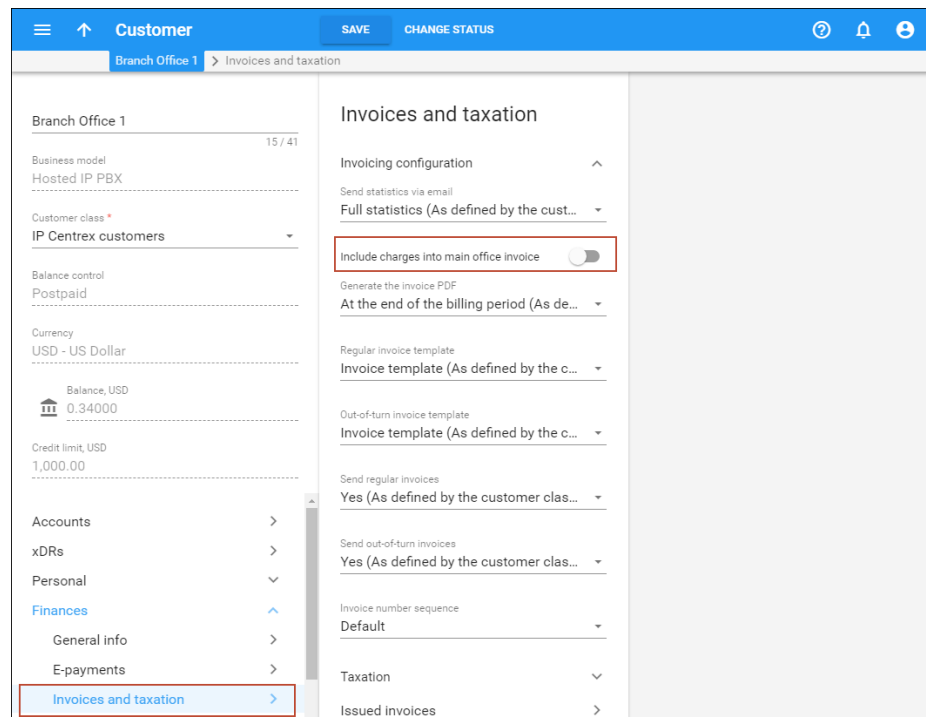

For more information on Python regular expressions, see <https://docs.python.org/2/howto/regex.html>

Note that Web, SMS and Email callback triggers are written in Perl and thus utilize Perl-based translation rules.

- **Consolidated invoice for linked customers** – Beginning with this release, the system generates one consolidated invoice for a group of linked customers. The invoice includes the total charged amount for all linked customers within the group.

To preserve individual invoice generation for linked customers, set the **Include New Branches Into Consolidated Invoice** option to **No** on the Configuration server after the software upgrade.

Alternatively, to generate an individual invoice for a Branch Office (site) customer, you can disable the **Include charges into main office invoice** option for this customer.



- **Use of Mouse in event provisioning handlers** – To simplify the support and maintenance of event provisioning handlers, they are now configured to use the Perl Mouse object system (<https://metacpan.org/pod/Mouse>). Thus, `__PACKAGE__->member(..)` and `__PACKAGE__->member_ro(...)` methods are no longer used and no longer supported.

If you have created custom provisioning handlers, adjust your code to use Mouse to safeguard correct operation after the software upgrade.