



PortaSwitch

New Features Guide



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Preface

PortaSwitch® Maintenance Release 77 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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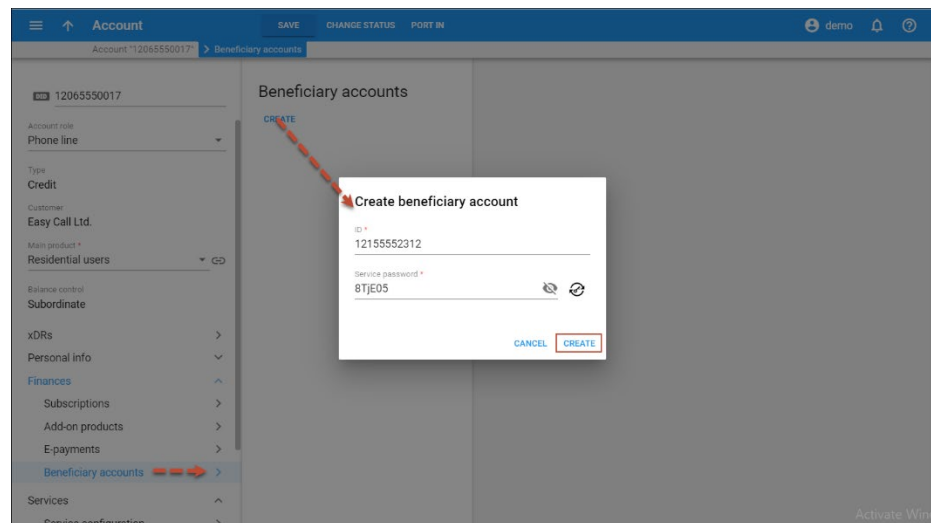
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Beneficiary accounts

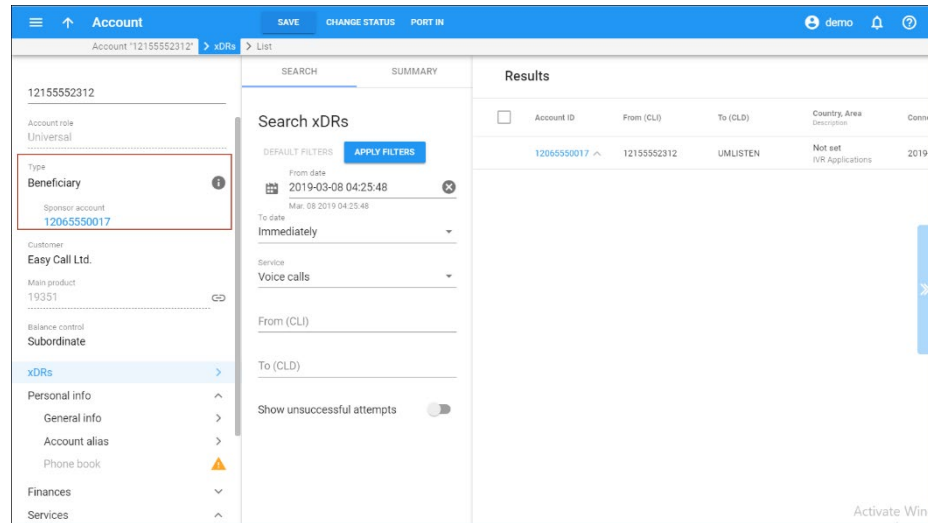
You can now create accounts with only a service configuration that use the balance, products and quotas of other accounts. By doing so, you can introduce the twin card / data card service to your customers. These are additional SIM cards for customers to use their service and quotas on multiple devices while sharing the same subscription.

For example, let's say a customer orders an extra SIM to use the mobile Internet in their car. This SIM is assigned to an additional account that consumes the service bundle from their main account that's registered on their phone. So now the customer can make calls from their cell phone and use the Internet from their car at the same time, yet only their main account is billed for the service usage. Thus, your customers better control their quota consumption and manage a single balance. It also encourages your customers to use more of the services you provide.

Accounts with only a service configuration are called beneficiary accounts. Beneficiary accounts are linked to regular accounts and inherit their billing configuration – balances, quotas and tariff rates. In other words, a regular account “sponsors” its beneficiaries.



When a beneficiary account uses this service, charges and quota consumption apply to the sponsor. Likewise, the xDRs are created for the sponsor although the beneficiary is the actual user of the service.



In contrast with using account aliases, beneficiary accounts can have an individual service configuration (e.g. their own SIM card, individual extension or different service policy). You can only configure the service features for the services included in the sponsor’s main product.



An administrator can add and manage beneficiary accounts via both the web interface and the API. Resellers can currently operate with beneficiary accounts via the API only.

Sponsor and beneficiary accounts’ activities

The table below compares the sponsor and beneficiary accounts in terms of their activity:

Activity	Sponsor accounts	Beneficiary accounts
Account configuration	Any account automatically becomes a sponsor as soon as a beneficiary account is created under it. To switch off sponsorship for the account, terminate all of its beneficiaries.	A beneficiary account can only be created from scratch under a regular account. You cannot convert a beneficiary account into a regular one or make it a sponsor.
Service configuration	Can have an individual service configuration that is different from the beneficiaries.	Can have an individual service configuration (e.g. enable voicemail or assign a different

		access policy). You can override the service features at the account level.
Product configuration change	Allowed. You can change / modify the main product (e.g. add a new service or change the tariff), assign / remove add-ons.	Forbidden as the beneficiary account inherits its product configuration from the sponsor.
Volume discount plan usage	Shares its volume discount plans with all its beneficiaries. You can add volume discounts, quotas and service wallets.	Uses the volume discount plans assigned to the sponsor. When a volume discount plan is finished or the destination is not included in the destination group set, charges apply to the sponsor.
Subscription assignment	Allowed via add-ons and also directly. All recurring charges apply to the sponsor.	Restricted. The sponsor account bears the recurring charges of its beneficiaries.
xDR history	Includes its own xDRs and xDRs created on behalf of all beneficiaries. These xDRs contain the reference to the beneficiary account ID.	Shows the sponsor's xDRs created on behalf of a beneficiary account.
Balance and payments	Sponsor accounts see own balance / available funds. Account owners can make credit card payments and top ups via vouchers.	Beneficiary accounts see their sponsors' balance. Account owners are forbidden to make payments and top ups.
Life cycle	Independent from beneficiaries. When a sponsor account expires, services for beneficiaries are	Independent from sponsor. The date of last usage is updated for both

	blocked.	<p>sponsor and beneficiary accounts.</p> <p>The account's expiration does not affect service availability for the sponsor.</p>
Status change	<p>Any status change affects service availability for both sponsor and beneficiary accounts. For example, when a sponsor is blocked, services are denied both for it and for its beneficiaries.</p>	<p>The status of the beneficiary account does not affect its sponsor yet the beneficiary account is subject to the sponsor's status change.</p>
Self-care access	Allowed.	Forbidden.
API access under account realm	Allowed.	Allowed for the activities of a beneficiary account.

Examples of usage

To illustrate the use of beneficiary accounts in PortaBilling®, consider the following example:

John Doe is your mobile subscriber. His service bundle includes voice calls, SMS and 1GB of default data for a \$20 monthly subscription. Plus, he has several top-up options for his service wallet to add more data.

John orders an additional SIM card for his tablet and is charged \$5 for SIM card activation. Your administrator creates beneficiary account 12065558882 for his main account (12065552131) and assigns a SIM card to it. Now John can make calls and use the Internet from both his phone and his tablet.

John uses up the 1GB of default data from his tablet and wants to purchase an additional 5GB. He enters his main account's self-care portal (12065552131) and tops up his service wallet for \$10. In his transaction history, John can see that his Internet sessions from the tablet are billed to his main account (12065552131).

Another example is to let your business customers share quotas among a certain set of their accounts (e.g. grant 500 minutes of international calls for all employees in the Sales department while the Support department receives 100 minutes). To meet the customer's request, your administrator creates a sponsor account for the Sales department, assigns a 500-minute

quota to it and then creates the appropriate number of beneficiary accounts under it. Likewise, your administrator creates sponsor and beneficiary accounts for the Support department with the 100-minute shared quota assigned to the sponsor. As a result, customers optimize their service consumption and their customer experience improves.

To summarize, the introduction of beneficiary accounts in PortaBilling® enables you to:

- Introduce twin card / data card services to mobile customers and allow them to use the services from multiple devices yet manage a single balance. Please contact us to consult about your options for deploying your mobile project with PortaBilling®.
- Offer shared buckets to your business customers and let them optimize their service consumption.

Subscriber provisioning to Sandvine SPB

PortaBilling® is integrated with Sandvine SPB (Subscriber Policy Broker). Sandvine SPB is a component of the Sandvine DPI (Deep Packet Inspection) solution. It enables CSPs to shape traffic on a per-subscriber basis by applying different access policies to them (e.g. prioritize VoIP traffic to ensure sound quality for calls). CSPs can analyze and measure network traffic, study user behavior on the network (e.g. which sites customers visit most often) and collect various statistics data (e.g. the percentage of content types consumed). MVNOs and CSPs that rent the network infrastructure can use Sandvine SPB to authenticate users and control their activity on the network.

PortaBilling® provisions Sandvine SPB via ESPF (External Systems Provisioning Framework) with this subscriber data:

- Account details: username, static IP address / netmask, service provider identifier;
- Service configuration details: Internet access policy name, upload / download speed limits, captive portal URL.

This automates subscriber provisioning and service activation in networks that have a static IP assignment (e.g. fiber-based networks for point-to-point connections). Traffic management for networks with dynamic IP allocations (e.g. ADSL, LTE and 3G) will be added in future releases.

To provision Sandvine SPB, configure the access policies in Sandvine and set up a hotline portal and the IP assignment rules. In PortaBilling® configure the following:

- Create Internet access policies where you define Sandvine attributes, service provider identifiers and speed limits;

- Create Internet access products. Include the Mobile network provisioning service in the products to trigger provisioning;
- Create accounts and assign static IP addresses to them;
- Configure ESPF to provision subscriber data.

When the administrator creates a new customer in PortaBilling®, it sends the provisioning requests to Sandvine SPB to create the new subscriber and assign a corresponding Internet access policy there. If there's already a subscriber with the same name in Sandvine SPB, their Internet access policy configuration is overridden with the PortaBilling® data received.

Sandvine SPB controls a user's traffic usage when they connect to the Internet. Thus, the user can use the service according to their access policy (e.g. they are denied access to web sites with pirate videos). When the user's status changes (e.g. they are blocked or their services are suspended due to non-payment), PortaBilling® updates their status in Sandvine SPB. The user is redirected to the captive portal URL. Similarly, when a user's access policy parameters change (e.g. new speed limits are applied), their data is updated in Sandvine SPB.

This integration enables CSPs to manage traffic effectively. They can:

- Monitor network performance and ensure quality service to subscribers.
- Introduce policy enforcement per subscriber based on their subscription plan (e.g. premium customers receive more bandwidth and higher Internet speed while residential users enjoy regular speed limits).
- Facilitate security on the network by detecting and blocking unwanted traffic / protocols (e.g. BitTorrent) and cyber threats.
- Collect various statistics data.

Integration with the ECConnect EAP for mobile core provisioning

PortaBilling® is integrated with the ECConnect EAP platform – the provisioning solution for MVNOs, which operate on the Optus network in Australia.

PortaBilling® provisions the ECConnect EAP via the ESPF (External System Provisioning Framework) with the following data:

- SIM card details (ICCID),
- subscriber details (MSISDN, service configuration, billing status)

- ECCConnect-related information such as “phoneid” and “clientid.” These are the unique IDs of a subscriber’s record and phone number in the ECCConnect EAP.

ECCConnect EAP then provisions the Optus mobile core to activate the SIM and grant access to the services for your mobile subscribers.

This is how it works:

Your administrator uploads SIM cards and configures the rate plans and mobile service profiles in the ECCConnect EAP. The rate plans must match the PortaBilling® products.

In PortaBilling® the administrator does the following:

- configures products that correspond to the rate plans defined in the ECCConnect EAP (e.g. domestic and roaming ones) and enables the Mobile network provisioning service to trigger provisioning;
- uploads SIM cards;
- configures custom fields for customer and account records to store ECCConnect-related information such as “clientid” and “phoneid,” and
- configures the ESPF to provision subscriber data.

When John Doe signs up for the mobile service bundle, a new customer is created in PortaBilling® and a SIM card is assigned to this customer’s account. PortaBilling® sends a provisioning request with SIM card details and subscriber data to ECCConnect EAP. ECCConnect EAP processes the request and generates the “phoneid” and “clientid” values for the subscriber. Then ECCConnect EAP triggers the API call to the Optus mobile core to activate the SIM card. John Doe can now enjoy the service.

Whenever John’s account status changes in PortaBilling®, (e.g. he runs out of funds or his account is suspended), PortaBilling® updates the Optus mobile core via the ECCConnect to stop John’s services until he tops up the balance. The provisioning request now includes the “phoneid” and “clientid” values to update the service availability status for John in the Optus mobile core.

If John decides to update his phone number with a different one or change his SIM card, his new details update automatically in the Optus mobile core without his service being stopped. This ensures the data integrity in the entire network infrastructure.

This integration is useful for Australian CSPs interested in becoming an MVNO. It provides a ready-to-use solution to roll out services virtually

instantly and therefore become an active player in the telecommunications market.

Invoice data export to SAP Business One ERP

PortaBilling® is integrated with SAP Business One ERP (Enterprise Resource Planning). PortaBilling® operates as a product inventory and the OCS (Online Charging System). SAP Business One is used to manage accounting processes (e.g. track accounts payable and account receivable, produce financial reports, etc.). So now you can use both systems in sync to streamline your business processes.

You create customers via a SAP Business One web interface. Their data is then automatically replicated to PortaBilling®.

This integration is to meet the business demands of a Communication Service Provider (CSP) from South Africa. There they use ledger codes to categorize revenue data by services. For example, a unique ledger code is allocated to a particular call direction:

- 400000001 – for local calls.
- 400000002 – for international calls.
- 400000003 – for wholesale calls.

These codes are specified in PortaBilling® for destination groups, subscriptions and manual transactions. First PortaBilling® calculates the charges and groups the data according to the ledger codes. Then PortaBilling® creates and sends the invoice report to SAP Business One via the SOAP API. The resulting report contains the accumulated costs for specific services and customers all grouped by ledger codes.

An accounting manager can now produce general ledger reports via SAP Business One for a specific period, e.g. an expense report for a particular quarter.

PortaBilling® sends the invoice report to SAP Business One when the invoice is produced upon:

- the customers' billing period closure,
- as an out-of-turn invoice generation, and /or
- an xDR re-rating and an invoice regeneration.

To send data from PortaBilling® to SAP Business One, middleware is used. PortaBilling® must communicate with that middleware via the SOAP API.



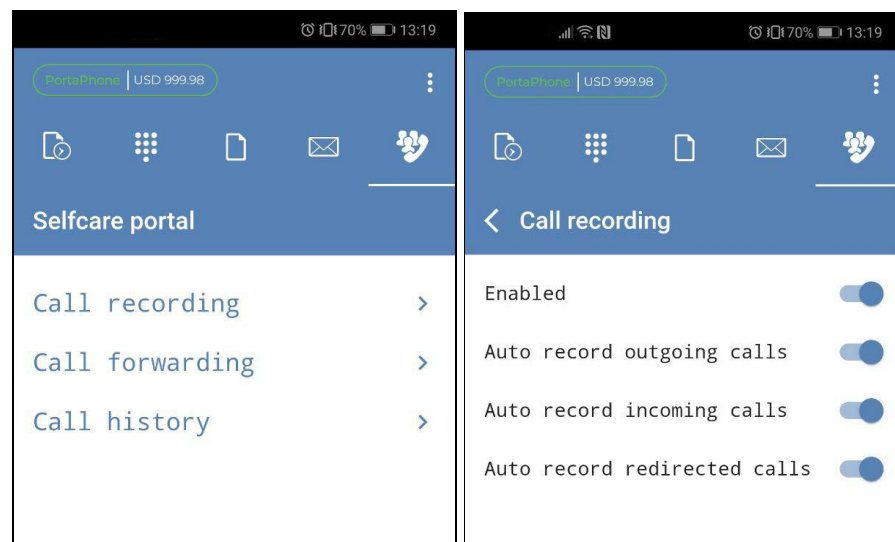
Since your business requirements most likely differ from South Africa CSPs, you need to develop your own middleware.

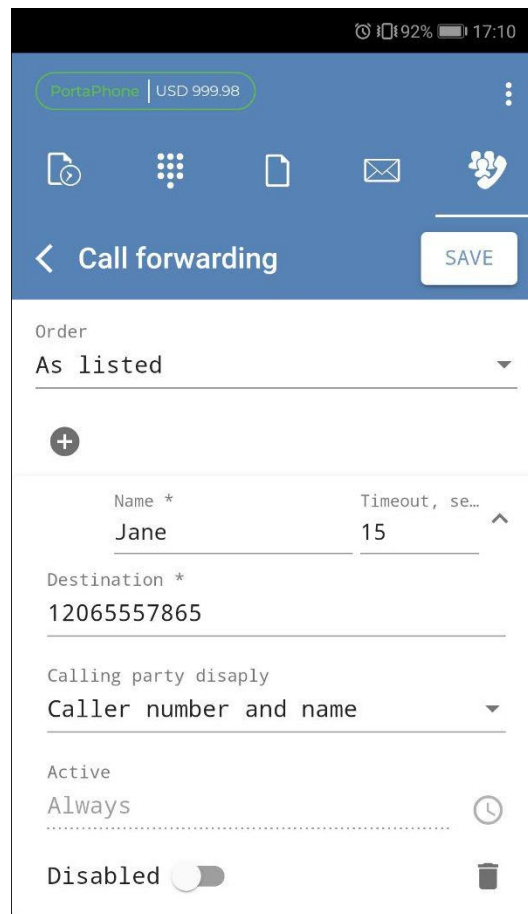
This integration automates the data transfer for invoicing and reporting to SAP Business One.

Self-care portal for PortaPhone

Now PortaPhone users can modify their service configuration from within the app. When they switch to the self-care tab in PortaPhone, they can:

- Configure follow-me lists and forwarding rules;
- Configure call recording; and
- Browse call history and listen to call records.





For the self-care portal to appear in PortaPhone, define the self-care URL when you build your app image on the configuration portal.

Any changes made on the self-care portal (e.g. updated forwarding rules) are pushed to PortaBilling® via the API.

With this enhancement, PortaPhone users manage their own configurations without having to explicitly log into the PortaBilling® self-care interface. This improves their user experience.

The global IP Centrex configuration (e.g. call barring rules, service codes definition) remains centralized and is done via the customer self-care in PortaBilling®.

To allow end users to manage their own service configurations, your administrator enables the **Can be edited by end users** check box for call forwarding and call recording service features within their product configurations.

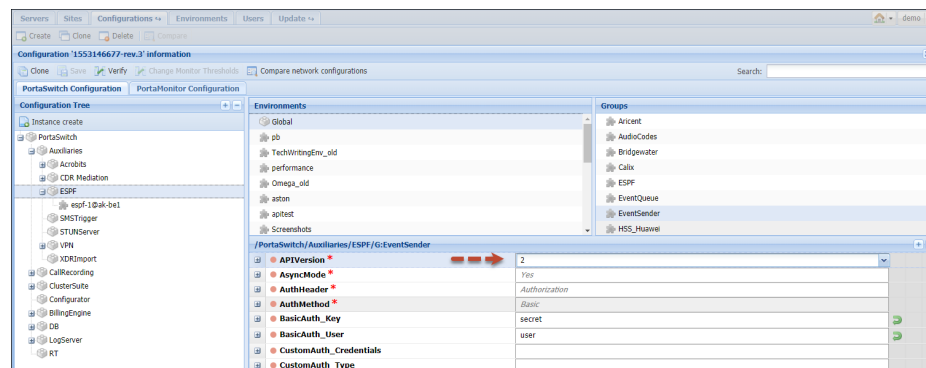
Other features and enhancements

- **Provisioning event version for ESPF** – There are two versions of provisioning events in the External Systems Provisioning Framework (ESPF): standard and simplified. ESPF uses standard events to provision external systems via dedicated provisioning handlers. To provision other external systems, the EventSender ESPF handler sends the simplified events to an external web application. This application then provisions a corresponding external system.

If you decide to configure provisioning of your external system on your own, we recommend that you develop the web application to operate with the simplified events. If the simplified events do not meet the system's requirements for provisioning, you may develop the web application to process the standard events.

Depending on the application's logic, you can now configure the ESPF to send the required version of provisioning events on the Configuration server. Simply select the value for the **EventSender.APIVersion** option, where:

- 1 stands for standard provisioning events, and
- 2 – for simplified provisioning events.



You can provision several external systems via the EventSender (e.g. an HSS and an external CRM system). If your web applications require different event versions, fine-tune ESPF to send the correct version to either application:

1. Configure the default event version for ESPF as described above. All applications will operate with it when you add more external systems to your infrastructure.
2. Define the event version for a particular web application. Enter the following string in the **ESPF.CustomIniOptions** option on the Configuration server:

```
[EventSender]APIVersionForReceivers=https://mycompany.com
=version
```

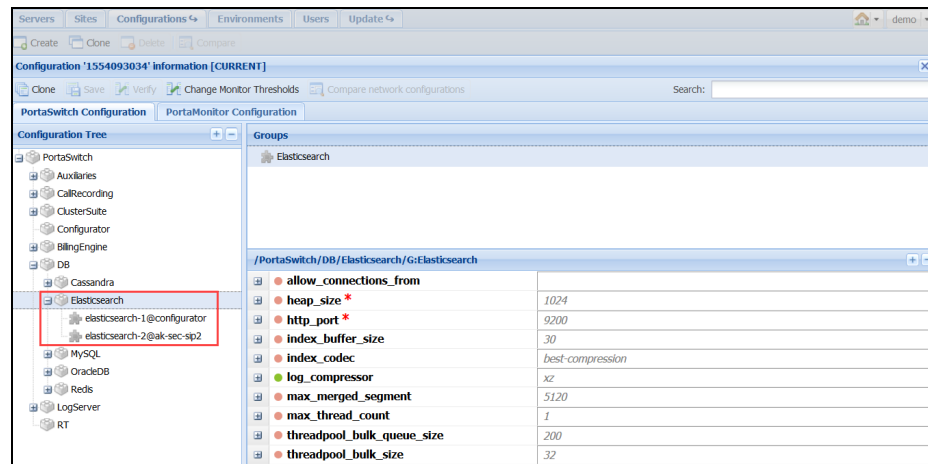
where:

- https://mycompany.com is the URL of the web application, and
- version is the provisioning event version value.

This enhancement simplifies external system provisioning configuration.

- **Elasticsearch cluster** – Elasticsearch provides storage for session logs, audit logs and raw xDRs that come from external systems. Your administrator can now create an Elasticsearch cluster. To make that happen, they create two Elasticsearch instances per site. Then the instances automatically combine to form a cluster. Additional instances can be added. Contact the PortaOne® support team to define the number of Elasticsearch instances your system requires.

An administrator can create only one Elasticsearch cluster per site. No timeout is expected upon adding a new instance to make a cluster.



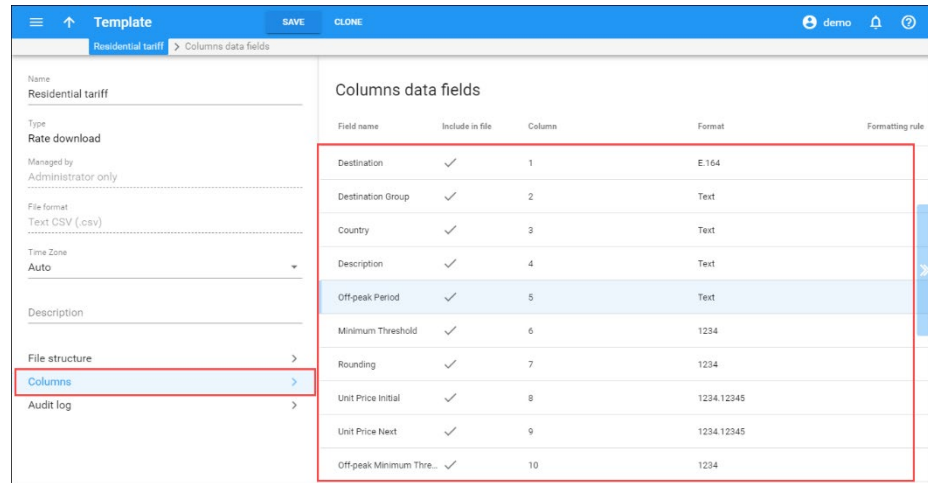
Please note that Elasticsearch clusters operate independently on the main site and on the secondary site. This means that there is no cross-site data (e.g. session logs) replication.

This enhancement improves system performance.

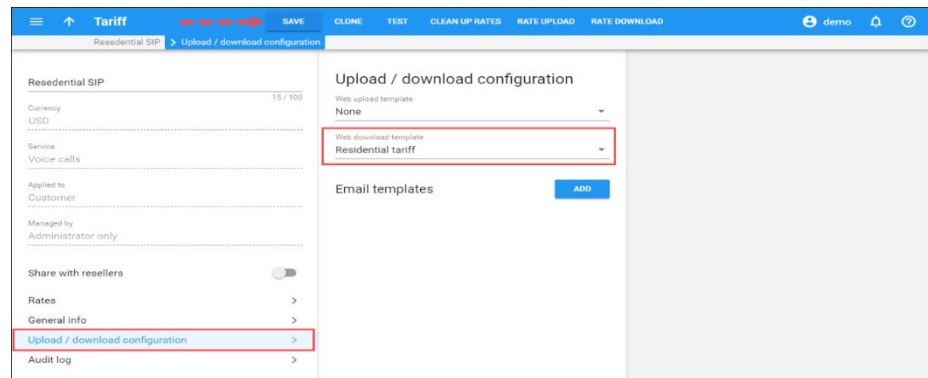
- **Rate download using templates** – Now you can download tariff rates by using the rate download template. Upon download, you can change the rate details in the file (e.g. change the prices for all

US destinations) and upload those modified rates to the tariff by using the Rate upload function.

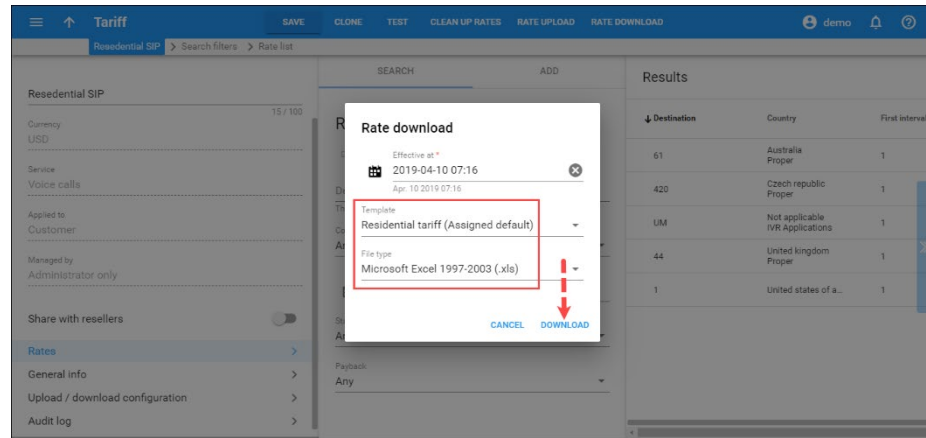
To download rates, create a rate download template and define the output file format. Select which data fields to receive in the output file.



You can set this template as the default for a specific tariff in the **Web download template** field.



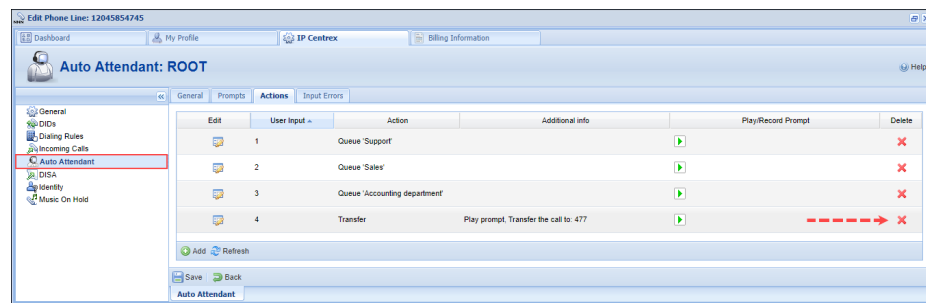
To download the rates click **Rate download** on the edit tariff panel. The output file configuration will be taken from the assigned template. You can change it by selecting another template or a different file format.



This enhancement saves an administrator time and improves tariff management.

- **Delete auto attendant menu actions** – With this release, IP Centrex customers can delete auto attendant menu actions via their self-care portal.

For example, Daisy Telecom configures their auto attendant menu to transfer calls to the accounting department when a user dials “3.” When a user dials “4,” the call is transferred to the chief accountant’s extension, 477. The chief accountant is overloaded with calls, therefore, Daisy Telecom deletes the action to directly transfer the calls to 477.



This enhancement allows customers to keep their auto attendant configuration in order.

- **Special prompt for calls via IVR when the callee is busy** – Now PortaSIP® plays a “The destination is busy now,” voice prompt when a call made via the Prepaid card IVR application

fails because the callee’s line is busy. This prompt helps users distinguish the reason for call failure.

Let’s say John calls Mary using a prepaid calling card. If Mary’s line is busy, John hears, “The destination is busy now,” so John does not redial her number again for a while. If the call fails due to connectivity issues, the system plays, “The number you have dialed is unreachable at the moment. Please try again later.”

This enhancement helps to avoid end user confusion about when a callee’s line is busy, thus end users do not spend time and money on useless redialing. As a result, service providers receive fewer complaints and therefore avoid needless troubleshooting.

Web interface changes

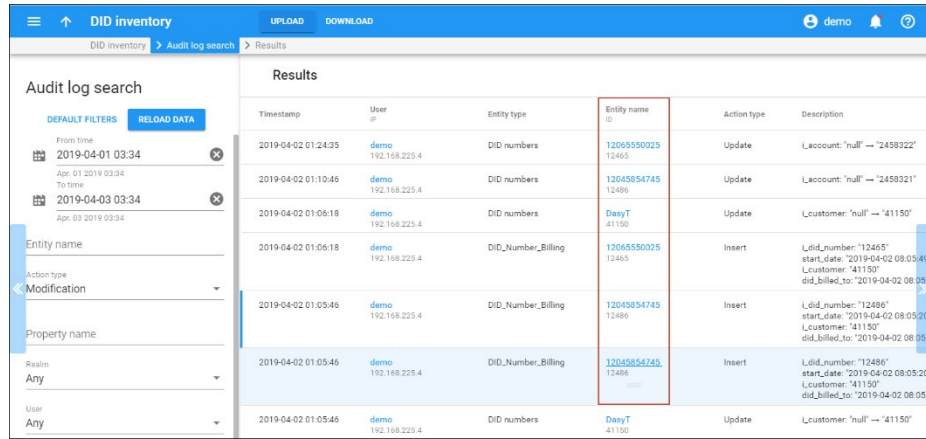
- **Add DID numbers manually** – With this release, an administrator can manually create a DID number for testing purposes within the DID inventory. Also, an administrator can manually restore a DID number in case of accidental deletion from the DID inventory.

The screenshot displays the 'DID inventory' web interface. On the left, a sidebar menu lists various management options, with 'DID numbers list' highlighted in red. The main content area is divided into two sections: 'DID inventory' and 'DID numbers list'. The 'DID inventory' section shows a summary table with columns for 'Total number', 'In use', 'Not in use', and 'Frozen'. The 'DID numbers list' section is currently empty. A 'Create a DID number' form is visible, also highlighted in red, with fields for 'DID number *', 'Vendor batch *', 'Country', 'Area', 'Pricing batch', 'Activation cost *', and 'Recurring cost *'. The 'SAVE' button is located at the top of the form.

To add a large quantity of DID numbers to the DID inventory, we recommend that you use the DID upload tool. This minimizes human error.

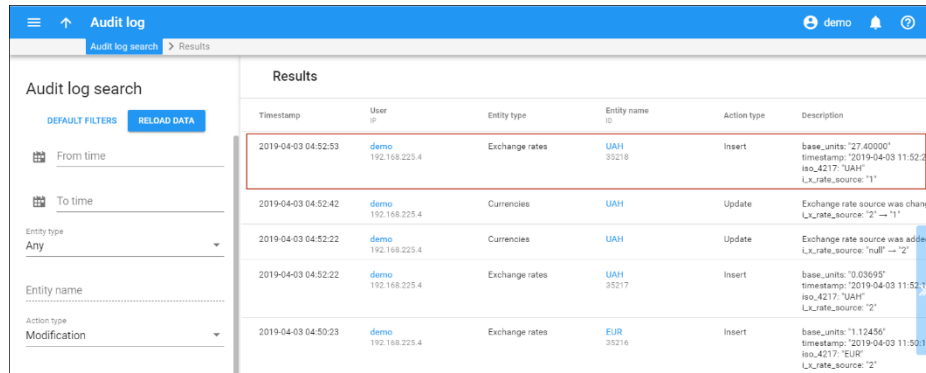
- **Improved Audit log usability** – The log features these enhancements:
 - Log records contain entity name and ID. This helps you quickly understand how the entity was modified.

- Entity name is an active link that opens the entity’s editing options. Deleted entities are shown as plain records.



Timestamp	User	Entity type	Entity name	Action type	Description
2019-04-02 01:24:35	demo	DID numbers	1206550025	Update	L_account: 'null' → '2459322'
2019-04-02 01:10:48	demo	DID numbers	12045854745	Update	L_account: 'null' → '2459321'
2019-04-02 01:06:18	demo	DID numbers	DaisyT	Update	L_customer: 'null' → '41150'
2019-04-02 01:06:18	demo	DID_Number_Billing	1206550025	Insert	L_did_number: '12465' start_date: '2019-04-02 08:05:49' L_customer: '41150' did_billed_to: '2019-04-02 08:05:49'
2019-04-02 01:05:46	demo	DID_Number_Billing	12045854745	Insert	L_did_number: '12486' start_date: '2019-04-02 08:05:20' L_customer: '41150' did_billed_to: '2019-04-02 08:05:20'
2019-04-02 01:05:46	demo	DID_Number_Billing	12045854745	Insert	L_did_number: '12486' start_date: '2019-04-02 08:05:20' L_customer: '41150' did_billed_to: '2019-04-02 08:05:20'
2019-04-02 01:05:46	demo	DID numbers	DaisyT	Update	L_customer: 'null' → '41150'

- When you modify a sub entity that cannot be traced by name (e.g. exchange rates for currencies), the name of its parent entity is shown in the Audit log page.



Timestamp	User	Entity type	Entity name	Action type	Description
2019-04-03 04:52:53	demo	Exchange rates	UAH	Insert	base_units: '27.40000' timestamp: '2019-04-03 11:52:34' iso_4217: 'UAH' L_currency_source: '1'
2019-04-03 04:52:42	demo	Currencies	UAH	Update	Exchange rate source was changed L_currency_source: '2' → '1'
2019-04-03 04:52:22	demo	Currencies	UAH	Update	Exchange rate source was added L_currency_source: 'null' → '2'
2019-04-03 04:52:22	demo	Exchange rates	UAH	Insert	base_units: '0.02695' timestamp: '2019-04-03 11:52:11' iso_4217: 'UAH' L_currency_source: '2'
2019-04-03 04:50:23	demo	Exchange rates	EUR	Insert	base_units: '1.12456' timestamp: '2019-04-03 11:50:12' iso_4217: 'EUR' L_currency_source: '2'

These enhancements aim to help you with your daily support and troubleshooting operations.