PortaSwitch New Features Guide

MAINTENANCE RELEASE 88

Copyright notice & disclaimers

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Preface

PortaSwitch® Maintenance Release 88 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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Enhanced payment collection

Service providers can gradually enforce outstanding payment collection. Step-by-step service deactivation encourages customers to pay their invoices on time and helps service providers maintain positive relationships with their customers. Service providers also receive additional revenue for each overdue invoice by applying service reactivation and late payment fees.

The process of outstanding payment collection may include four steps. Each step is optional, independent from other steps, and can be configured individually. You can use one, two, or all of them if necessary. The description below demonstrates the way the payment collection process works when all four steps are configured:

1. **Service limitation.**
   If a customer fails to pay invoices issued for services, the customer's status changes to "Service limited." This means that the customer can still use the services, but in a restricted capacity. For example, instead of the standard 100Mbps package, a customer can only use 1Mbps. While the service is limited due to non-payment, recurring charges still apply. A late payment fee is also charged each billing period. Service limitation can be lifted upon customer payment – or the next step is activated (e.g., customer suspension).

2. **Customer suspension.**
   If invoices are still not paid within the limitation period, the customer's status changes to "Suspended." While suspended, the customer can no longer use the services and is charged a late payment fee for each unpaid billing period. In this case, recurring charges do not apply. The customer can resume using the services when they pay in full for all the overdue invoices that caused the suspension. Once that happens, a reactivation fee applies and the customer can use the services again.

3. **Commitment termination for all accounts.**
   If invoices are not paid within the service suspension period, customers benefiting from a discounted subscription rate (a so-called "commitment") lose the discount. Services within these commitments are no longer provided. To renew the services, customers are required to repay the full cost of service backdated from the start of the commitment.

4. **Customer termination.**
   If invoices are not paid within the previous period (commitment termination takes place), the customer record is closed and can no longer be activated.

NOTE: You can set the options for payment collection either in billing periods or in days.

The administrator can set the following options to configure the payment collection process:

- Payment is expected within billing periods after invoice generation – this period is called the grace period. The due date of the invoice is calculated as follows: the invoice issue date + the grace period. For example, if the issue date is October 1 and the grace period is 2 billing periods, the invoice must be paid before December 1 (for a monthly billing period).
- Late payment fee per billing period – this is a fixed fee that applies to each billing period if a customer has an overdue invoice(s). A single late payment fee applies regardless of the number of overdue invoices.
- Limit service for customer after the due date – the number of billing periods after the due date when the customer receives the "Service limited" status. Once a customer is limited, their services are restricted but recurring fees still apply.
- Suspend the customer after the due date – the number of billing periods after the due date when the customer receives the "Suspended" status. When a customer is suspended, their services are blocked but no recurring charges apply.
- Reactivation fee – a fixed fee that applies each time the customer pays all their overdue invoices (that caused the suspension). The reactivation fee is included in the next invoice.
- Terminate commitments for all accounts after the due date – the number of billing periods after the due date when all account commitments are closed (terminated). Accounts can no longer use services/features provided within the commitments. Other services remain active.

NOTE: To apply a late payment fee / reactivation fee only for customers whose accounts have active commitments assigned, enable the **ReactivationAndLatePaymentDependOnCommitments** option on the Configuration server. By default, this option is disabled, which means that all customers are charged a late payment fee / reactivation fee in case of overdue invoices.

For example, to define the payment collection settings (grace period, service limitation and customer suspension, etc.) for residential users, the administrator performs the following steps:

- Opens **Customer class** > **Invoicing** > **Regular invoices**.
- Defines terms in billing periods.
- Defines that **payment is expected** within 1 billing period.
- Specifies a **late payment fee** of $2 on an overdue invoice(s).
- Sets to **limit service for customer** in 1 billing period after the due date.

NOTE: To limit services immediately on the due date, set "0" for the **Limit service for customer** option.

- Sets to **suspend customer** in 2 billing periods after the due date.
- Sets a $10 **reactivation fee**.
- Sets to **terminate commitments for all accounts** in 3 billing periods after the due date.
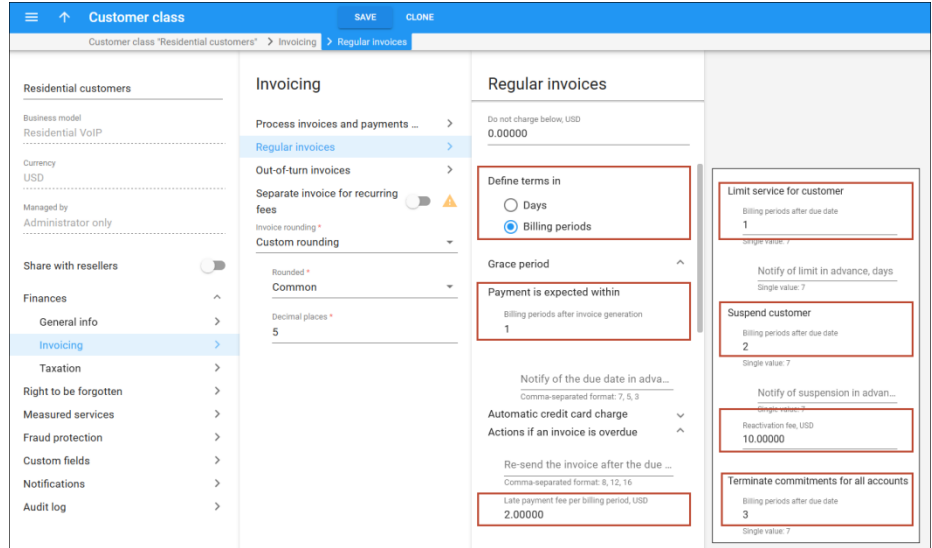
The configured payment collection schema illustrates the following timeline:
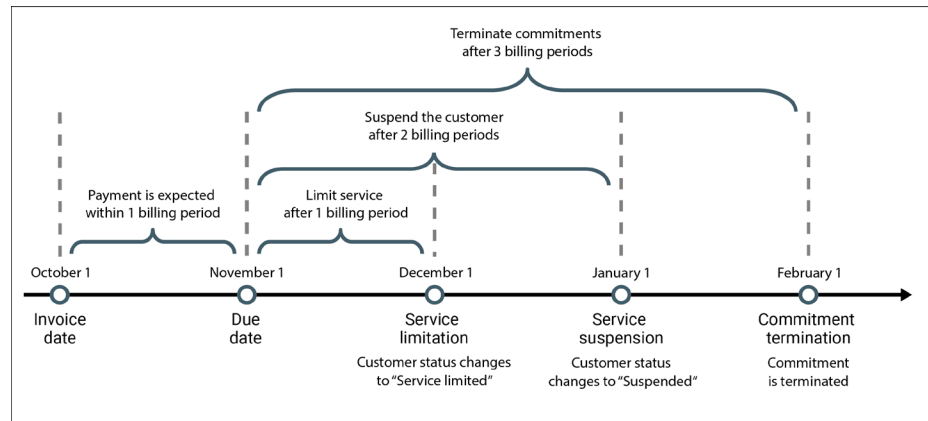
Let's see what happens if John Doe doesn't pay for his Turbo 100Mbps commitment for several months and tries to continue to use the services after suspension.

Date	Description
October 1	John Doe receives a $20 invoice for his Internet service for September.
November 1	John Doe hasn't paid for the services. • The September invoice becomes overdue, since

	the grace period is 1 billing period (October-November). • John Doe receives the October invoice with its $40 total: ○ $20 for the September invoice; ○ $20 for the October invoice.
December 1	John Doe still hasn't paid for the services. • John Doe's status changes to "Service limited" since 1 whole billing period passed since the September invoice was issued (on October 1). Now John can only use 1Mbps of Internet instead of the standard 100Mbps. • The October invoice becomes overdue since the grace period (1 billing period, November-December) ended. • A $2 late payment fee applies due to the overdue September invoice. • John Doe receives the November invoice with its $62 total: ○ $40 for the September and October invoices; ○ $22 for the November invoice ($20 for services plus a $2 late payment fee).
January 1	John Doe still doesn't pay for the services. • John Doe is suspended since 2 billing periods passed after the September invoice due date (November 1). • The November invoice is overdue, since the grace period (1 billing period, December-January) ended. • A $2 late payment fee applies due to overdue invoices. • John Doe receives the December invoice with its $84 total: ○ $62 for the September, October, and November invoices; ○ $22 for the December invoice ($20 for services plus a $2 late payment fee).
January 25	• John Doe pays $84, which covers his entire invoice debt. • A reactivation fee of $10 is applied and now John can use the services.
February 1	• John Doe receives the January invoice with its $14.5 total:

	o $4.5 for seven days of service usage (January 25-31) and
	o a $10 reactivation fee.

Let's see the alternative outcome when John Doe pays only $25 (not $84) on January 25. Though the September invoice ($20) is paid in full, services become limited due to the partially-paid (overdue) October invoice ($5). A reactivation fee is applied and then John's status changes from "Suspended" to "Service limited."

Benefits

Service providers can stimulate their customers to pay for their services on time.

An administrator can define conditions and penalties (late payments fees, reactivation fee limitations) that apply in relation to unpaid invoices for a particular customer class all in one place.

Shift the date for service limitation/suspension

When service limitation/suspension takes place during a holiday (a region-wide day off) or a weekend, some customers request services to be turned back on and promise to pay once the holiday is over. However, there are usually fewer employees to process such requests during weekends and holidays, so to decrease their load; configure an automatic shift in the service limitation/suspension date (to weekdays instead of weekends and public holidays).

To accomplish this, the administrator performs the following steps:
- Goes to the **Configuration server** > **ClusterSuite** > **Web cluster**.
- Selects **Global** environment > **CustomerBillStatuses** group.
- Enables **LimitsEnabled** option.
- Sets "0" for **NonWorkingDaysLimit** option. This means that all customers will only be limited/suspended on weekdays.
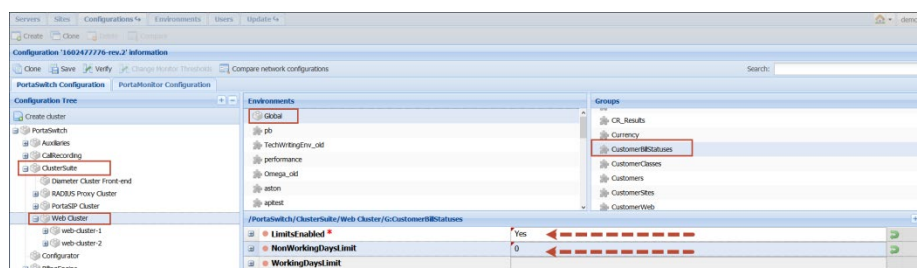
On the PortaBilling® web interface, opens **My company** > **Company info** panel.
- Selects **Non-working days** panel.

- Selects **Set weekends** option and checks Saturday and Sunday in the dialog window.
- Selects public holidays on the calendar manually or uploads a file of non-working days in .csv format.
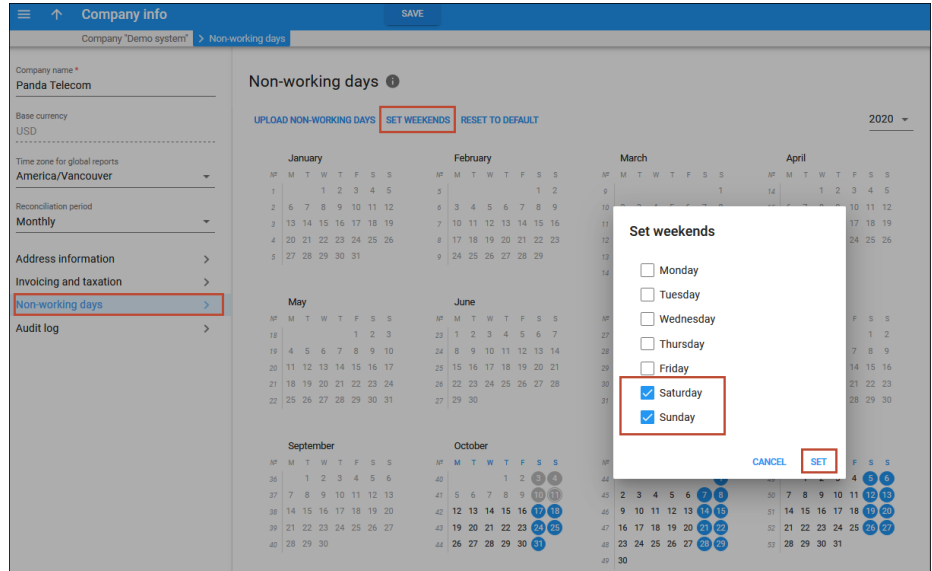
For example, let's say that Mary Smith didn't pay her previous invoices, so on Sunday her services are suspended. Since it is set as a non-working day, Mary's suspension automatically shifts to Monday so that on Sunday, Mary can use the services. On Monday, her services are suspended.

Mary doesn't pay her invoices, so her commitment will be terminated. The date of termination falls on a Saturday. Mary's commitment is terminated, since date shifting only works for service limitation or suspension.

Reschedule the service limited/suspended status manually

When customer services are going to be limited or suspended (customer has an overdue invoice), the administrator sees a notification on the customer's record. This notification shows the date the customer status will change and the invoice(s) number that caused limitation/suspension.

An administrator can reschedule the service limitation/suspension date manually. To accomplish this, the administrator performs the following steps:

- opens Mary Smith's record;
- clicks **Reschedule**;
- selects a new date for customer limitation/suspension in the dialog window; and

- clicks **Reschedule** in the dialog window.
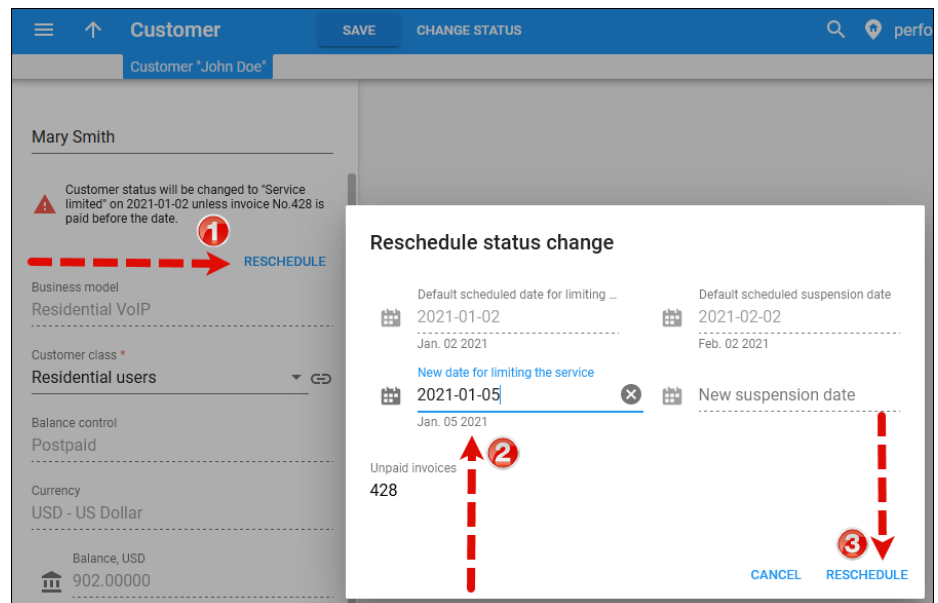
Web interface for the External System Provisioning Framework

The External System Provisioning Framework (ESPF) captures changes in customer/account configuration in PortaBilling® and sends provisioning events to an external application (for example, the IPTV platform). After the external application updates the entity's configuration, it returns the event provisioning status to PortaBilling® via the ESPF API or replies with HTTP Status Codes (e.g., "404 Not Found", or "500 Internal Server Error.")

With this release, an administrator can see the provisioning status of events for account and customer entities (e.g., failed, queued, successful) and check event logs directly in the PortaBilling® web interface. The administrator can also filter the provisioning event logs for the account entity.

Thus, if the provisioning to an external application fails, an administrator can check the web logs directly in the web interface, instead of accessing logs through a command line interface. This saves time and helps solve the issues faster. After solving the issues, the administrator can re-start the provisioning in one click.
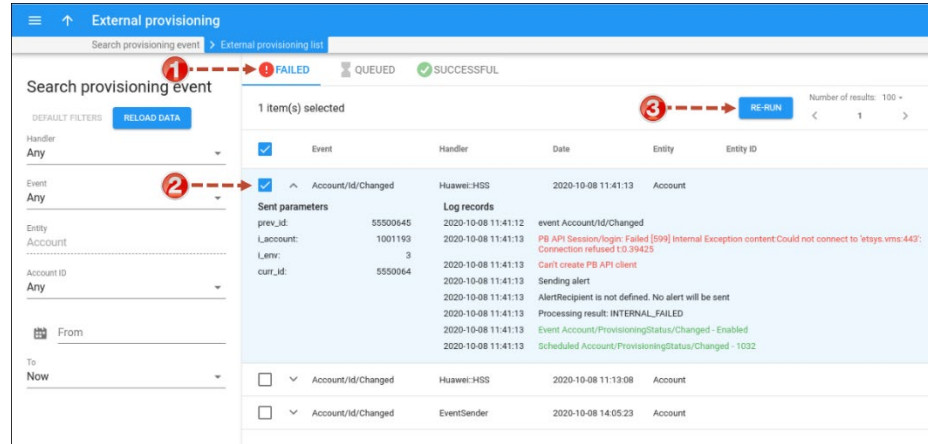
Also, it is possible to check the status for a particular provisioning event and re-provision it via the API. To do this, the `GET/espf/v1/logs` API method was extended to return a list of initial event parameters. These parameters are used in `POST/espf/v1/event/create` request to re-provision a failed event.

This is how it works:

Scenario 1

Let's say a service provider needs to provision the information about customers and accounts from PortaBilling® to an external application (for example, the IPTV platform). There is an account, John Doe, in PortaBilling®. John Doe is assigned a product – Standard TV. The administrator changes John Doe's product from Standard TV to Premium TV in PortaBilling®. These changes are recorded as a provisioning event and sent by the ESPF to the IPTV platform. The IPTV platform receives the provisioning event that contains John Doe's unique account ID and the information that the product has changed. The IPTV platform then attempts to change John Doe's product from Standard TV to Premium TV. The product change fails. The external application sends the failed provisioning status to PortaBilling®.

The administrator checks the logs on the External provisioning panel in the PortaBilling® web interface and sees that provisioning failed because incorrect credentials were used in the API request. The administrator reports the issue to their colleague, who sets the correct credentials on the IPTV platform side. Then the administrator clicks the Re-run button in the PortaBilling® web interface to re-provision the event.

As a result, the IPTV platform successfully changes John Doe's product from Standard TV to Premium TV and sends the successful provisioning status to PortaBilling®.

Scenario 2

Let's say a customer service representative (CSR) uses the service provider's CRM system, which then communicates with PortaBilling® via API. The service provider has a new customer, Jerry Price.
The information about this customer needs to be provisioned to PortaBilling® and to an external application (for example, the IPTV platform).

To do this, the CSR creates a new customer record for Jerry Price in the CRM system, which provisions this information to PortaBilling®. The customer creation is recorded in PortaBilling® as a provisioning event and is then sent by the ESPF to the IPTV platform. The IPTV platform fails to create a customer record because it ran out of disc space so it replies with a "500 Internal Server Error" message to PortaBilling®.

The CRM system requests the customer provisioning status from PortaBilling® via API using the `GET/espf/v1/logs` method and displays this status in the web interface. The CSR sees that the event provisioning failed and asks their colleague to check the logs on the IPTV platform side. The logs shows that the provisioning failed due to an issue with the disc space. Once the disc space is freed up, the CSR clicks the button in the CRM system's web interface to re-provision the customer record via the API.

As a result, the customer record for Jerry Price is successfully created in the IPTV platform.

Benefits

This feature allows the administrator to control the provisioning of events from PortaBilling® to external applications. It also saves time that might be spent on troubleshooting.
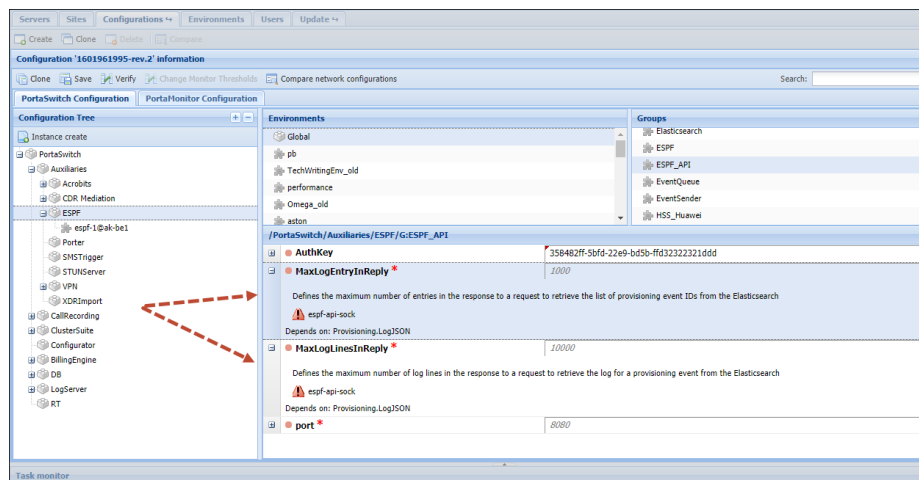
Configuration:

Go to the Configuration server and complete the following steps to enable ESPS logs storage:
1. Clone the existing configuration.
2. Specify these parameters under the ESPF.Provisioning group:
   - **LogJSON** – Enable logging in JSON format. This is required for the dedicated log server.
   - **LogRetentionMonths** – Define how long the indices with ESPF logs must be stored in the Elasticsearch storage before they are deleted. The default value is set to 3 months.
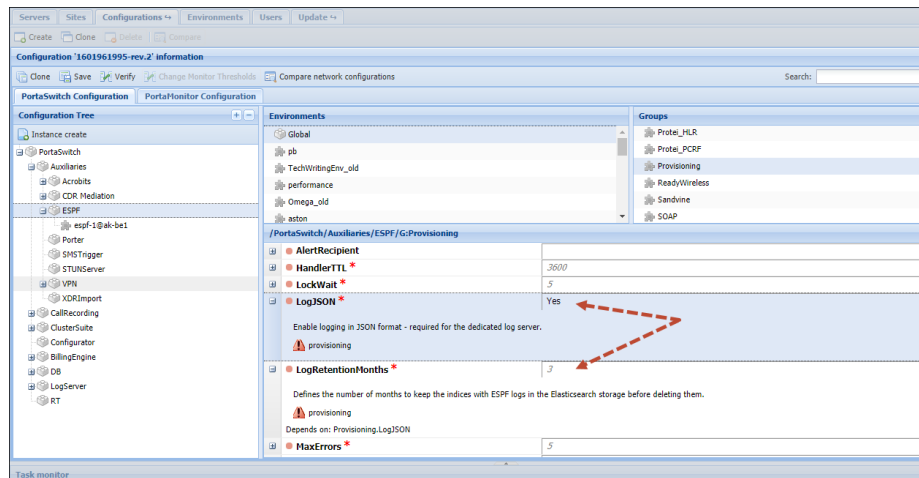
3. Define these parameters under the ESPF.ESPF_API group:
   - **MaxLogEntryInReply** – Define the maximum number of entries in the Elasticsearch response to a query for the list of provisioning event IDs. The default value is set to 1,000 entries.
   - **MaxLogLinesInReply** – Define the maximum number of log lines in a response query for the log for a provisioning event from the Elasticsearch. The default value is set to 10,000 log lines.

4. Configure the EventSender handler to send the provisioning status to an external application.
   - Go to the ESPF.EventSender group and specify the following parameters:
     - **BasicAuth_Key** – Specify the user password for the "Basic" HTTP authentication.
     - **BasicAuth_User** – Specify the user ID for the "Basic" HTTP authentication.

o **URL** – Specify which web address events should be sent to.
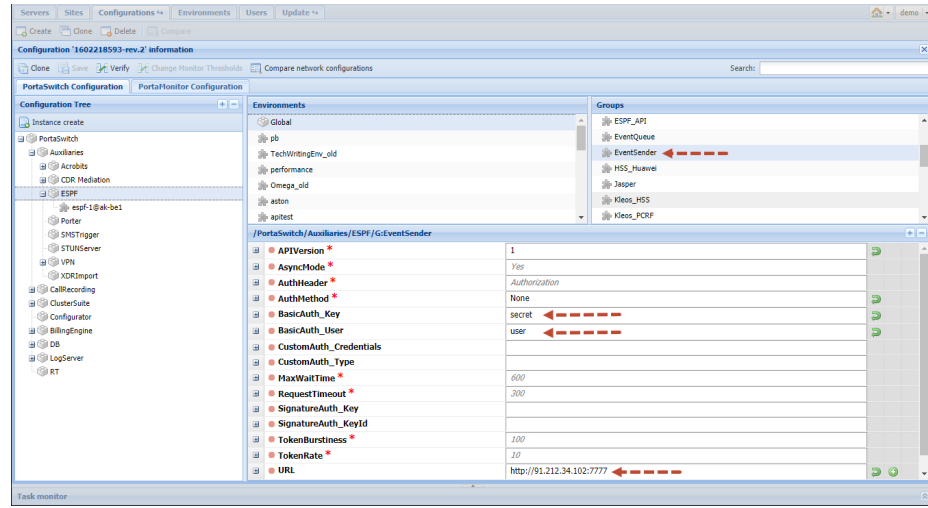
5. To subscribe the EventSender for an `Account/ProvisioningStatus/Changed` event, run the following scripts:
```
> /home/provisioning-framework/utils/evctl.pl type
enable Account/ProvisioningStatus/Changed
> /home/provisioning-framework/utils/evctl.pl handler
enable EventSender
```

Other features and enhancements

Possibility to provision the service to all Calix ONT ports

Previously, when configuring the Calix ONT (Optical Network Terminal) auto-provisioning for an account, the administrator could select only one ONT port for a specific service type. For example, when the administrator selected port 1 to provision the Internet service, a customer could accidentally plug their device into the wrong port (e.g., port 3), where Internet service was unavailable. The customer then would call the service provider's technical support line to resolve the issue. And a customer service representative would spend time troubleshooting and giving the instructions for a correct setup.

With this enhancement, service providers can provision all ONT ports with the same service. In this case, the Internet service is available to the customer on every port. This eliminates mistakes and thus reduces the load on the service provider's support staff.

For example, an Internet service provider provisions Calix ONTs in residential gateway mode (RG). Thus, bandwidth is limited on the entire ONT rather than on a specific Ethernet port. When the administrator chooses to provision all the ports, a user can plug their devices into any port for Internet access and the bandwidth limit is shared among the ports.

Let's say John Doe signs up for the Internet service package with a 100 Mbps bandwidth limit. The service provider's engineer installs a Calix ONT at John's home. John plugs his PC into a random port (any of four) of the Calix device. The 100 Mbps Internet service is now available on John's PC. John plugs his laptop into another available port. Now the bandwidth limit is shared between the PC and the laptop (e.g., downloading on the PC takes 60 Mbps and a video conference on the laptop takes 40 Mbps).

To enable this scenario, the administrator needs to configure the following in PortaBilling®:

1. Create an Internet access policy:
   - choose **RG** (residential gateway) for the **ONT slot type**;
   - define the bandwidth limit.
2. Assign the service policy to the product.
3. Assign the product to the account.
4. Create a CPE profile for the specific type of Calix ONT (e.g., Calix 844E) and add the Calix device to the CPE list.
5. Assign a Calix ONT with all ports provisioned to the account:
   - open **Account** > **Account info** > enable **Auto-provisioning**;
   - select the Calix device (ID); and
   - select **All** for **Data device port**.

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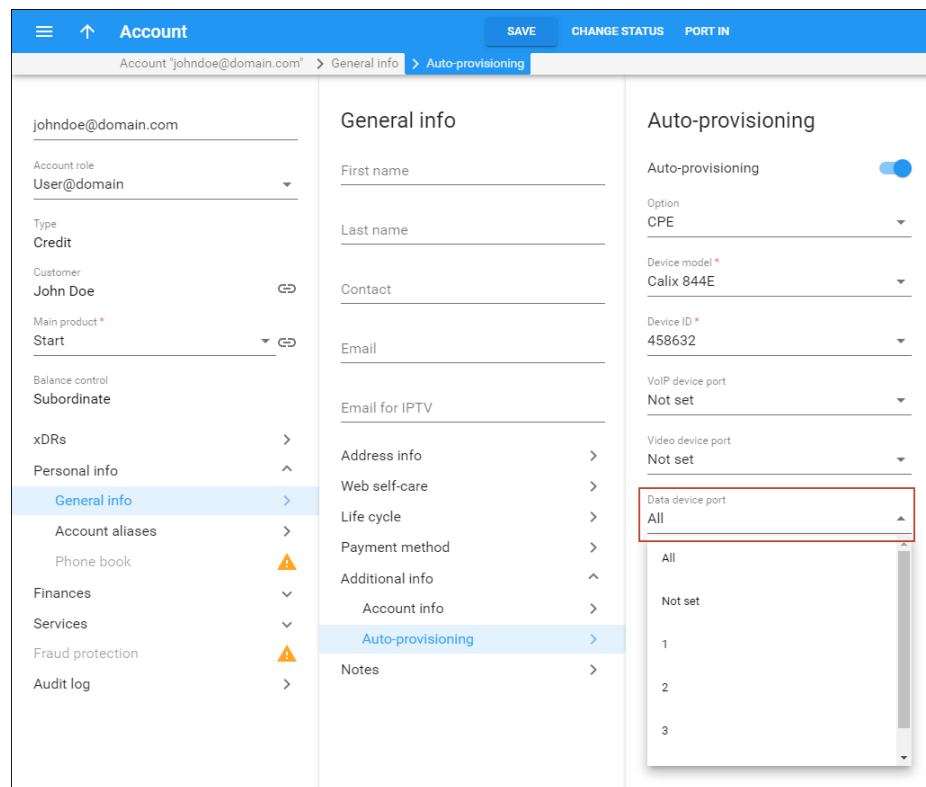
It's also possible to provision all the ports with Internet service by using the **Gigabit Ethernet** rather than **RG** as the **ONT port type**. In this case, the bandwidth limit defined in the service policy applies to each Ethernet port independently.

With this enhancement, service providers can allow their customers to access the Internet via any ONT port. This helps to avoid customer complaints caused by selecting a wrong port and as a result saves the customer support staff time. Also, customers can now plug in several devices at the same time.

Call features supported during encrypted calls

With this release, call encryption is enhanced by the support of the following call features: three-way conferencing, call transfer, and call on hold. It's now possible to use these features when making secure calls protected by SRTP encryption. Support for other call features (e.g., call pickup, call parking) during encrypted calls will be added in future releases.

Transcoding for Opus codec

With this release, PortaSwitch® now supports transcoding for the Opus codec. This is an open, royalty-free audio codec for smartphone dialer apps and it is one of the standard WebRTC codecs. Opus enables the delivery of good-quality sound even over a poor Internet connection – for example, if a customer uses a browser to make a call from a hotel with low-quality WiFi.

Here's how it works: in such situations, PortaSwitch® receives a media stream encoded with Opus to ensure quality, then, as the call has to go to a vendor that only supports "old school" telephony codecs such as G.711 or G.729, PortaSIP® will convert the media from Opus into G.729 to allow it to go to the vendor and back. This ensures no added costs, good sound quality, and codec compatibility on the VoIP vendor side.

NOTE: Transcoding is supported for Opus codec with an 8 kHz sampling rate. Support for other sampling rates for Opus codec (e.g., 48 kHz) will be implemented in future releases.

The support of transcoding for Opus codec ensures good call quality even with a poor Internet connection at no extra cost.

Transfer commitments between customers

Now an administrator can transfer commitments between customers. This enhancement is useful in situations when a customer who currently uses a TV or Internet service commitment moves out (for example, apartment tenants or owners), and the new occupant who moves in agrees to continue using the services provided within either the same or an upgraded commitment package.

If the current customer who uses the commitment decides to terminate the services, the early cancellation penalty will be applied. But if the existing commitment is transferred to another customer, the early cancellation penalty is not applied. As a result, it's beneficial for the customer to use the transfer commitment option instead of cancelling the commitment early. A transfer fee may be applied to the customer to whom the commitment is transferred.

Let's consider an example:
Let's say that John Doe has been using Turbo 100 Mbps high-speed Internet commitment for 12 months at $15 per month, with the full duration of the commitment being 24 months. John will move to another apartment soon and Mary Smith will move into his old apt. She wants to continue using the existing commitment.

John calls his customer service representative (CSR) and informs the CSR that he wishes to transfer the existing commitment to Mary Smith on September 15. The CSR contacts Mary Smith, explains the conditions of the commitment, and informs her that if she wishes the commitment to transfer to her, a $1.50 fee will be charged. She confirms that she wishes to take over the commitment starting on September 16 (she can also choose to upgrade it and take on a more expensive commitment, for example, 1 Gbps Internet service).

On September 15, the commitment transfer takes place. The administrator moves the commitment from John Doe to Mary Smith. John can still use the commitment until midnight on September 15. Starting on September 16, the commitment fully transfers to Mary and the charges begin to be calculated.

On October 1, John Doe and Mary Smith receive their invoices for September.
John Doe is charged a prorated fee of $7.50 for the 15 days he used it in September. Mary Smith's total amount is $9 – the prorated fee of $7.50 for the 15 days when she took over the service in September plus a $1.50 commitment transfer fee. John Doe and Mary Smith pay their invoices. After John Doe moves, Mary Smith continues the service with the commitment in her name until the end of the commitment period.

To transfer a commitment (for example, Turbo 100 Mbps high-speed Internet service commitment) from John Doe to Mary Smith, the administrator:

- Opens Mary Smith's record > **Finances** > **Commitments**;
- Clicks the **Transfer from** button;
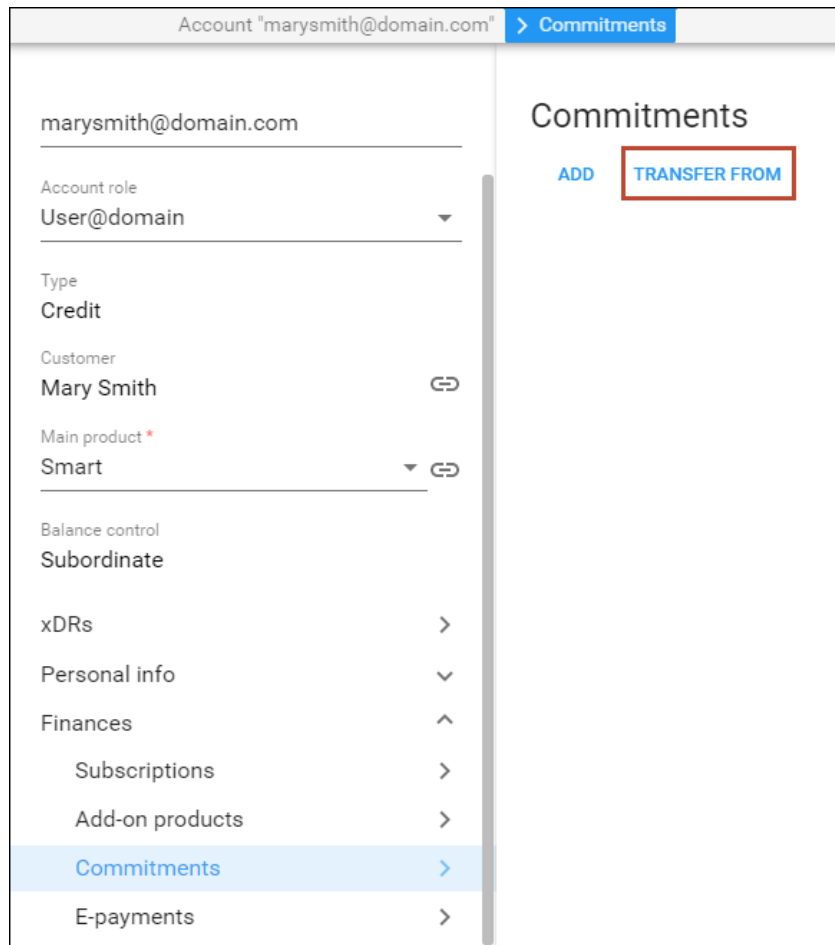
- Uses **Transfer commitment dialog window** to transfer the commitment from an existing account (John Doe's); and
- Activates the **Apply transfer fee** toggle switch and clicks **Transfer**.
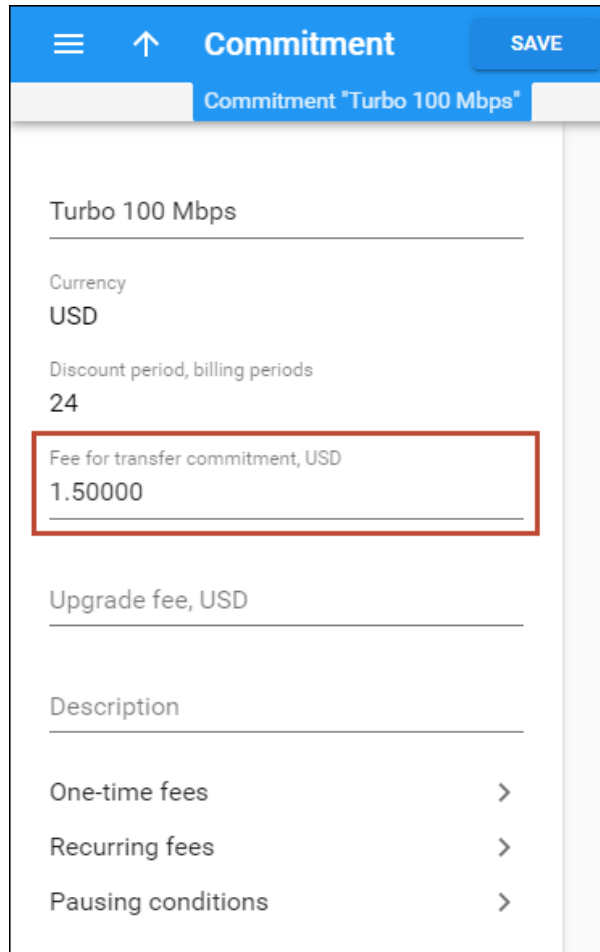
The commitment transfer fee is set when a commitment is created. This fee can only be modified up until a commitment is assigned to an account. To set the amount for a commitment transfer fee, the administrator:

- Creates a new commitment: **Service catalog** > **Commitments** > **Create** ("Turbo 100 Mbps" in the example); and
- Opens the new commitment and sets the desired **Fee for transfer commitment**.

This enhancement provides more flexibility for customers who use commitments. As a result, it becomes easier to encourage customers to sign up for commitments because they can now transfer them to other (new) customers and avoid paying the early cancellation penalty if, for example, they need to move.

With this enhancement, the administrator can transfer commitments between customers and set the fees for commitment transfers in just a few clicks.

Configure commitment termination penalties for a specific period

The administrator now can configure early commitment termination penalties for both recurring and one-time fees. This means that the early cancellation fee can be applied for an arbitrary period of time (e.g., just the last 3 months), not only for the whole period when the commitment was used. The administrator can also waive particular penalties for recurring and one-time fees charged as a part of a commitment.

The administrator now can also choose whether to include specific early termination penalties carried over from the previous customer for a transferred commitment. This penalty is applied to the customer to which the commitment was transferred.

For example, John Doe signs up for a 24-month Drive TV service commitment at $15 per month on 02 December 2020. The monthly service fee for the Drive TV subscription without a long-term commitment is $20. Thus, John Doe enjoys a discount of $5 per month.

On the same day, he is charged $10 - 100% discount for the setup (a full one-time fee of $10 applies if the customer doesn't sign up for a commitment) = $0. He is also charged $400-$399.99 = $0.01 for the TV-set. His first invoice comes up on 01 January 2021 and it is $14.51 ($15 monthly service fee prorated for 29 days of commitment = $14.50 + $0.01 discount charge for the TV set).

On May 02, John Doe decides to terminate the commitment and informs the customer service representative (CSR) about it. The CSR informs John that an early termination penalty of $5 will be applied to each of the 6 months when John used the commitment services at the discount price, totaling $30.

The CSR next informs John that he will also need to pay the remainder of the full price of the TV-set ($399.99) and cover the setup costs ($10). John Doe informs the CSR that he is ready to pay all the penalties next month, but if the recurring charge penalties for the discount monthly service are reduced to the last 3 months when he used the commitment (3 x $5 = $15), he is ready to pay for everything on the same day. To support the positive cash flow, the CSR agrees to waive the early termination fees for the first 3 months when John used the commitment.

To configure the commitment termination penalties, the administrator:
- Opens John Doe's **Account** > **Finances** > **Commitments**.
- Selects the Drive TV commitment.
- Opens the **Termination** tab and sets the commitment termination date. (**Apply penalties** toggle switch is active by default)

- Proceeds to configure early termination penalties in the dialog windows called by clicking the **Configure** buttons.

- Configures **Penalties based on recurring fees**.
In our example, the CRS only applies the early termination penalties for the last 3 months when John used the commitment – from March to May 2021.

Once configured, the penalties can be recalculated by clicking the **Recalculate** button. The sum total of the penalties will be updated, too.

- Configures (decides to keep or waive) the **Penalties based on one-time fees**.

As a result, John receives an invoice for $425.95 ($0.96 prorated service fee in May + $399.99 TV-set price + $10 TV set-up fee + $15 recurring charge penalties for the last 3 months of using the commitment). John's commitment is terminated, so he can no longer use the service.

The administrator can waive the commitment penalties if the customer wants to close the existing commitment and immediately sign up for a new upgraded commitment. This can be done by clearing the corresponding check boxes.

If a commitment set for an early termination was previously transferred from a different customer, there will be two different toggle switches activated by default: **Apply penalties** and **Include penalties from the previous account** (calculated for the previous customer). The administrator can exclude the early termination penalties calculated for the previous customer by deactivating the corresponding toggle switch.
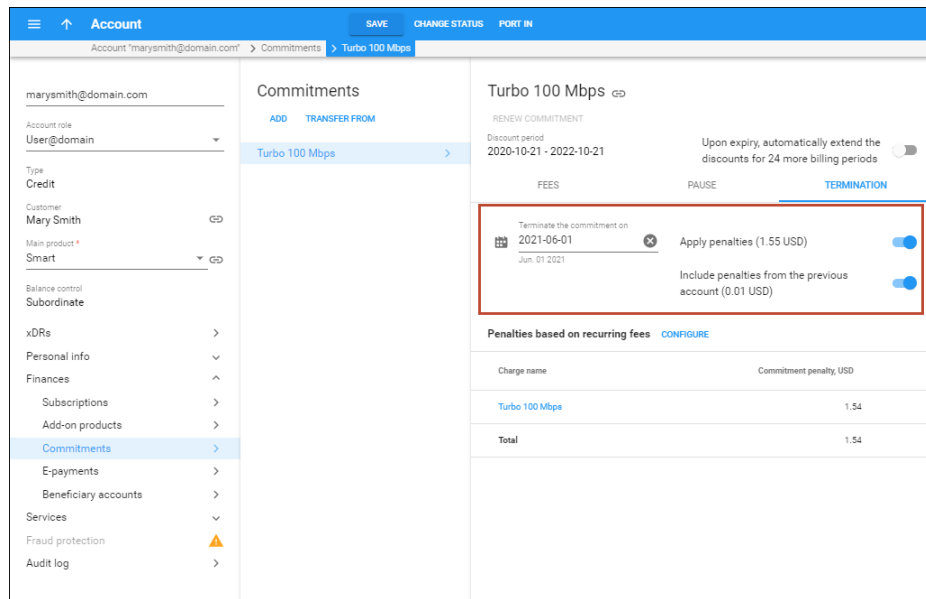
This enhancement allows the administrator to configure the commitment transfer penalties by setting the exact time period for which to apply the penalties, add or remove certain penalties, and select to include the penalties for the time when the commitment was used by the previous customer.

Web interface changes

Search subscriptions by name when selecting subscriptions for a commission plan

Before, an administrator needed to scroll through the list of subscriptions to add the required one to the commission schema.

Now, an administrator can save time on adding subscriptions to the commission schema by searching for the necessary subscriptions by name.