



# PortaSwitch

## New Features Guide

76

MAINTENANCE  
RELEASE

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**PortaSwitch® New Features Guide, March 2019**  
**Maintenance Release 76**  
**V1.76.05**

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## Preface

PortaSwitch® Maintenance Release 76 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/](http://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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## Real-time billing for roaming SMS

To remain competitive in the market, MVNOs must ensure that their subscribers enjoy roaming services. Roaming charges are higher than domestic ones; therefore, real-time billing is crucial for saving subscribers from overspending.

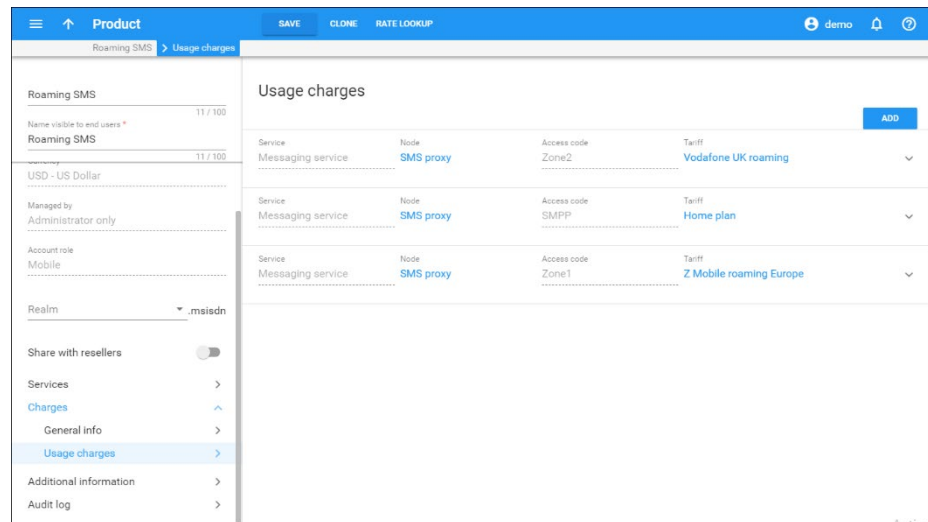
PortaBilling® supports real-time billing for SMS services used while a user is roaming. When a subscriber sends an SMS from abroad, PortaBilling® identifies the country the subscriber is currently visiting and selects the roaming tariff based on this country. Then it charges the subscriber depending upon the destination number.

This is how it works in detail.

All of the world's countries are divided into roaming zones to formulate the pricing for service usage. Each zone has its own rate defined in the roaming tariff.

The administrator creates a special “Roaming Zones” destination group set in PortaBilling®. The destination groups within the set correspond to the roaming zones and contain their own respective destinations. The home country is not included in the destination group set.

When a subscriber sends an SMS from abroad, PortaBilling® receives the Diameter Ro request for processing. The request contains the `Originator-SCCP-Address` AVP (attribute-value pair) with the E.164 number of the serving SMSC. PortaBilling® uses this number to look up the longest destination match among the destination groups in the “Roaming Zones” destination group set. The destination group serves to identify the user's roaming zone. This destination group name matches the access code defined for the usage charges record in the product configuration. Thus, PortaBilling® uses this name to select the roaming tariff and charge the subscriber.



For example, let's say that John Doe from Canada is traveling in the UK. The UK belongs to roaming zone 2 where SMSs to Canada cost \$0.03. The "Roaming Zones" destination group set in PortaBilling® contains the destination group "Zone2" which includes Canadian destinations.

John sends an SMS to his wife in Canada. PortaBilling® receives the Diameter Ro request with the number 447340555555 in the Originator-SCCP-Address AVP. PortaBilling® finds the longest match for 447340555555 in the destination group "Zone2." PortaBilling® searches for the usage charges record with the Zone2 access code in John's product configuration and selects the corresponding roaming tariff. As a result, John is charged \$0.03 for an SMS.

With this functionality, the benefits for mobile subscribers include:

- the ability to send SMSs both in the home network and while roaming;
- a clear view of one's own expenses and therefore, better control.

MVNOs, in their turn, benefit from being able to:

- formulate flexible pricing per roaming zone; and
- reduce the risk of revenue loss by charging subscribers in real time.

### Implementation specifics:

1. Real-time billing for roaming SMSs is enabled via a special module for Diameter. To enable it, enter the `roamingzone=Porta::Extra::RoamingAccessCode` string in the **Custom.LoadModules** option on the Configuration server.
2. You must create the destination group set with the name "Roaming Zones" in PortaBilling®. It is used to identify the user's roaming zone and consequently select a roaming tariff.

3. The destination group set can contain all countries distributed among the destination groups according to the roaming zones they belong to. The home country is not included and SMSs sent from it are charged using the default SMPP access code.
4. Access codes in product rating lists must correspond to the destination group names in the “Roaming Zones” destination group set.

**Known limitations:**

1. PortaBilling® charges only for outgoing SMSs.
2. The user is charged for sending SMSs regardless of whether the SMS was delivered or not.

## On the spot conferencing in IMS via the Call control API

With this release, you can develop an app (e.g. a switchboard app) to provide intelligent conferencing services with PortaSIP® as the IMS TAS and Call control API. Using the app, mobile users can turn active calls into conferences on the fly by simply adding more participants. They can leave this conference call and let the conversation continue among the remaining participants.

For example, Alice can check the app to see if Bob and John are available before adding them to her active call with Peter. Then, when she leaves the conference call, the remaining participants continue the conversation. This allows you to facilitate business calling services and enable your Mobile Centrex customers to manage calls efficiently.

Mobile users can connect to any network (3G or 4G) to create and manage conference calls. You, as an MVNO, however, must meet these criteria:

- Your host MNO must operate on a 4G network and support VoLTE;
- You must integrate PortaSIP® as a TAS (Telephone Application Server) in the IMS core;
- You must develop or extend your application (a mobile dialing app, a CRM or a switchboard console) to communicate with PortaSwitch® via the call control API.

The external application you develop must be able to receive call state notifications to enable your users to create and manage conferences.

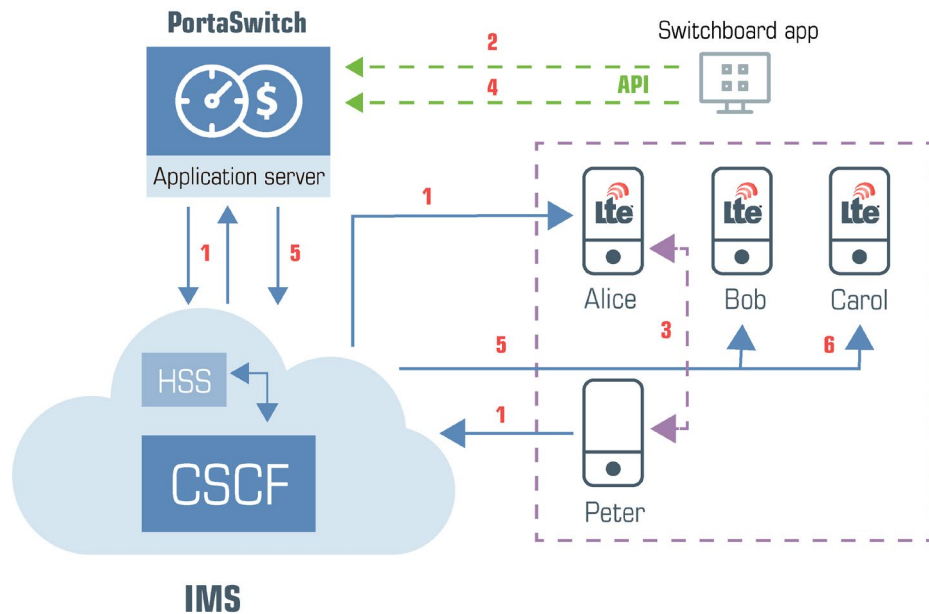
Thus, your users have the options to:

- turn an active call into a conference call;
- manage a conference by adding and removing participants, muting them and / or putting them on hold during the call;
- leave the conference while other participants continue the conversation;
- join another active conference in “listen only” mode, have a private talk with its moderator and / or drop in this conference call;
- browse the list of active conferences in a Mobile Centrex environment as well as the list of participants for the conference, both those who are still active and those who left.

The user who converts an active call into a conference call automatically becomes its owner and is therefore the one who pays for the conferencing service.

### Usage scenario

To illustrate how it works in detail, consider this example: Alice, Bob and Carol are sales managers of your business customer EasyMobile. Peter is EasyMobile’s client and is subscribed to another mobile operator. The call takes place in the mobile network; therefore, all communication passes via the CSCF.



1. Peter calls Alice. PortaSIP® successfully processes the terminating triggering call to Alice and routes it to the CSCF. The CSCF delivers the call to Alice and she and Peter begin the conversation (1).



2. Alice decides to involve her colleagues, Bob and Carol, to jointly discuss the matter. She opens the switchboard app and checks their availability.
3. Both Bob and Carol are available, so Alice adds them to her call with Peter and specifies the name of the call in the app.
4. The app sends the API request to the PortaBilling® web server, which passes it on to PortaSIP® (2).
5. PortaSIP® authorizes Alice for the conferencing service in PortaBilling®. PortaBilling® verifies that Alice's service configuration includes the conferencing service and instructs PortaSIP® to create a conference room with the name she specified. Alice is the conference owner.
6. PortaSIP® renegotiates the media session parameters between Alice and Peter. They both hear an invitation to the conference (3).
7. The app sends the API request to add Bob to the call (4).
8. PortaSIP® sends the terminating triggering call to Bob via the CSCF (5). Bob answers and is now in the conference.
9. In the same way, Carol is also added to the conference (6).
10. Since Alice has another scheduled call, she hangs up a few minutes later. The call among Bob, Carol and Peter continues.
11. Eventually all call participants hang up and PortaSIP® removes the conference.
12. PortaBilling® charges the call participants as follows:
  - As the conference owner, Alice is charged for the time spent by each participant, herself included, in the conference call. Thus, four xDRs for the conferencing service are created for Alice.
  - Alice is also charged for the incoming call from Peter plus the outgoing calls to Bob and Carol. Thus, three xDRs for voice calls service are created for Alice, too.
  - Bob and Carol are charged for the incoming calls.

The example above illustrates how conferencing works in an IMS environment. Your VoIP customers can manage their calls the same way, using the app that communicates with PortaSwitch via the Call control API.

With this functionality, business customers can manage their calls efficiently. The ability to leave or join a conference at any moment improves their communication with their clients and saves them time for other activities.

MVNOs extend their Mobile Centrex solution. By bundling conferencing with call transfers and redirects, they deliver services that other wireless operators do not offer. This enables them to occupy the leading position in the market.

## Complete removal of customer personal data (“Right to be forgotten”)

With this release, an administrator can completely remove customers’ personal data from PortaBilling®. This helps you comply with the GDPR “right to be forgotten” requirements.

The following personal data is removed from the PortaBilling® database:

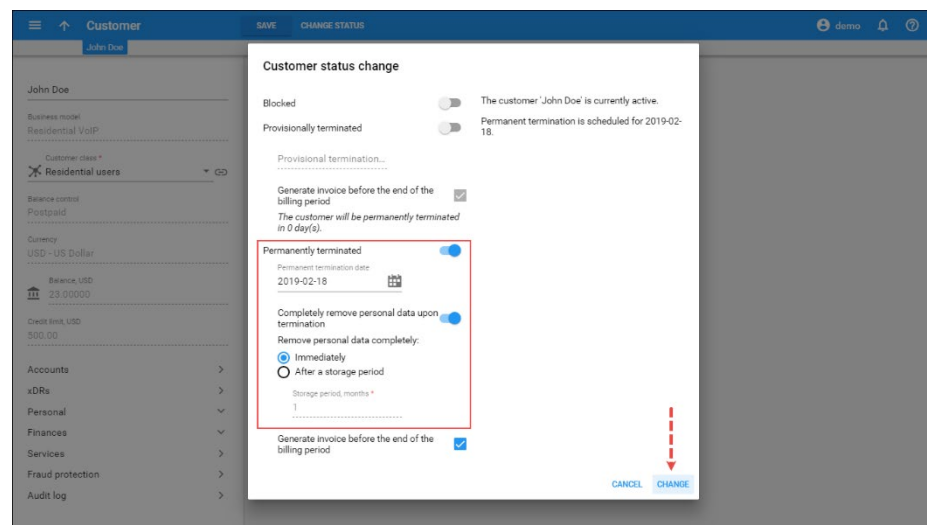
- All information about a customer and their accounts which is considered personal (e.g. name, billing and contact information, MAC address of an IP phone, etc.);
- All call recordings.

Customer and account xDRs remain in PortaBilling®. However, account IDs, CLIs, CLDs and IPs (e.g. subscriber\_ip or originating\_ip) are removed from them.

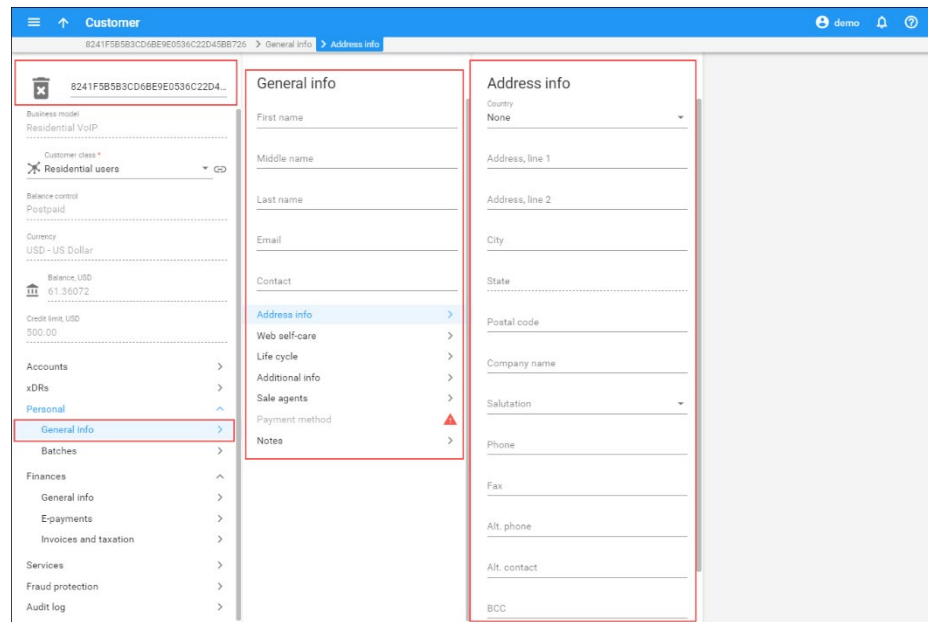
There are two options for removing a customer’s personal data:

- immediately upon termination; or
- after the specified storage period ends (e.g. you store customer’s personal data until the limitation period expires).

Let’s say customer John Doe asks the administrator to close his contract and remove all his personal data from the system. The administrator schedules the termination of John’s record and arranges for his personal data to be removed immediately upon termination.

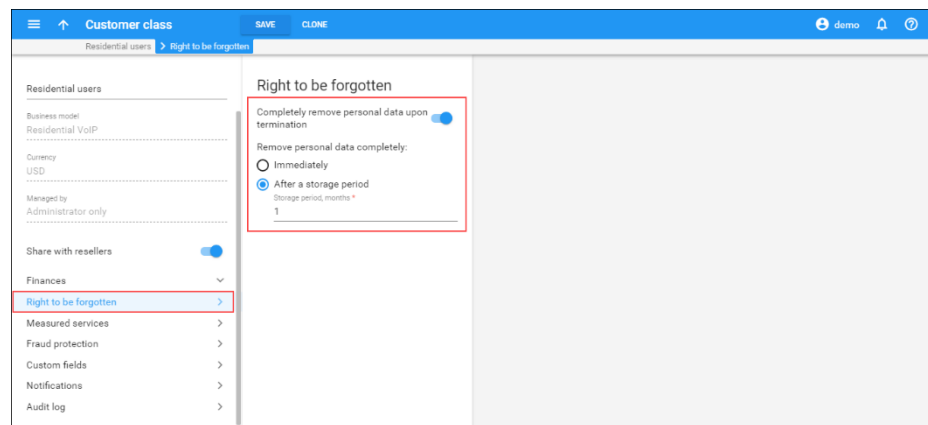


So once John’s record is terminated, PortaBilling® deletes his personal data.



An administrator can preconfigure personal data removal via the customer class. Thus, all the customers of this customer class share the same configurations for data removal.

For example, an administrator can assign a “European Customers” customer class to all customers located in Europe and specify that these customers’ personal data be stored for one month.



With this feature, service providers respect the users’ rights to control their personal data. This enables them to provide services to European customers.

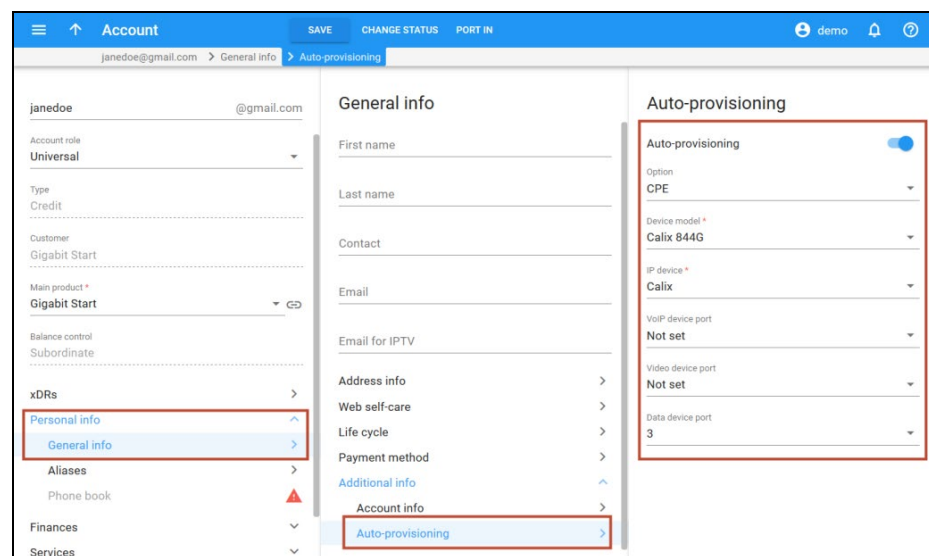
# Provisioning of Calix 844G / 854G GigaCenters

PortaBilling® now provisions the Calix 844G / 854G GigaCenters. These are ONTs (Optical Network Terminals) – user endpoints for Internet access in the fiber to the home (FTTH) networks. The ONTs are located on the subscribers' premises.

PortaBilling® provisions the subscriber's data (e.g. bandwidth profile) to the Calix Management System (CMS) via the External Systems Provisioning Framework (ESPF). For example, when an administrator activates services for a new user, PortaBilling® instructs the CMS to allocate the bandwidth for a specific ONT.

To make this happen, an administrator configures the following:

- in the CMS, creates network uplinks for GPON services, ONT and bandwidth profiles;
- in PortaBilling®, creates the Internet access policy, specifies the bandwidth profile ID there and assigns the policy to the product;
- creates a CPE profile for the ONT and assigns it to an account with a product
- configures the ESPF to provision the CMS.



Provisioning of these new ONTs extends the list of network access equipment that service providers can use for organizing their FTTH networks.

## Static IP allocation depending on access node

MVNOs can now allocate IP pools per NAS and manage them. This is useful for MVNOs who operate on the mobile network with several NASes and whose host MNO either does not provide or charges extra for IP pool management services. Depending on which NAS the RADIUS request comes from, PortaBilling® assigns static IP addresses to user mobile devices from this NAS's IP pool. This enables an MVNO to provide flexible data access services to customers (e.g. allow access to security camera video recordings from a specific IP).

This is how it works:

An end user is assigned a default static IP address to access the Internet via the default connection – the NAS closest to them. When the user is in another area, a different NAS sends the RADIUS request to authorize the user session in PortaBilling®. PortaBilling® checks whether the NAS source IP address matches any mapping rule specified for this NAS. If the match is found, PortaBilling® replaces the user's default static IP address with an IP from this NAS's pool.

For example, an MVNO has four NASes with the following source IPs:

NAS1: 193.28.86.105,  
NAS2: 91.212.37.127,  
NAS3: 168.82.15.248,  
NAS4: 212.44.17.183.

An administrator configures the mapping rules for three NASes:

NAS1:[IPPoolMapper]MappingRule=193.28.86.105:10.50.144.0/20=10.60.144.0,  
NAS2:[IPPoolMapper]MappingRule=91.212.37.127:10.50.144.0/20=10.70.144.0,  
NAS3:[IPPoolMapper]MappingRule=168.82.15.248:10.50.144.0/20=10.80.144.0.

NAS4 is set as the default one and has therefore no mapping rule. The static IP address 10.50.144.1 is assigned to John Doe's account in PortaBilling®. Depending on which NAS authorizes John's session when he connects to the Internet, PortaBilling® assigns static IP addresses to his mobile device as follows:

193.28.86.105 – PortaBilling® responds with 10.60.144.1  
91.212.37.127 – PortaBilling® responds with 10.70.144.1  
168.82.15.248 – PortaBilling® responds with 10.80.144.1

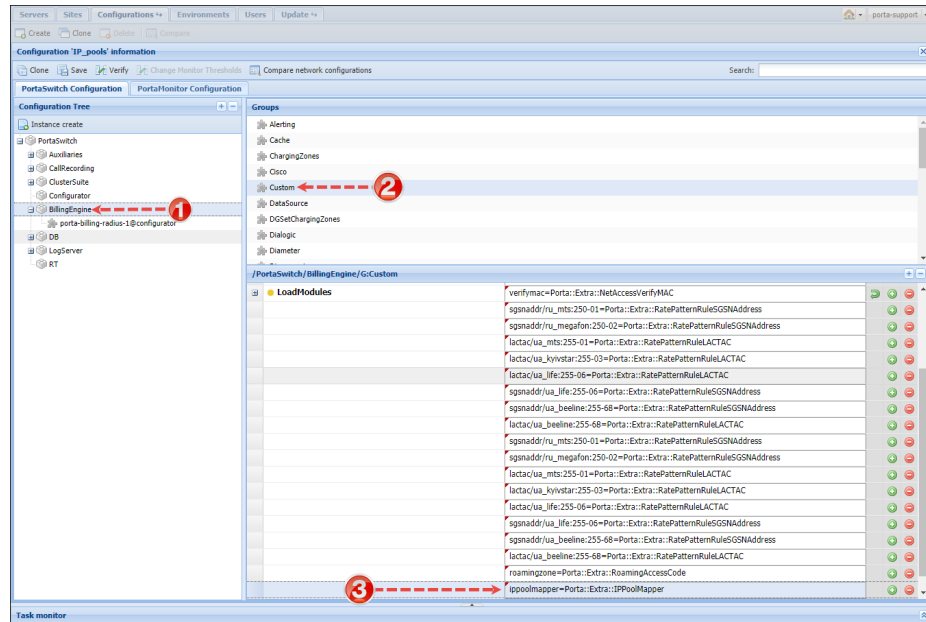
212.44.17.183 – No mapping rules are configured for the default NAS. PortaBilling® responds with the account’s default static IP address 10.50.144.1.

With this feature, MVNO’s business customers can build their own private mobile networks and provide their employees with access to specific internal resources. For example, authenticate their workers by IP address and provide access to internal networks from specific IPs.

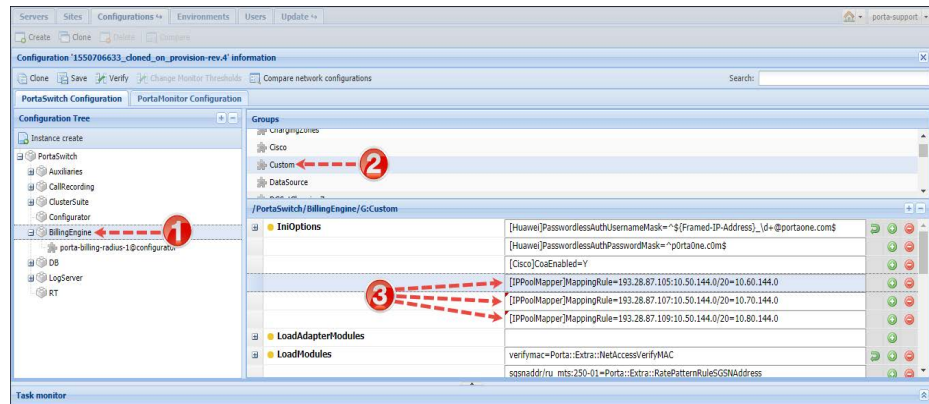
MVNOs save on IP pool management services and therefore become more competitive in the market.

**Configuration:**

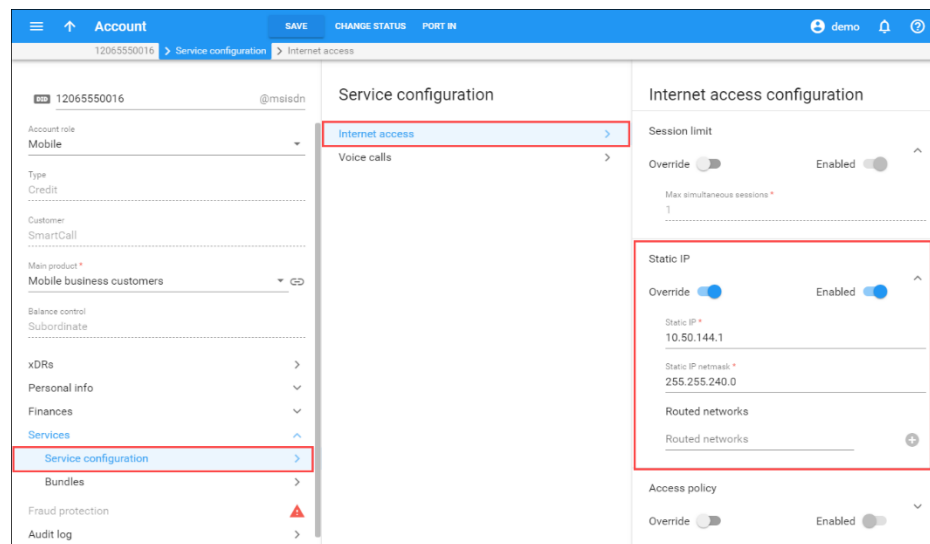
1. Static IP allocation that depends on a NAS is controlled via a special module. To enable this module, enter the `ippoolmapper=Porta::Extra::IPPoolMapper` under the **BillingEngine.LoadModules** option on the Configuration server.



2. Enter the mapping rules under the **IniOptions** option in the format `[IPPoolMapper]MappingRule=<nasip>:<matchrange>=<mappediprange>`  
 For example:
  - o `[IPPoolMapper]MappingRule=193.28.86.105:10.50.144.0/20=10.60.144.0`
  - o `[IPPoolMapper]MappingRule=91.212.37.127:10.50.144.0/20=10.70.144.0`
  - o `[IPPoolMapper]MappingRule=168.82.15.248:10.50.144.0/20=10.80.144.0`



3. Configure the default static IP addresses for the required accounts in PortaBilling®.



## Other features and enhancements

- Unique IDs for provisioning events** – With this release, the External Systems Provisioning Framework (ESPF) sends provisioning requests to an external system with the `i_event` identifier. This way, the external applications recognize whether it is a new request or a repeat request. In the case of a repeat request, the application verifies the request’s status. If the request was already processed, the application responds with 200OK. Otherwise, the application treats it as a new request and processes it.

To illustrate the provisioning in detail, consider the following example:

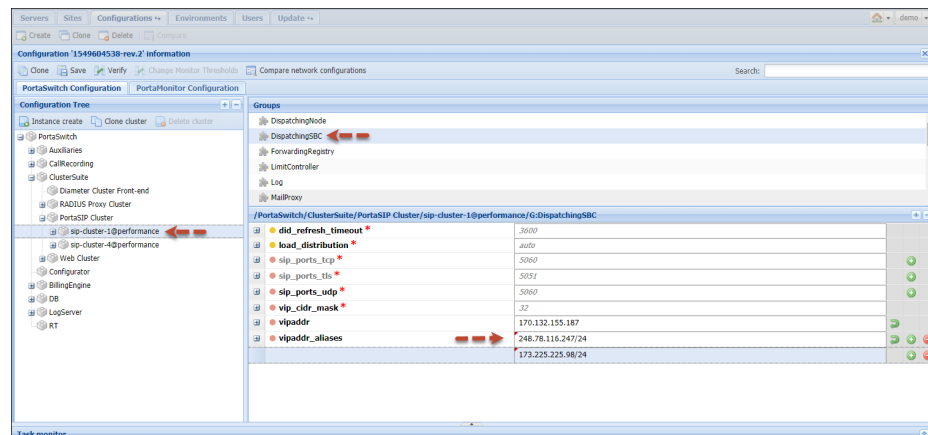
An administrator creates a new account record in PortaBilling®. The ESPF sends the HTTP POST request with the **Subscriber/Created** event type and `i_event=5` to the external application. The application retrieves the account service configuration from PortaBilling® and provisions the external system. If the ESPF receives no response from the application during the timeout (e.g. 30 seconds), it resends the request. The application determines that it is the same request (`i_event=5`) and searches its own event queue. If provisioning is successful but takes longer, the application does not attempt to provision that subscriber again. Otherwise, it re-provisions the external system.

When the ESPF sends several events that relate to the same entity (e.g. have the same `i_account` value), the application uses the `i_event` values to sort them in correct order.

With this enhancement, the provisioning flow is more efficient since it avoids repeated provisioning.

- **IP aliasing support for the dispatching SBC** – With this release, you can configure several entry points for the dispatching SBC. In doing so, you can smoothly migrate customers registered with legacy PortaSIP® environments to a single entry point of your site-redundant and / or dual-version PortaSwitch®.

To make this happen, the administrator adds the PortaSIP® IP addresses as aliases to the virtual IP address of the dispatching SBC. Thus, customers can start using the services via the dispatching SBC without having to reconfigure their IP phones.



The dispatching SBC processes registration and call initiation requests sent to the IP aliases and to its main (virtual) IP address in the same way.



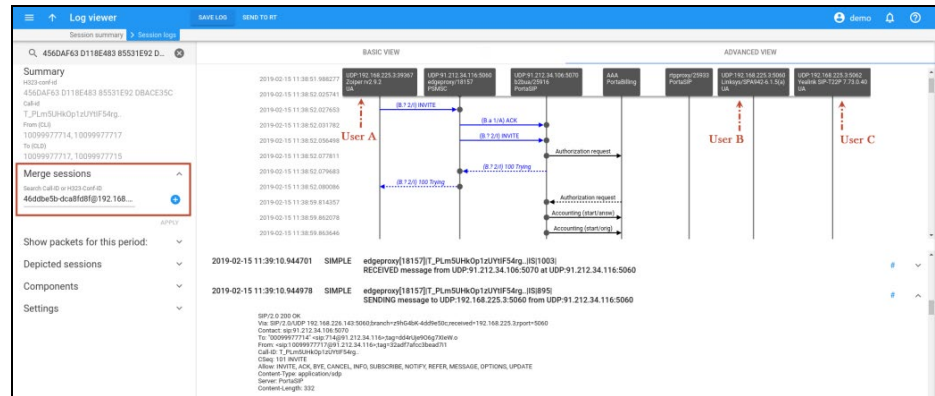
This enhancement simplifies the customer migration procedure by saving the administrator from having to reconfigure customer phones.

## Web interface changes

- Merge logs for related sessions** – A session can consist of several subsessions. For instance, during an attended transfer, two subsessions are created – one when user A calls user B and one when user B then transfers the call to user C. Each subsession has a unique Call-ID and H323-conf-id and PortaBilling® shows a separate log for each subsession.

An administrator can now merge subsessions to review an entire session log among all participants.

To make this happen, an administrator opens the **Advanced view** on the Log viewer panel and adds the Call-ID / H323-conf-id in the **Merge sessions** field.



This enhancement facilitates troubleshooting and saves the administrator time for determining the root cause of the issue.

## Important upgrade notes

- Switching to the new PortaBilling® web interface** – Starting with MR76-0 and MR75-1, functionalities that are fully implemented on the new web interface are no longer accessible via the old web interface.

The following functionalities remain available on the old web interface:

- Access Levels
- Templates
- Quick Forms
- Resellers
- Customers
- Destinations
- Tariffs
- Volume Discount Plans
- Trace Session
- BE Log Viewer
- SIP Log Viewer
- Account Info
- Test Dialplan
- Dial Plan
- Service Policies
- Internet Services
- System Load
- Custom Reports
- Invoices

These changes relate only to the old web interface for PortaBilling® administrators.

The old web interface is set to be completely removed in 2019. Thus, we encourage you to switch to the new web interface and provide us with feedback about your experience in using it.