PORTA ONE

PortaSwitch

New Features Guide

57
Maintenance
Release

Documentation

www.portaone.com

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Preface

PortaSwitch® Maintenance Release 57 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`.

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.

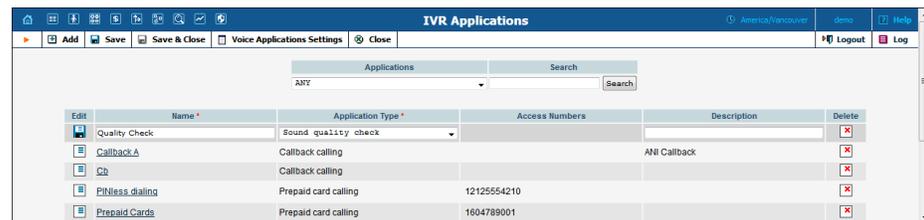**Tips** provide information that might help you solve a problem.

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Sound Quality Check IVR

Good sound quality is a key factor in the end user's satisfaction with the service and consequently, their loyalty to the service provider.

With the newly introduced Sound quality check IVR application, end users are given the opportunity to perform a simple sound test during which they can check the connection to the server and basic sound quality points, for example, sound clarity.
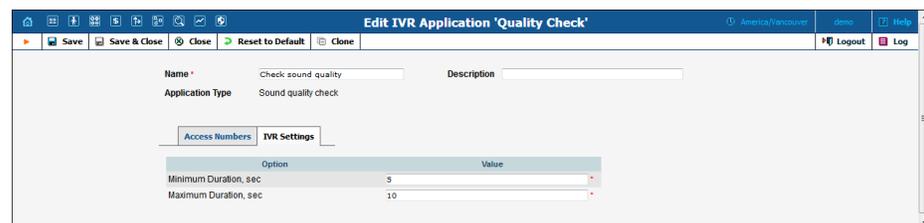

This is how it works:

Upon calling an access number associated with the Sound quality check IVR, an end user is prompted to record a message. Ten seconds later (an administrator can modify this parameter if required), the end user hears their message played back.

If the message sounds fine, then the end user's sound and microphone are working properly and there are no issues with the connection and media transmission to PortaSIP®.

The recorded message is then stored as a regular call record. Both the administrator and the end user can access it via the web interface and use it for resolving disputable issues. To ensure that stored messages are long enough to judge their sound quality, an administrator can set the required minimum length for a message to be stored.

A sound test via the Sound quality check IVR helps end users dispel any doubts about the quality of service. The basic troubleshooting of sound quality issues by end users themselves significantly saves the time and effort of the service provider's support team.

Customer Business Models and Account Roles

It is essential for every service provider to have a thorough understanding of their customers, e.g. which services they use or would like to have, and what their needs are, etc. In order to simplify customer management in a convergent environment where different types of services are provided, PortaBilling® introduces two important new concepts: business model and account role.

Business model

A business model defines which type of service a customer is using. The following business models are available:
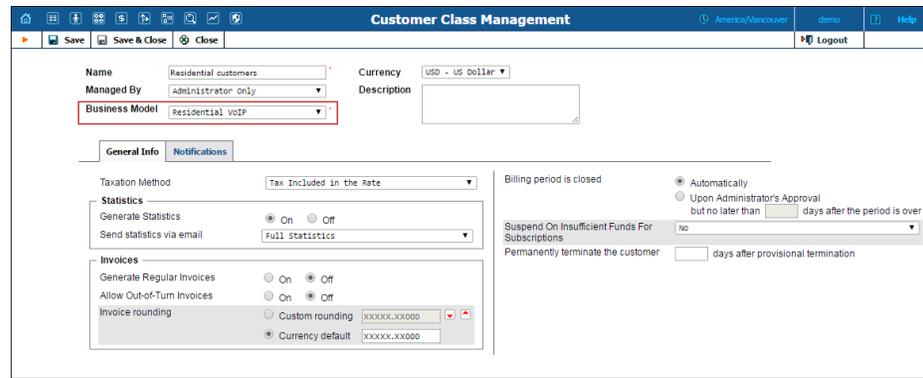
- Hosted IP PBX
- SIP Trunking
- Residential VoIP
- PINless
- Internet Access
- Prepaid Card Holder
- Mobile
- Universal

The first six business models in the list are self-explanatory, while the other two must be explained in more detail.

The Mobile business model is customized for configuring mobile network subscribers – customers who are provided with a full range of mobile services.

The Universal business model is a generalized model that allows you to configure any type of service for your customers. In addition, the Universal business model is also used for backward compatibility – any previously created customer is automatically assigned the Universal business model after a software upgrade.

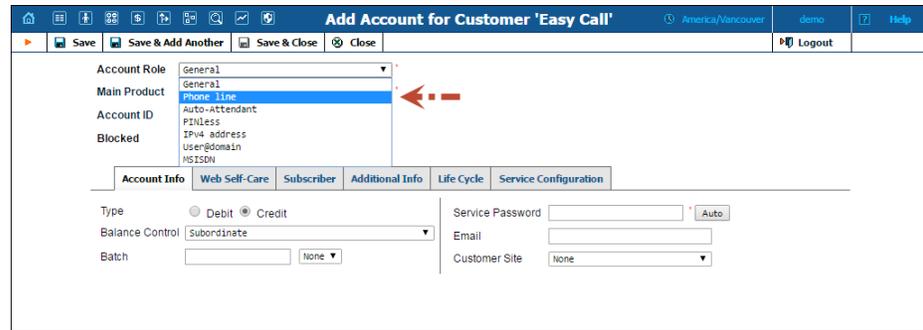An administrator assigns a business model via a customer class.

Depending on the chosen business model, the administrator is offered a list of recommended account roles for it.

Account role

An account role defines what a specific account is designated for (e.g. whether the account represents a phone line or a top-up voucher) and executes account ID validation. Thus, for a phone line, one can only pick a valid phone number as an account ID.

The following table demonstrates which account roles are available for each service model:

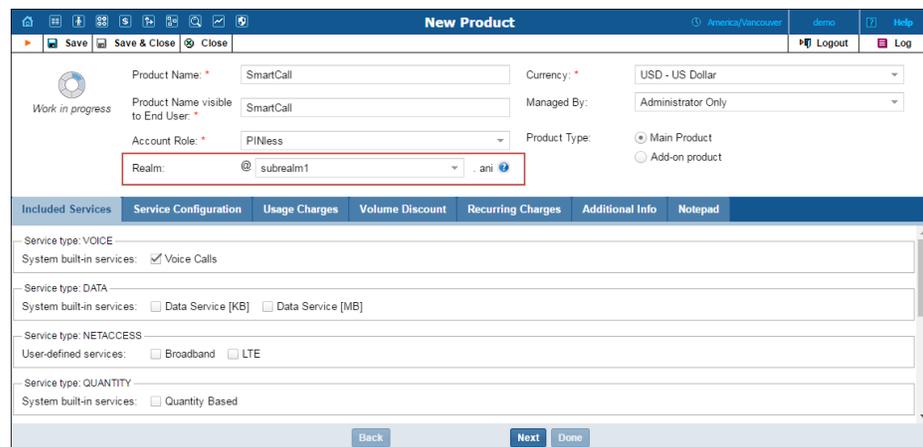| Business model	Account roles
Universal	All available account roles.
Hosted IP PBX	Phone line, Auto-Attendant.
SIP Trunking	Phone line, IPv4 address.
Residential VoIP	Phone line, Auto-Attendant, Voucher.
PINless	PINless.
Internet Access	User@domain, Voucher.
Prepaid Card Holder	Prepaid card, PINless, Voucher.
Mobile	MSISDN, Voucher.

The administrator defines account roles for both accounts and products. This introduces the following constraint – a product can only be assigned to an account having the same role.

This makes it possible to reduce the occurrence of errors during product assignment. For example, an account that is supposed to be for a phone line can only be assigned to a product that is designated for that; i.e. one cannot mistakenly pick a business SIP trunk product.

Along with an account role, an administrator can define an account realm.

Account realm

An account realm allows administrators to impose a scope of uniqueness for an account ID. An account realm is configured for a product.

For example, user John Doe wants to subscribe to the SmartCall product for PINless dialing from their mobile phone 12065551234. To provision John Doe's mobile phone in PortaBilling®, the administrator configures the SmartCall product using an **ani** realm. The administrator adds an account and chooses the SmartCall product for it. Then the account is saved in the following format: 12065551234@ani.

John Doe finds another PINless dialing product attractive, MegaCall, and wants to subscribe to it too. The administrator needs to add an account that must not be confused with the account for theSmartCall product. The account realm perfectly serves this purpose. The administrator configures the MegaCall product with **subrealm1.ani** realm. The administrator adds an account and chooses the MegaCall product for it. The account is saved in the following format: 12065551234@subrealm1.ani.

This allows proper provisioning for both accounts in PortaBilling®.

Alias role and realm

When an administrator adds an alias to an account, a role and realm must be selected for it. Alias role and realm selection is limited by the main and add-on products assigned to the account.

The introduction of the business model and account role concept ensures that:

- The correct account ID format is preserved during account creation; and
- The chances of assigning an incorrect product to an account are significantly reduced.

This makes the account creation procedure more user-friendly and reduces the occurrence of human error.

Multiple Add-on Products Provisioning for LTE

In LTE networks deployed with ZTE equipment, services for subscribers are activated based on the PAKID value. The PAKID value defines which Internet quota is available for a subscriber and is taken from the accounts' product configuration provisioned by PortaBilling®. Thus,

users can only have one single quota allocated to them which means they use the service according to a single usage counter.

To compete in the market you can now allocate multiple Internet quotas within ZTE EPC for subscribers and then allow them to modify their product configuration a la carte. This is done by provisioning several PAKID values via add-on products. PortaBilling® provisions a PAKID value to ZTE SPR as soon as a subscriber assigns an add-on product and ZTE SPR allocates the corresponding quota for the subscriber. As a result, the subscriber receives the service based on the combination of the PAKID values and according to add-on precedence.

Consider the following example:
Smart Net is an LTE service provider. They offer a 1 GB Internet quota for their basic service and the following additional service packages:
- 2 GB "Turbo" quota available within 24 hours and
- 5 GB of "Regular Internet access" quota available within 30 days.

These service packages are configured as the following add-on products in PortaBilling®:
- "Turbo" add-on product with high precedence level and
- "Regular Internet access" add-on product with medium precedence level.

John Doe has basic LTE service. In a week, he uses all the allocated 1 GB Internet quota so he is then redirected to his self-care portal. There he signs up for both service packages. His product configuration now includes the "Turbo" add-on product with an expiration date of 24 hours and the "Regular Internet access" add-on product with an expiration date of 30 days. Thus, John Doe uses the "Turbo" quota first and once it expires, he uses the "Regular Internet access" quota.

To configure add-on product provisioning to ZTE EPC, include the LTE service and Internet access policy with the PAKID value defined in the product configuration.
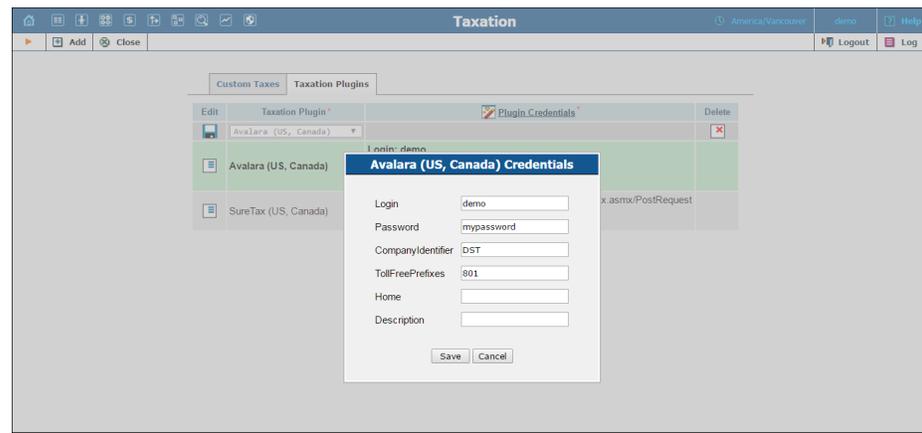
Add-on product provisioning for ZTE EPC enables ISPs to provide various service packages to their customers, making them more competitive in the market while growing their customers' loyalty.

Alternatively, for quota control organized within ZTE EPC, you can deploy PortaBilling® as the online charging system (OCS) in your LTE network. Thereby you gain advanced control over your service provisioning by receiving information about monthly quotas, service wallets, and current usage bars and rollovers in one single location.

Taxation Management by Resellers

Since your resellers are separate business entities, they have different taxation parameters. Therefore, to properly calculate taxes for their customers, resellers must be able to manage their taxation parameters without the involvement of an administrator.

With this release, taxation configuration is done on the web interface. Administrators and resellers can independently configure taxation plugins (Avalara, SureTax or EZTax) on the **Taxation** tab and apply them to their customers.

As a result, PortaBilling® clearly distinguishes between resellers' customers and those of an administrator and ensures proper tax calculation for them.

Optionally, if you calculate taxes via SureTax, you may configure a single taxation plugin and allow resellers to apply it to their customers. To do this, set *Yes* for the **AllowTaxPluginCredentialsInheritance** option of the Configuration server. SureTax distinguishes customer xDRs received from PortaBilling® based on the reseller ID and then creates separate tax reports for your own customers and for those of your resellers.

Taxation management for resellers grants additional flexibility to their service provisioning and ensures proper tax processing for their customers.

Integration with PROTEI CAMEL Gateway

As an OCS (Online Charging System), PortaBilling® can be integrated with 2.5 / 3G and 4G mobile networks. In 2.5 and 3G networks, the CAMEL protocol is the de-facto standard for real-time charging.

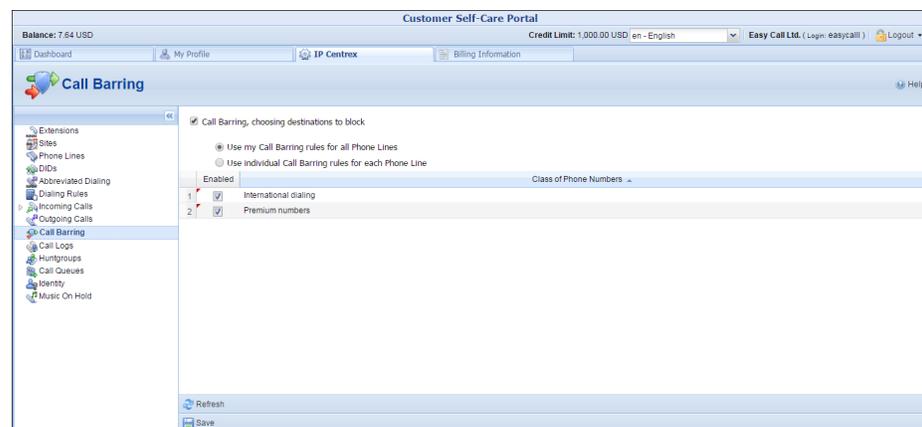In this case, PortaBilling® can interoperate with mobile operator networks via the PROTEI CAMEL gateway.

In this configuration, the PROTEI CAMEL gateway is deployed within a service provider's network and acts as a mediation component between PortaBilling® and a mobile operator's network, converting the CAMEL protocol to the Diameter protocol and vice versa.

This allows PortaBilling® to communicate with the MSC (Mobile Switching Center) – a switching node that routes calls and messages to and from other telecommunication networks, including PSTN, ISDN and other mobile operators' networks – for real-time calls and SMS authorization and rating.

This kind of integration allows service providers interested in entering the mobile market to integrate with mobile operator's networks that use the CAMEL (Phase 1, 2 and 3) protocol to communicate with a billing system.

Call Barring Management by Customers

The call barring functionality serves to prohibit outgoing calls to certain destinations (e.g. to premium numbers). With this release, customers are able to manage call barring for their accounts on their self-care interface. Thus, a customer can enable / disable the feature, and select call barring rules from the list of available ones and apply them either to all their accounts or individually per account.

Thus, customers obtain flexibility in managing their calling patterns which, in turn, serves to reduce the load on an administrator.

Individual Pricing for DID Numbers

Your customers may ask for a personal price when purchasing a DID number. Instead of creating a special pricing batch with this new markup and moving the DID numbers to it, you and your resellers can now modify the existing one per DID. Before you assign a particular DID to a customer, click **Edit** next to this number in the **DID Inventory** window. Then click the **Activation Fee** or **Recurring Fee** links and specify the new fees for the DID number there.

A DID number with modified fees is automatically marked as having **Individual Pricing**.

This enhancement allows you to customize DID provisioning, offer individual promotions for your customers and, as a result, improve the overall customer experience.

Enhanced Internet Access Policy Configuration

PortaBilling® communicates with different gateways (e.g. Huawei UGW9811 or ZTE P-GW) within mobile network configurations using the Diameter protocol. Every gateway has its own idiosyncrasies and uses different attributes.

With this release, you can adjust PortaBilling® to communicate with a particular gateway in a single place via Diameter by using only a few mouse clicks. All you have to do is to configure an Internet access policy.

The **Internet Access Policy** page now contains a set of attributes to fine-tune LTE service provisioning. For your convenience, the attributes are grouped into Gy-specific ones and those for a particular manufacturer (e.g. ZTE, Huawei, etc.). Gy attributes enable the features that have been provisioned via the Diameter (Gy) interface (e.g. real-time tariff switch), while other groups facilitate account and service provisioning to the LTE network.

This list can be complemented with other parameters to help you easily adjust PortaBilling® to effectively provide Internet services to your customers.

Binding a User Session to an IP address

Session hijacking is a hacker practice: a fraudster obtains a valid session ID and uses it to gain unauthorized access to the system. The SSL encryption used by PortaSwitch® provides adequate protection against most of these kinds of traffic interception attacks. However, there might still be a slight possibility that a hacker can guess the session ID or that, while travelling through a high-fraud-risk country, an end user may connect to an unscrupulous internet provider that has the means to decrypt traffic and leaks sensitive information to fraudsters.

There is now a new security measure that binds a user session to an IP address and protects PortaBilling® web interface users from the above-described risks.
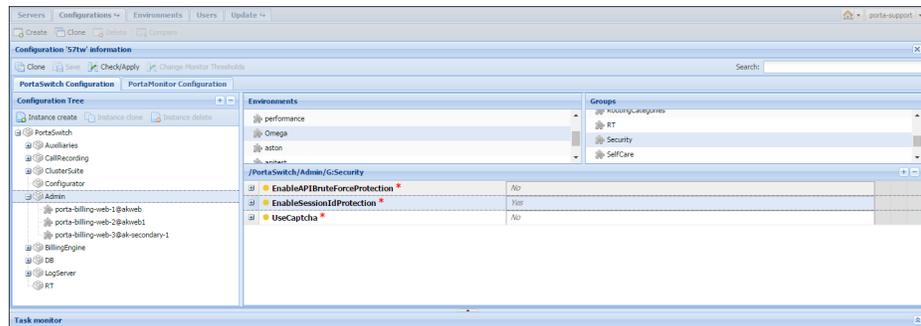
This is how it works:

When a user logs in to the web interface, the created session is associated with the user's current IP address. The system subsequently discards all access attempts from other IP addresses within that session. It also sends a notification to the user when such an attempt occurs.
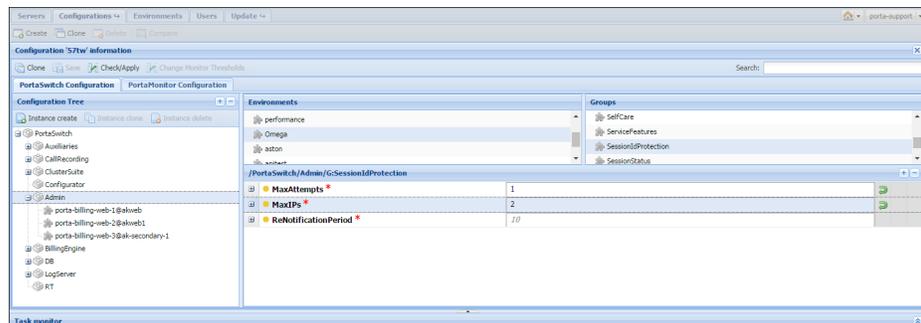
Thus, even if someone manages to steal a session ID, it is of no use to the fraudster.

In the case of a legitimate IP address change (for example, the user has reconnected to the Internet via a different WLAN), the user sees a notification page with information on how they can continue their work. The user has two options: either authorize their new IP address by following the link provided in the notification email, or simply re-login.

To enable the binding of a user session to an IP address on the Configuration server web interface, go to the **PortaSwitch** node -> the **Admin** node -> the *<your_desired_env>* environment -> the **Security** group and set the **EnabledSessionIdProtection** option to **Yes**.

You can increase the safety level by configuring how many IP addresses can be authorized within the same session and after how many access attempts from an unknown IP the system will reject subsequent ones without any notification.
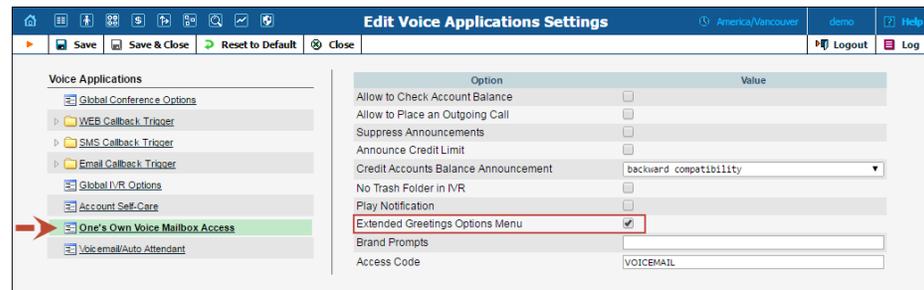

Security is an essential factor for a successful business. With this security measure in place, PortaBilling® users can safely use the web interface and be sure their session is protected.

Changing Your Voicemail Greeting via the Voicemail Menu

Now end users can change their voicemail greeting – the message that callers hear when they are transferred to voicemail – via the **Extended Greetings Options** menu.
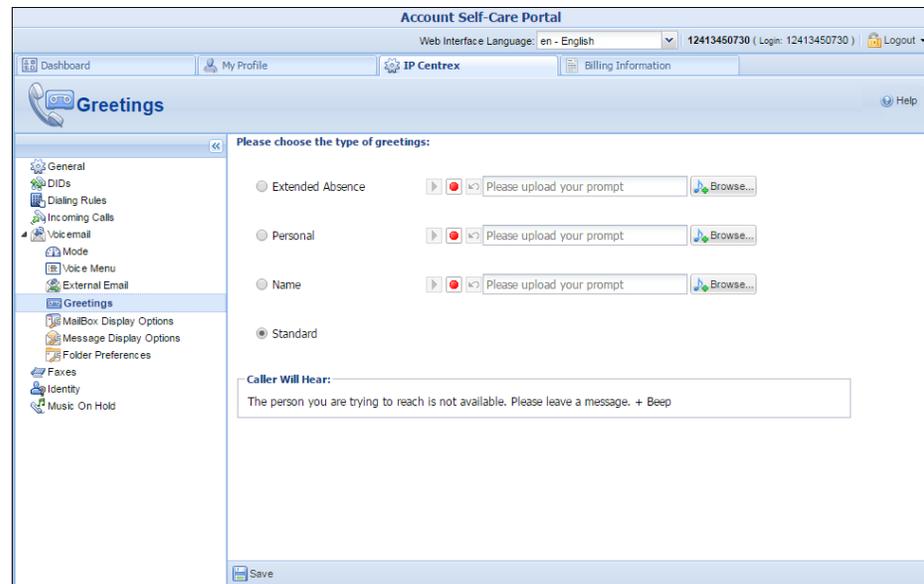
Note: In order for end users to access the **Extended Greetings Options** menu, an administrator needs to enable it in the **One's Own Voice Mailbox Access** IVR application settings.

The procedure for changing the voicemail greeting is the following:
1. Dial the voicemail access number.
2. From the **Main** menu, select **Personal Options** by pressing **3**.
3. From the **Personal Options** menu, select **Greetings** by pressing **3**.
4. From the **Greetings** menu, choose the greeting you want to activate.
5. If the greeting has not been recorded yet, you will be asked to record it. Follow the prompts to record your greeting.
6. When the greeting is recorded, press **2** to activate it.
7. You can now hang up or press ***** to return to the previous menu.

End users can also change their voicemail greetings via their account self-care interface.

This enhancement allows end users to directly activate their greeting via the voicemail menu, thereby improving their experience with voicemail.

Dialing Rules for Carrier Selection Codes

In some countries (for example, Brazil), users have to specify a *national carrier selection code* to make long-distance or international calls.

For example, to make a long distance call in Brazil using the carrier Telefonica (their selection code is 15), one must dial:
0 + 15 + city code + phone number,
where 0 indicates that this is a long distance call.

To make an international call using the carrier Intelig (their selection code is 23), one must dial:
00 + 23 + country code + city code + phone number,
where 00 indicates that this is an international call.

With this release, administrators can define how to process carrier selection codes when converting dialed numbers to the e.164 format. The carrier selection code translation settings are defined in the **Dialing Rules Wizard**.
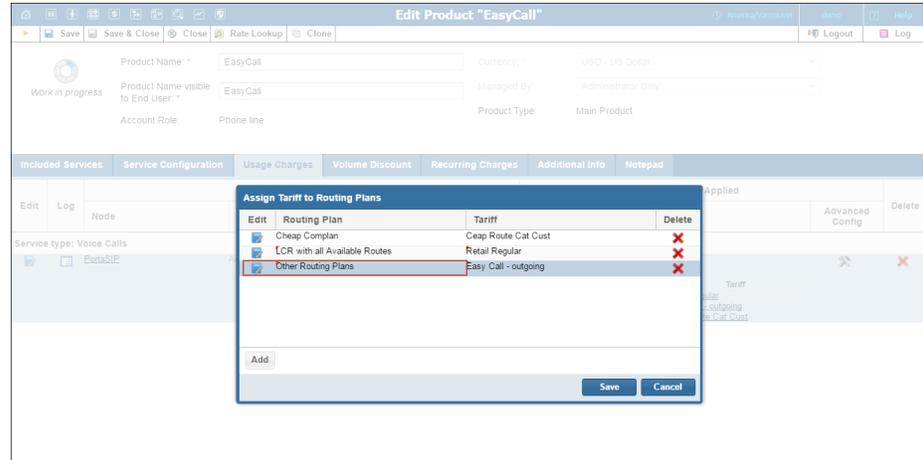
Administrators have the following options:

- Enable the carrier selection code translation.
- Disable the carrier selection code translation.
- Enable differentiating among carrier selection codes using a predefined pattern.

A detailed description of carrier selection code translation settings is available in **PortaBilling® online help**.

This ensures that calls made using carrier selection codes are properly routed to their correct destinations and that customers are accurately billed for them.

Other Features and Enhancements

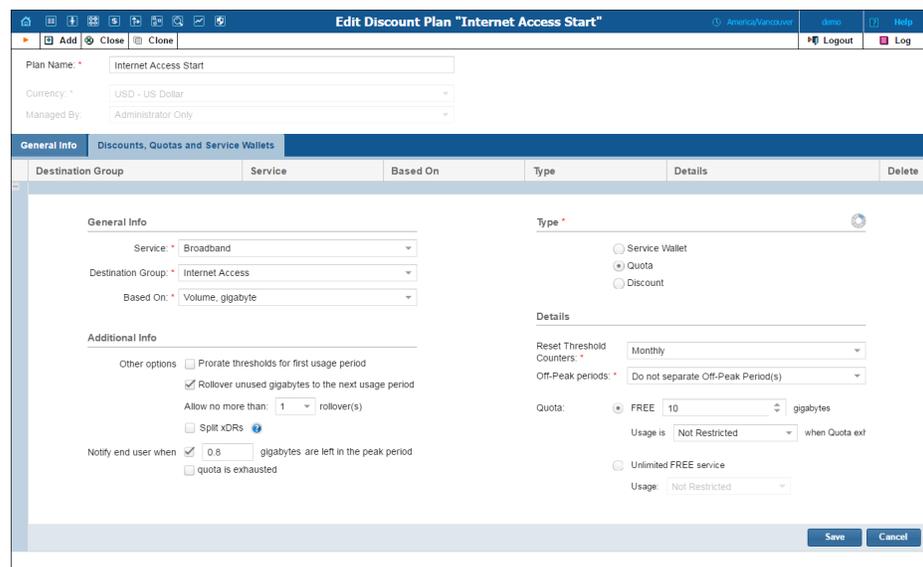- **Default tariff within the routing plan list** – The administrator can apply different tariffs based on which routing plan is used to terminate the call. To do this, the administrator selects the "Assign tariff per routing plan" mode in the product rating list and configures the tariff / routing plan mapping table. With this release, this mapping table must also include a tariff for other applicable, not-yet listed routing plans.

Thus, if an account has an individual routing plan assigned (either inherited from a customer service configuration or explicitly assigned by an administrator) and the user makes a call without dialing a selection code, the call will pass via this "other" routing plan and be charged for using the defined tariff.

Such a product rating list configuration ensures correct billing and prevents revenue leakage.

- **Enhanced usage notifications for quotas and service wallets** – Now customers receive notifications about the *remaining* service wallet balance and / or amount of remaining quota before it is exhausted. If some unused quotas have been rolled over from previous billing periods, the user only receives notification when the total amount of unused traffic reaches the defined threshold.

This enhancement speeds up quota and service wallet configuration for administrators since they only need to define the remaining traffic / balance amount and the system does all of the calculations. Moreover, administrators can now define a decimal value (e.g. 0.5 GB).

This enhancement helps prevent customer confusion, since customers are only notified when it is necessary.

- **Auto attendant configuration without account self-care credentials** – Since the account used for auto attendant does not belong to any user, you do not need to define the credentials in the self-care access for this account. This simplifies IP Centrex solution provisioning for administrators and grants additional security within IP Centrex management for customers.

- **Call queue announcements are now configurable** – Now your customers can activate or deactivate call queue announcements such as "Announce the number of callers ahead" and "Announce estimated wait time." These options are activated by default.

  This ability to configure call queue announcements makes its configuration more user friendly and improves the overall customer experience.

- **Porter enhancements** – Beginning with this release, you can use the Porter functionality to transfer the following customer and account data from the source billing environment to the target one:
  - Account voice mailbox settings.
  - Auto attendant configuration.
  - Conferencing settings.
  - SIM cards assigned to the customer accounts.
  - Spending plans.

  NOTE: Voicemail messages and auto-attendant custom prompts are not transferred.

  These enhancements optimize the data transfer process and reduce the administrative load.

- **Update the NetNumber SMS / MMS routing database for a particular end user** – Optimization of SMS / MMS routing requires that service providers use centralized routing databases. These databases contain information about which network the

number belongs to and take number portability data and other specifics into account.

PortaSwitch® is integrated with the NetNumber routing database, the largest of such solutions for North America. NetNumber's charging policy, however, assumes that service providers pay based on how many numbers are currently uploaded to the database. To reduce operating costs, service providers need to upload only those phone numbers that are expected to receive SMS / MMS messages.

With this release, service providers can choose whether to upload a particular account to the NetNumber database. For end users that require incoming SMS / MMS messages, a service provider purposely enables synchronization. It can be done for either the account's product or for the account itself.

If an end user is only subscribed to on-net services or simply does not need to receive SMS / MMS messages, by default, their account will not be uploaded to the routing database.

This approach considerably reduces the service providers' expenses.

- **Deferred spending plan change** – Now when an administrator changes a spending plan for a customer (for example, from spending plan A to spending plan B), within the new spending plan they can include the amount already spent.

For example, if customer John Doe has a spending plan of 300 USD and has already spent 250 USD, an administrator can change John Doe's spending plan to 500 USD. Now John Doe can spend 250 USD more (500 USD - 250 USD = 250 USD).

To do this, the administrator needs to choose a desired spending plan and then select the **Apply the new spending plan immediately** check box. This gives the following results:

o The spending limit (the amount of money the customer may spend on services per day) is changed according to the new spending plan.

o The amount of money the customer has already spent is not reset and continues being calculated.

o The spending plan expiration date and time are not changed. So a customer can use the new spending limit until the previous spending plan expires.

If the administrator leaves the **Apply the new spending plan immediately** check box unchecked, the new spending plan will take effect at midnight (00:00:00) after the previous one expires. The customer's spent amount will be reset to zero and calculated from scratch towards the new spending limit.

The administrator can also change a spending plan for a customer class. As a result, the spending plan will be changed for all of the customers with this customer class assigned. The logic is the same as that for changing a spending plan for a customer. By selecting or clearing the **Apply the new spending plan immediately** check box, the administrator can choose whether to include the already spent amount in the new spending plan or reset the counter and calculate it from scratch.

This gives administrators more flexibility for adjusting customer's spending plans. Having the capability to change a spending plan for a customer class allows administrators to apply these changes to many customers at once, thereby reducing the administrators' workload.

- **Extend customers' credit limit management for CC-staff members** – With this release, resellers can authorize their customer care staff members (CC-staff) to temporarily increase customers' credit limits. A reseller defines the credit limit increase permissions for every new CC-staff member individually. These permissions include:
  - Maximum permitted **amount** of credit limit increase specified either as an absolute value or a percentage of the original credit limit; and
  - **Duration** for which the credit limit increase is valid.

Existing CC-staff members can increase customers' credit limits according to the default permissions specified on the Configuration server.
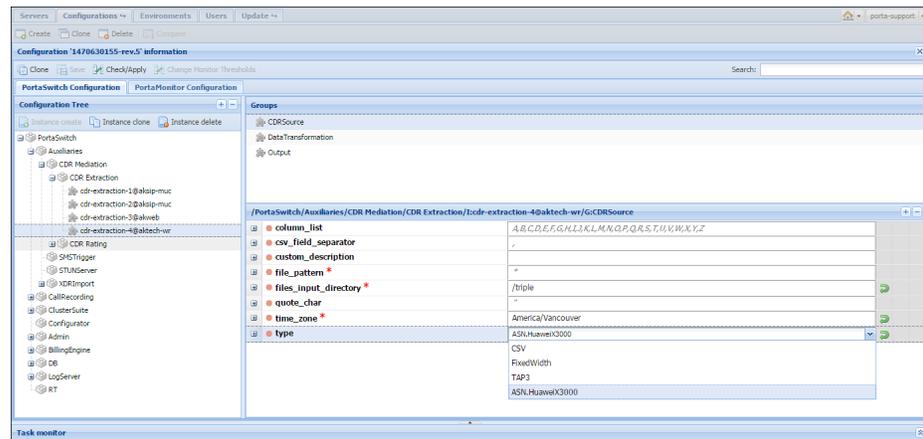
With this enhancement resellers improve their customer management via their CC-staff members and at the same time, reduce their own load.

- **Combine instant messaging and SMS services for users** – With PortaBilling®, you can allow your users to exchange both on-net instant messaging and sending SMSs to external subscribers. To keep the service configuration simple, use these special destinations for authorizing a user for on-net messaging in the customer tariff:
  - MSGN – to cover all messages sent to an IP Phone connected to PortaSwitch®.
  - MSGNR – to cover all messages sent among subcustomers of the same reseller.
  - MSGNRX – to cover all messages sent among accounts belonging to the same customer (e.g. within an IP Centrex environment).
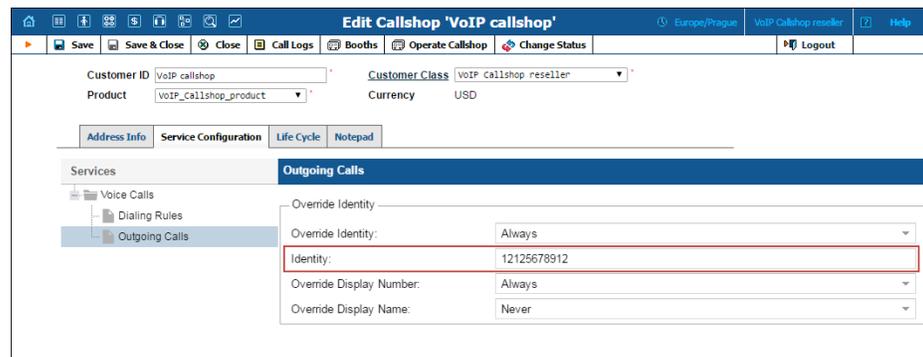
This enhancement provides additional flexibility for providing full-scale messaging services to your subscribers within a single tariff charge.

NOTE: To enable users to receive on-net messages, make sure their product configuration also includes the rating entry for the Voice calls service.

- **Import xDRs generated by Huawei MSoftX3000** – This Huawei device serves as a gateway mobile switching center or tandem mobile switching center and mainly produces xDRs in a binary ASN.1 format. Beginning with this release, the xDRs generated by MSoftX3000 can be easily uploaded to PortaSwitch® using the CDR Mediation utility. This enlarges the service provider's opportunities for how to organize their network infrastructure.
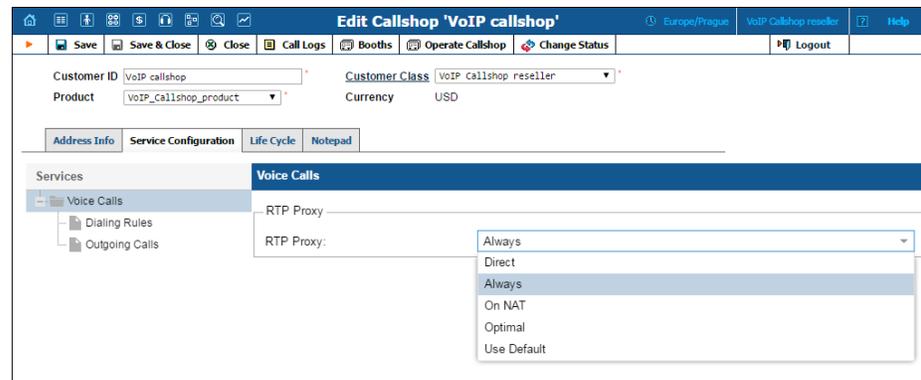

- **Override Identity for callshops** – With this release, callshop resellers can configure the **Override Identity** service feature for their callshops. This service feature permits the definition of custom caller identities (ANI numbers) that will be used for outgoing calls made from all callshop booths.

Callshop booths use the **Authorization ID** as an ANI number for outgoing calls. Since booth **Authorization IDs** consist of randomly-generated sequences of digits, they can be improperly treated by vendors (for example, as a non-local phone number) and therefore billed at a higher rate.

By setting a single ANI number for all callshop booths, callshop resellers ensure that all calls made from their callshops are properly billed by vendors.

- **Managing the RTP proxy for callshops** – With this release, callshop resellers can specify the RTP proxy policy for their callshops. The possible options are:
  - **Direct** – Do not use an RTP proxy; rather, allow the media stream to go directly between endpoints.
  - **Always** – Always engage an RTP proxy, so that the media stream never goes directly between endpoints.
  - **On NAT** – Direct communication with other endpoints is only possible if these endpoints are on public IP addresses; otherwise, engage an RTP proxy.
  - **Optimal** – Callshop endpoints support NAT traversal, so can directly communicate with other endpoints located behind NAT; no RTP proxying is required.
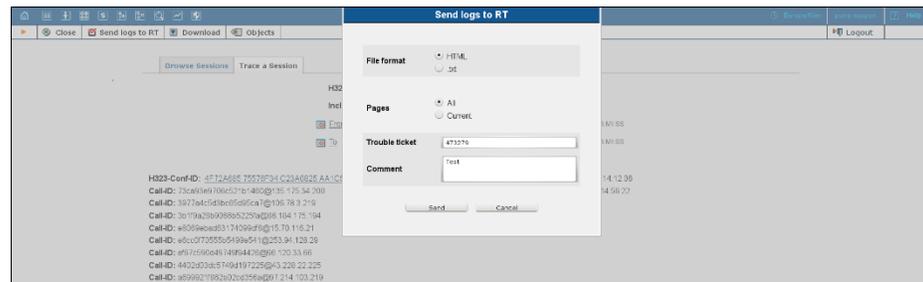 - **Use Default** – This uses the Optimal RTP proxy.

These options allow callshop resellers to configure proper RTP proxy policies for their callshops, depending upon which network topology they use.

Web Interface Changes

- **More convenient download of BE logs** – Billing engine logs contain all the essential information about how a call was processed and charged. It is very important to have a way to

quickly download them and send them to support staff who are troubleshooting issues.

These tasks have now become more convenient to perform: there are two new buttons on the toolbar; one of them controls log downloads and the other, sending logs to RT. An administrator can choose a log format (.html or a plain text) and for multipage logs – whether to download / send the whole log or just the current page. If the administrator chooses to download the entire log, they will receive a download link in their email as soon as the entire log has been saved to storage.

This enhancement facilitates troubleshooting by making it easier to communicate issues having to do with PortaBilling® with either PortaOne support or a service provider's support team.

- **Product creation for callshop resellers** – Now when an administrator creates a product for a callshop reseller there are only five tabs available for editing:
  o **Included Services**
  o **Service Configuration**
  o **Usage Charges**
  o **Additional Info**
  o **Notepad**

This makes product creation for callshop services more custom tailored for callshop resellers.

Important Upgrade Notes

- **PortaSIP® virtual IP address validation** – With this release, the deployment of a PortaSIP® virtual IP address and its aliases is validated. Thus, PortaSIP®'s virtual IP address can only be an address that is not assigned to any instance or server as the service IP. If you have defined the same IP address as the PortaSIP® virtual IP address and assigned it to an instance, you must reassign the instance to another IP before applying the configuration.

- **The multicast mode is deprecated for both PortaSIP® and Web clusters** – A special utility responsible for managing cluster resources determines which nodes belong to a cluster. For this, the utility can use unicast (when IP addresses of nodes are taken from a predefined list) or multicast (when the utility announces a request to the network and in reply, the nodes indicate their IP addresses) methods.

  However, a significant share of network environments where PortaSwitch® is installed do not fully support multicast. Thus, to eliminate issues that may arise due to this fact, the support of multicast mode has been deprecated beginning with this release and will be completely removed in the future.

  The unicast mode is now the default mode for PortaSIP® and Web clusters. You must reconfigure your clusters to use the unicast mode before upgrading your system to a new release.

- **Password usage for callshop booths** – In order to enable service password verification for callshop booths after a software

upgrade, callshop resellers need to reconfigure the service passwords for all the booths in their callshops.