

PortaSwitch

New Features Guide

69

MAINTENANCE
RELEASE



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Preface

PortaSwitch® Maintenance Release 69 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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Mobile Centrex via PortaSIP® as IMS TAS

PortaSIP® can function as a TAS (Telephony Application Server) in IMS / VoLTE networks, thus enable you to provide mobile services to subscribers without building a full network core.

Now in addition to receiving basic calling services, your subscribers can treat their mobile phones like extensions of their office Centrex environments.

With this release, the following features are available:

- extension dialing;
- follow-me call forwarding;
- redirect to MNO voicemail.

Extension dialing

IP Centrex users are accustomed to calling each other by dialing extension numbers. Now your mobile subscribers can continue that practice by dialing short three- or four-digit dial codes on their mobile phones to reach each other.

Customers can also use short dial codes to call external numbers. Your customers can define, for instance, that 1111 is for customer support, etc. This way their frequently used contacts can be easily reached.

Follow-me call forwarding

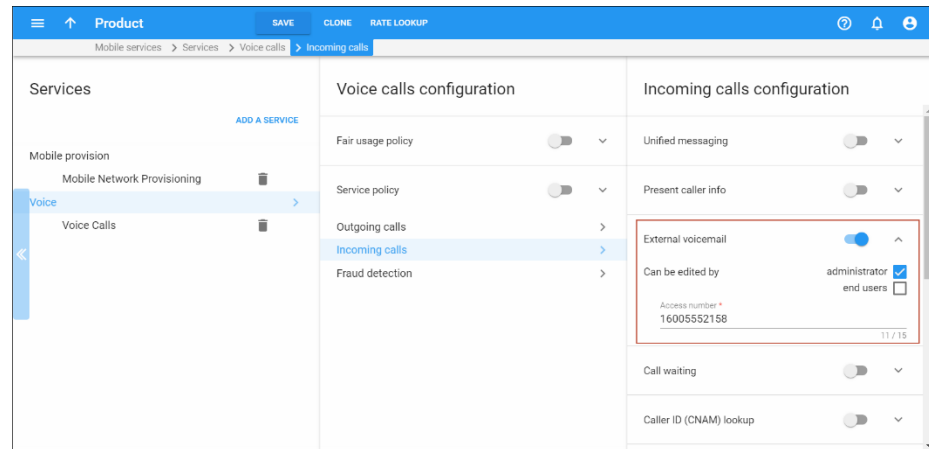
You can supplement traditional call forwarding that is supported by your MNO with the follow-me feature. Your subscribers configure their follow-me lists in PortaBilling® and then define how the phones in their lists ring when calls are received: simultaneously, randomly or in a defined order.

PortaSIP® supports both unconditional and conditional forwarding. During unconditional forwarding, PortaSIP automatically redirects the call so the callee's phone does not ring. Conditional forwarding means that PortaSIP® redirects calls when the callee is busy or unavailable. Charges for call forwarding are applied to the account initiating the call.

Redirect to MNO voicemail

To ensure service continuity for mobile subscribers, you can redirect their calls to your host MNO's voicemail. To do this, enable the **External voicemail** service feature within the product configuration and define the

application's access number. This enables you to preserve their user experience with the voicemail service.



These enhancements enable you to introduce a mobile Centrex solution to your corporate customers.

Commission calculation for representatives

To win new customers and increase sales, service providers cooperate with various representatives (e.g. independent contractors, sales agents, etc.). Representatives work on behalf of the company, selling services for a commission which is paid by the service provider. Previously, administrators had to download a representative's customer charges report and calculate the commission either manually or via an external application.

But with this release, PortaBilling® automatically calculates representatives' commissions. To make this happen, an administrator creates a commission plan wherein different calculation schemas are defined.

The commission amount depends on:

- service type (e.g. subscription, voice calls, etc.);
- commission type:
 - a one-time commission – a fixed amount of money that is paid one time only when a new subscription is assigned;
 - a percentage commission – a percentage of the customer's charges for services provided;
- the period – this is the number of months during which a predefined percentage commission is charged (e.g. for the first 3 months, the representative receives 10% of customer charges, for the next 3 months – 7% and for the following months – 5%).

There are two commission calculation modes that define when a commission is made available to a representative.

1. Payments.
PortaBilling® calculates and only makes available a commission once a customer makes a payment for their services. This mode is recommended for prepaid customers. Note that different commission amounts can be configured differently for time periods only. There is no option for differentiating a commission amount by service type and / or commission type.
2. Invoiced amount.
When a customer is charged, PortaBilling® calculates and makes available the representatives' commission. This mode permits flexible commission schemas to be configured – for example, to differentiate a commission by service type and apply a one-time commission for subscriptions. Note that a representative may want to receive their commission before the customer has actually paid.

When a commission is calculated, the representative's outstanding payout increases.

The screenshot shows the 'Representative' configuration page for Mark Johnson. The page is divided into two main sections: 'Mark Johnson' and 'Commission plan'. The 'Mark Johnson' section includes fields for 'Initials' (M.J.), 'Currency' (USD - US Dollar), and 'managed by' (Administrator only). A red box highlights the 'Outstanding payout' field, which shows a value of 55.00000. The 'Commission plan' section shows a dropdown menu set to 'Canada - Mark Johnson'.

Administrators and representatives can generate commission reports where all the commission details are presented (e.g. date, customer name, sum of charges, percentage of commission, etc.).

This is how it works:

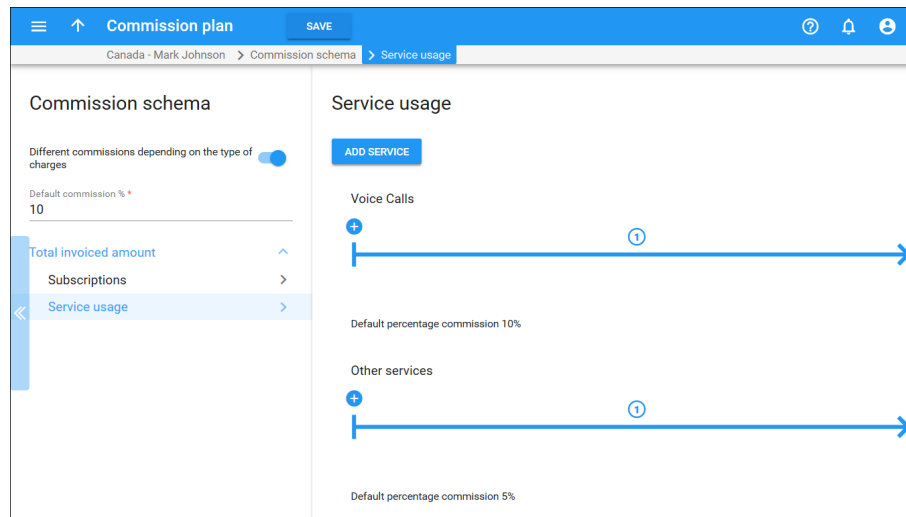
1. The administrator creates a commission plan for the new representative, Mark Johnson.

2. The administrator then assigns the commission plan to Mark.
3. When Mark brings in a new customer, the administrator identifies Mark Johnson as the customer's representative. Thus, Mark receives a commission from all of his customers according to his commission plan.
4. The administrator opens the representative's profile and sees the amount of money owed by the service provider to the representative.
5. The administrator therefore pays Mark his commission and manually decreases the service provider's debt.

Consider the following example.

Via Mark Johnson's commission plan, he will earn:

- a \$15 one-time commission – when the subscription “Equipment rental” is assigned.
- a 2% commission – for use of the \$10 monthly “Equipment rental.”
- a 10% commission – on all voice call service charges.
- and a 5% commission – on all other service charges.



At the end of the month, the administrator opens Mark's profile and sees that the total sum of Mark's commissions comes to \$40.20. A report detailing the commission total is generated:

- \$15 one-time commission for the subscription;
- \$0.2 for subscription charge (2% x \$10 = \$0.2);
- \$15 for voice calls charges (10% x \$150 = \$15);
- \$10 for other service charges (5% x \$200 = \$10).

To reward and encourage representatives for their good work, an

administrator can issue bonuses – amounts of money that are in addition to their commissions.

Override representative's commission plan

It is possible that a service provider and a representative negotiate a different commission scheme for a particular customer. For instance, a representative receives a 5% commission according to his ABC commission plan but he wants a 10% commission for services consumed by the customer GoMobile. To make this happen, the administrator creates an individual commission plan and assigns it to that customer.

The screenshot displays the 'Customer' profile page for 'GoMobile'. The page is divided into three main sections: 'Personal info', 'Additional info', and 'Accounts'. The 'Personal info' section includes fields for First name (Tony), Middle name, Last name (Glen), Email (tonyglen@glen.com), and Contact (Tony). The 'Additional info' section includes fields for Auto-provision DIDs via batch (None), Bundle promotion (None), Distributor (Not defined), and Representative (M.J. - Mark Johnson). A red box highlights the 'Override commission plan' toggle, which is currently turned on. Below this toggle, the 'Commission plan' is set to 'GoMobile plan'. The 'Accounts' section on the left shows 'Balance control' (Postpaid), 'Currency' (USD - US Dollar), 'Balance, USD' (0.00000), and 'Credit limit, USD' (300.00).

This feature automates the commission calculation process for representatives. In addition, administrators can define different commission schemas by means of particular commission plans.

Provision the invoicing and payment information to bookkeeping systems

To produce accurate financial reporting, businesses must have up-to-date information about their revenue. With PortaBilling®, communication service providers (CSPs) can now automatically update their bookkeeping systems (e.g. Pastel Accounting, QuickBooks, etc.) about their invoiced amounts and payments.

Since bookkeeping systems use different application programming interfaces (APIs), the methods for interacting with external systems differ. That is why it is necessary to develop a plugin for each bookkeeping

system. This plugin handles PortaBilling® revenue information and delivers it to the CSP's bookkeeping system.

The following example shows how the systems interact:

At the end of a billing period, PortaBilling® creates a \$110 invoice for John Doe. The plugin detects this change and therefore sends new data to the bookkeeping system.

When PortaBilling® receives a payment (e.g. cash or credit card), it applies this amount to John's invoice. The plugin detects these invoice changes and sends the amount paid to the bookkeeping system.

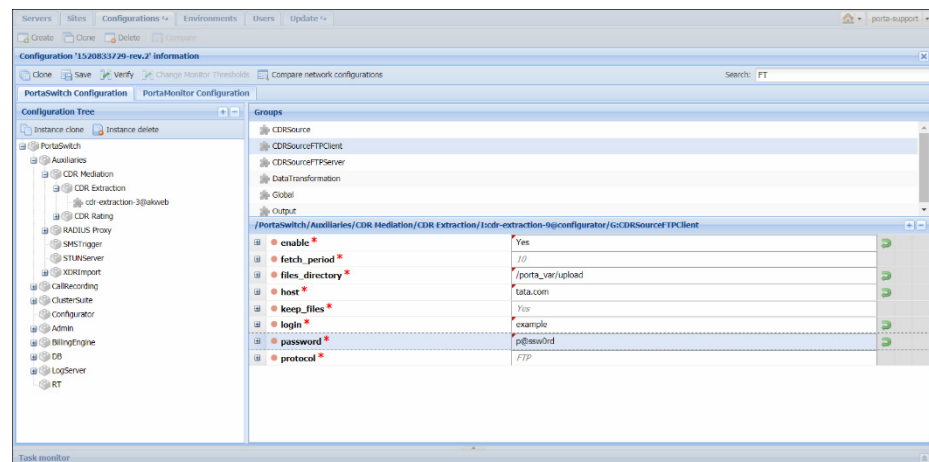
Depending on their needs, CSPs can also deliver information about invoice status changes and / or invoice adjustments (e.g. refunds) to their bookkeeping system.

This feature simplifies CSP's bookkeeping and ensures correct financial reporting.

Auto-download of CDR files from external systems

Let's say you operate as an MVNO and need to import TAP3 files to PortaBilling®. You can configure the xDR mediator now to download those files from your MNO B/OSS automatically.

The xDR mediator operates as an FTP client. It connects to the external system and downloads CDR source files via FTP / SFTP. To make this happen, the administrator defines the credentials needed for access to the external system as well as the path to the folder from which to download the files.



This configuration is the one recommended since it increases system security and simplifies xDR mediator support through system updates. For backward compatibility, the existing configurations for receiving CDR source files remain unchanged.

Token-based payments via Virtual Card Services (VCS) payment gateway

With this release, PortaBilling® supports token-based payment processing via the Virtual Card Services (VCS) payment gateway. Compared with operating as an external payment processor, this operating mode provides the following benefits:

- PortaBilling® stores tokens only; credit card information is stored by the VCS. Therefore, you do not need to pass the PCI DSS certification. This reduces the time spent for the initial service launch.
- The use of tokens enables your customers to configure automatic recurring payments to pay invoices and / or top up their balances. As a result, you receive payments faster compared with payments made manually.

Token-based payment processing requires an initial payment. A token is generated and serves as a credit card identifier to be used for subsequent payments.

This is how it works:

A customer enters their credit card information via the self-care interface and saves it for future use. PortaBilling® generates a token and forwards both it and that credit card information to VCS, which saves the token.

Upon payment processing, PortaBilling® updates the customer balance and stores the token in the database to be used for subsequent payments.

Token-based payment processing via the VCS has the following *implementation specifics*:

- To configure VCS for token-based payment processing, select the VCS-N as the payment processor in PortaBilling®.
- The VCS does not support Authorization only and E-commerce refund transaction types.
- The VCS does not return the currency code when processing payments. Therefore, make sure to charge your customers in the same currency that you operate in (e.g. ZAR).

High-availability for the dispatching SBC using different virtual IP addresses

There are two ways to ensure high-availability for the dispatching SBC in site-redundant PortaSwitch®.

The first way is to add the dispatching SBC instance on the secondary site using the same virtual IP address as that on the main site. Also, configure dynamic IP routing with this IP address using BGP / EGP, LISP or other technologies. This serves to make the dispatching SBC reachable on both sites for external networks (your vendors).

If you cannot use the same virtual IP address for the dispatching SBC because you or your hosting service provider does not provide such a network configuration, there is another way. Assign different virtual IP addresses for the dispatching SBC on the main and secondary sites.

Such a configuration presents two points of entry to your network; therefore, vendor and user equipment must be able to send requests to both of them. Configure the domain name for the dispatching SBC on the DNS server so that it resolves on two virtual IP addresses, and then provision it to vendors and user phones.

Vendor and user equipment must be configured to send all requests to the dispatching SBC on the main site within the normal mode of operation. When the main site is down or unavailable, registration and call initiation requests are sent to the dispatching SBC on the secondary site. User phones, however, can accept incoming calls only after they re-register with the IP address of the secondary site's dispatching SBC.

If you wish to balance the load on dispatching SBC instances and prioritize the traffic flow, configure DNS SRV records.

This enhancement makes you independent from your hosting service provider and any network limitations they might have. Thereby you can deploy PortaSwitch® sites in geographically dispersed locations (e.g. in New York and Singapore) and also ensure uninterrupted service provisioning for your users.

Support of SIP preconditions in PortaSIP®

In IMS networks, users must only be alerted about a call once all call parameters have been confirmed. This means that caller A and callee B must negotiate all the call parameters and allocate the necessary network resources for media streaming before B's phone rings.

To do this, A and B's phones exchange SIP preconditions while the call is being established. A SIP precondition is a set of constraints about the resources that caller and callee must meet and agree to. SIP preconditions are communicated in the SDP part of SIP messages.

PortaSIP® as an IMS application server supports calls with SIP preconditions by:

- Transmitting SIP preconditions between caller and callee; and
- Processing PRACK / UPDATE messages within the SIP dialogue to determine the session establishment's progress.

Calls with SIP preconditions are possible if:

- Both caller and callee support them;
- The call does not ring on several devices simultaneously (e.g. in case of call forking); and
- The user does not call the IVR application because calls to the IVR require that they be answered prior to playing media.

This enhancement enables you to meet the requirements of the IMS / VoLTE networks for call processing. By eliminating audio delays, you improve the user experience.

Auto-provisioning for the Fanvil and Htek IP Phones

The list of IP phones that are auto-provisioned by the PortaSwitch® has been extended to include the following phones:

- Fanvil X3S (firmware version is 2.3.2.4600)
- Fanvil X4G (firmware version is 2.3.2.4600)
- Fanvil X5S (firmware version is 1.2.4)
- Fanvil X6 (firmware version is 1.2.4)
- Fanvil C600 (firmware version is 14.0.0.1.r2)
- Htek UC902 (firmware version is 2.0.4.4.24)
- Htek UC903 (firmware version is 2.0.4.4.24)
- Htek UC912P (firmware version is 2.0.4.4.24)
- Htek UC923P (firmware version is 2.0.4.4.24)
- Htek UC924 (firmware version is 2.0.4.4.24)
- Htek UC926 (firmware version is 2.0.4.4.24)

Click the link to find more information about any of the [Fanvil IP](#) or [Htek IP](#) phone.

Auto-provisioning of these IP phones extends the number of offers you can make to your customers.

Other features and enhancements

- **Turn off system voice prompts upon call failure for carriers / customers** – When PortaBilling® rejects a call, by default, PortaSIP® plays a voice prompt that clarifies the reason for the failure (e.g. wrong password entered or wrong number dialed). PortaSIP® then sends a SIP response message to the calling party (e.g. GW, PBX, IP phone).

To reduce call processing time or to reroute failed calls, some carriers require that failed calls be disconnected immediately without playing a voice prompt.

Customers who use the same equipment (e.g. FreePBX) may require different voice prompt configuration. For example: EasyCall Ltd. does want their callers to hear the reason for a call failure while GreenLeaf Ltd. doesn't.

So now you can disable system voice prompts upon call failure for a calling party by assigning a service policy with the **no_voice_rejects** attribute enabled.

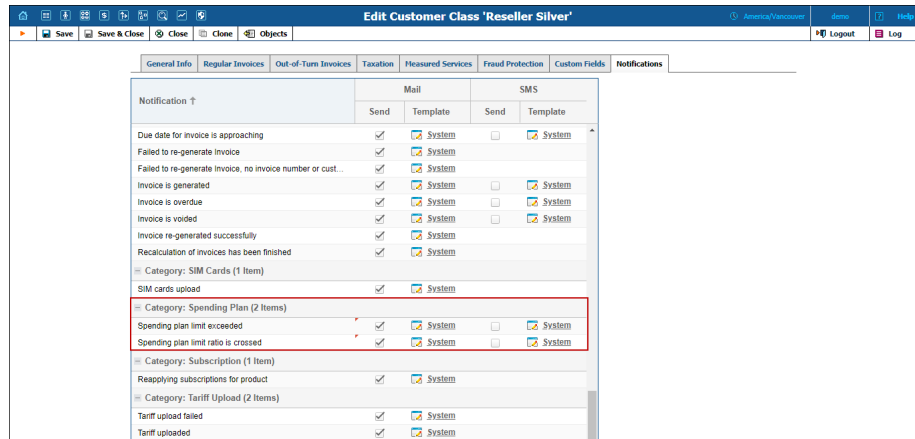
This allows you to personalize what a voice prompt says when there is a call failure – both for your customers and your carriers, thereby resulting in increased customer satisfaction.

- **Notify resellers about their customer's spending limitations** – An administrator assigns a spending plan to limit a customer's daily expenses. The administrator turns on notifications when they wish to know when their customer exceeds their spending limit.

With this release, an administrator enables their resellers to receive notifications once the reseller's customer crosses their spending threshold.

To do that, the administrator enables notifications for a customer class. Then, all resellers / subresellers who are assigned this customer class are notified.

NOTE: An administrator does not receive notifications about reseller's customers, and a reseller does not receive notifications about their subreseller's customers.



Let's say that these notifications are enabled for you and your ABC reseller and that ABC has assigned a spending plan of \$50 to their customer John Doe.

John has spent \$48 out of his daily \$50. His spending plan only prevents new phone calls from being made once his spending limit is reached. (The system does not interrupt sessions in progress.) John now makes a new \$5 call.

When the call ends, John's expenses add up to \$53. ABC receives an email stating that John Doe has spent \$53, thereby exceeding his \$50 limit. You do not receive any email.

This enhancement allows resellers to keep track of when their customers exceed their spending limits and therefore adjust them when necessary. This increases resellers' satisfaction.

- **Verifying country and area names during a DID upload –** Sometimes when files for DID number upload are being created, typos appear in the names of countries or areas. And sometimes areas are simply left blank.

With this release, PortaBilling® solves this issue, verifying the names of countries / areas before adding DIDs to an inventory and if a typo is detected, PortaBilling® corrects it and notifies the administrator about this change.

If PortaBilling® detects that either a country and / or an area is not defined for a DID file number, it matches the DID number with the destinations list. When the match is found, the country and / or area are filled in based upon the destination's parameters. If there is no match, the system adds a DID number as is (without either the country / area filled in).

Let's say that the file you upload contains DID number 120566612345 without either a country or area defined. PortaBilling® checks destinations and finds a match: 1205 – USA – Alabama. Thus, PortaBilling® adds the DID number and corresponding country and area names to the inventory. Otherwise, PortaBilling® simply adds the DID without defining either its country and /or area.

This enhancement ensures that uploaded data is accurate, thereby keeping the system clean of typographical errors.

- **Incoming multipart SMS message delivery** – The standard SMS message size may contain up to 160 Latin characters or 70 non-Latin characters. To send longer messages (e.g. 250 Latin characters), mobile operators send multipart SMS messages. This means that SMS messages may be comprised of several SMS parts.

With this release, PortaSwitch® accepts multipart SMS messages and delivers them as a single message, either to end users within the network or to your SMPP vendor.

Note that the sender is charged for each SMS part sent as part of a multipart SMS message. Delivery reports are sent for each SMS part as well.

Consider the following example:

A mobile user, John Doe, sends a multipart SMS message to Mary Smith, your network user. Since the SMS message contains 190 Latin characters (2 SMS parts), John is charged for 2 SMS messages although Mary receives just a single message.

This capability to deliver a multipart SMS message as a single message improves user experience.

- **Language support for national currencies called “dollar”**– National currencies called “dollar” (e.g. Australian Dollar (AUD), Singapore Dollar (SGD), etc.) have now been added for all IVR application languages as a supported currency. This improves the system's usability and customers' overall experience with the service.

Web interface changes

- **PortaUM® node type removal from node list** – The PortaUM® node identified the previous-generation media server.

Since the media server has been integrated into PortaSIP®, the PortaUM® node type is considered obsolete and is excluded from the nodes list on the PortaBilling® web interface.

For backward compatibility, your existing PortaUM® nodes remain unchanged so you can manage them. However, if you change the node type from PortaUM® to something else, you cannot undo this action.

- **The Internet access is in the list of predefined service types** – Administrators no longer need to create Internet access service. They may now select it from a list for any Internet scenario.

This reduces the number of steps necessary to configure Internet provisioning, thus saves the administrator's time.

- **Service policy identification by internal ID** – With this release, service policies are identified by the *i_service_policy* attribute instead of by the service policy ID value. Service policy ID is discontinued and removed from the web interface. It is also removed from API responses; however, the communication flow for your applications remains unchanged.

Important upgrade notes

- **Send start accounting after authorization by default** – With this release, PortaSIP® sends start accounting records after PortaBilling® authorizes a call, and alive accounting records after a call is connected by default. This allows active calls to be monitored for all customers and facilitates the correct display of call states on the web interface.

Note that PortaBilling® receives start accounting records from PortaSIP® for every route it tries while connecting a call. This imposes an additional load on PortaBilling® because more requests are processed. Therefore, if you do not require call state monitoring in your system, switch the **accounting_mode** option value to *disconnect*. In this case, PortaSIP® only sends accounting records when the call has finished.

Sending accounting records to PortaBilling® is defined by the new **accounting_mode** option on the Configuration server. It replaces the previous *send_alive_acct* and *send_start_acct* options and unifies their configuration parameters.

- **Multiple rating group authorization for LTE** – Rating groups enable wireless operators to charge individual customers differently, depending on the content they use (e.g. social media, news, online games, etc.). Thus, a rating group defines their Internet content and what it costs.

A customer can use different content within the same session (e.g. open a Facebook page and watch a YouTube video). In this case, the node sends two rating groups and requests the amount of Internet quota for each group in the authorization request. Previously, PortaBilling® made a simplified check to authorize the more expensive group, but that could potentially lead to overdraft.

With this release, PortaBilling® authorizes all rating groups provided within the same authorization request. To make this happen, it supports the Multiple-Services-Credit-Control (MSCC) AVP for Diameter(Gy). When P-GW sends the MSCC group in the Credit Control Request - Initiate (CCR-I) message to PortaBilling®, PortaBilling® authorizes rating groups within MSCC AVPs one by one, starting from the most expensive.

To illustrate how this works, consider the following example: Let's say you introduce access to different Internet content types via add-ons.

You have configured the P-GW to send rating group 101 for YouTube watching and rating group 102 for online games. Other types of Internet access (e.g. regular web browsing, emails, etc.) are authorized using the NETACCESS rate in a customer tariff. The P-GW requests 100MB for each type of Internet content in the authorization request.

A user product configuration includes a default 500MB quota that can be used for any online activity.

John Doe has signed up for 1GB of YouTube watching for \$5 / month. He has already used up 950 MB and has only 50MB available.

When on the next day he connects to the Internet to check his emails and watch YouTube, PortaBilling® authorizes his session as follows:

- For rating group 101 PortaBilling® first checks the amount of quota available for YouTube. Since the user has only 50 MB left, PortaBilling® allocates this amount, plus allocates 50 MB from the default 500MB quota.

- PortaBilling® authorizes the user for email check using the NETACCESS rate and allocates 100MB from the remaining 450MB (500 MB – 50MB = 450MB) of default quota.
- When 100MB allocated for YouTube is consumed, the P-GW sends another authorization request for rating group 101. PortaBilling® authorizes it and allocates another 100MB from the user's default quota.

Thus, users are protected from overdraft and PortaBilling® charges correctly and precisely for their Internet usage.