



PortaSwitch New Features Guide

MAINTENANCE RELEASE 81

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Preface

PortaSwitch® Maintenance Release 81 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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Call quality monitoring

With this release, administrators can monitor the quality of customers' calls by using a set of metrics. In so doing, they can identify and fix network issues (e.g. congestion) and analyze how network configuration changes influence call quality. This helps CSPs and resellers meet their customers' expectations about the quality of service according to the SLA (Service License Agreement).

Call quality is determined by these metrics:

- **Latency** – the delay in voice packet delivery from source to destination;
- **Jitter** – the variability in time it takes for voice packets to reach their destination;
- **Packet loss** – the number of voice packets not received by the destination;
- **MOS (Mean Opinion Score)** – the average rating of voice quality on a scale from 1 to 5, where 5 indicates the highest quality.

PortaSIP® collects metrics during or at the end of customers' calls. This depends on their phone configurations. PortaBilling® analyzes the collected data and determines the call status: good, fair or poor. An administrator sees the call status in the customer's xDRs. Call quality details for the call participants are available in their xDR details.

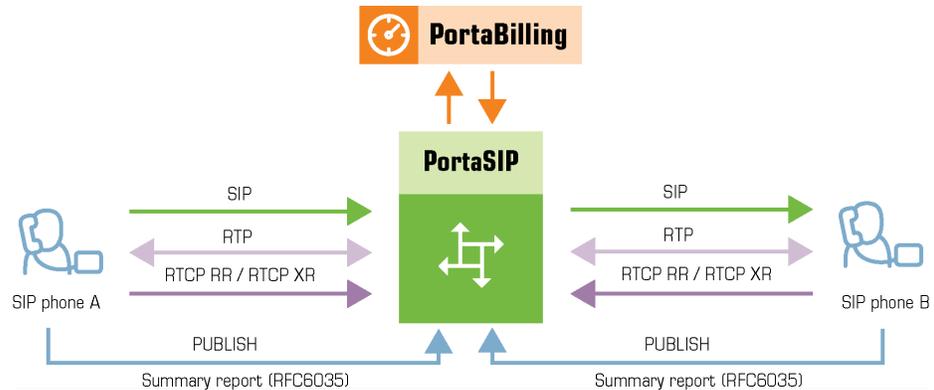
Let's have a closer look at how it works.

Metrics collection

Call quality values are sent in RTCP (Real-Time Transport Control Protocol) messages:

- receiver reports (RTCP RR), and
- extended reports (RTCP XR).

RTCP XR reports contain a wider set of quality parameters (e.g. packet loss rate, delay, MOS, etc.). However, user phones must support RTCP XR reports according to RFC 3611 and be configured to send them.



After a call is established, user phones exchange the media stream via the RTPProxy. They also send RTCP RR / RTCP XR reports to the RTPProxy, which passes them on to the Call quality tracker. The Call quality tracker is the PortaSIP® component that retrieves metrics values from the RTCP RR / RTCP XR messages, aggregates them and records them in the database.

User phones can also send aggregated call quality values at the end of the call if they support call quality summary reports according to RFC 6035. At the end of the call, PortaSIP® receives these summary reports in PUBLISH messages and passes them to the Call quality tracker. The Call quality tracker processes them in the same way: extracts the metrics and records them in the database. The metrics from the summary reports take precedence over those collected from the RTCP RR / RTCP XR reports.

Call status identification

A call can have a status of good, fair or poor. The criteria for call statuses are defined in call quality profiles. A call quality profile includes thresholds for call quality metrics that describe each call status. An administrator configures a call quality profile and assigns it to customers / customer sites whose call quality they wish to monitor (e.g. business or premium customers). PortaBilling® sets call statuses only for customers who have assigned call quality profiles.

The screenshot shows the 'Call quality profile' configuration page for 'Managed voice'. The page is divided into a left sidebar and a main content area. The sidebar includes a 'Metrics' tab. The main content area is titled 'Metrics' and contains four sections, each with a toggle switch and a 'Mark call quality as' section. The 'Delay' section has a toggle on and thresholds: Poor if delay is above, ms * 20; Fair if delay is above, ms * 10. The 'Jitter' section has a toggle on and thresholds: Poor if jitter is above, ms * 30; Fair if jitter is above, ms * 20. The 'Mean opinion score (MOS)' section has a toggle on and thresholds: Good if mos is above * 4.7; Fair if mos is above * 4.3. The 'Packet loss' section has a toggle on and thresholds: Poor if packet loss is above, % * 10; Fair if packet loss is above, % * 6. Each section includes a color-coded bar representing the quality status: Green for Good, Yellow for Fair, and Red for Poor.

To determine the status of calls, PortaBilling® retrieves metrics values from the Call quality tracker every 10 minutes. PortaBilling® matches the metrics values against the thresholds in a customer's call quality profile and then sets the call status based on the worst metric value. The resulting call status is identified by the color indicator in the customer's xDRs:

-  Green for good quality;
-  Yellow for fair quality;
-  Red for poor quality.
- No indicator means that either there is not yet a call quality status or a call quality profile is not assigned to the customer.

The screenshot displays the 'Customer' interface with a 'Results' table. The table has columns: Account ID, From (CLI), To (CLD), Country, Area, Connect time, Charged time, Charged amount, Disconnection error, and Call quality. A modal window titled 'Call quality details' is open, showing a 'Managed voice' profile for 'GlobalNet'. The modal contains two tables of metrics: 'On caller side' and 'On callee side'. Both tables show 'Quality' as 'Good', 'MOS' as '4.7', 'Jitter, ms' as '0', 'Delay, ms' as '0', and 'Packet loss, %' as '0'. A red dashed arrow points from the 'Call quality' column in the table to the 'Good call quality' status in the modal.

The administrator can view metrics values for call participants in the xDR details. They can also filter xDRs by call quality status for further analysis.

Resellers can configure call quality profiles and receive call quality details for their customers via the API.

Call quality monitoring is supported for calls made within the network, to / from external numbers and “complex calls” such as call forwarding, call transfer, call pickup, etc.

By monitoring call quality, administrators can:

- Analyze current quality and take actions to improve it;
- Identify network issues and fix them;
- Analyze how network configuration changes influence call quality;
- Retrieve call quality statistics via the API to create reports in external systems.

End users receive better service quality due to proactive administrators.

Implementation specifics:

1. To process call quality metrics from RTCP RR / RTCP XR reports, the media stream between the phones must pass through the RTPProxy. This is not required if the phones send call quality summary reports in PUBLISH messages. PortaSIP® receives these summary reports through the Subscription manager.
2. The Call quality tracker instance is required to process RTCP RR / RTCP XR and call quality summary reports. You can deploy it on any SIP server. The Call quality tracker must reside on the private

- IP. Only one instance of call quality tracker per PortaSIP® is allowed.
3. PortaBilling® retrieves metrics from the Call quality tracker every 10 minutes. Therefore, call status is not displayed immediately after call termination.
 4. PortaBilling® queries the replica database to show the metrics in the xDR browser. This imposes an additional load on the database.
 5. A change of metrics thresholds in call quality profiles, as well as profile changes for customers, is not recorded. Thus, if such a change takes place before PortaBilling® retrieves the metrics, PortaBilling® uses the new settings to determine the call statuses.

Known limitations

The xDRs for inter-site calls and for complex calls such as call forwarding, call transfer, etc. provide call quality details for one call participant only – the one whose xDR you are viewing. Therefore, to obtain full quality information about a call, you must view call quality details in the xDRs for each call participant.

Controlled environment deletion

In some cases you may need to delete billing environments that have obsolete data to clean up the database (e.g. as a preparation step for a system update to a new software version, to increase PortaSwitch® overall performance, etc.). With this release, an administrator can control the deletion of billing environments that have a huge amount of data (e.g. with millions of customers) on Oracle-based installations of PortaBilling®.

To delete the environment, run this script:

```
/home/porta-admin/porta-admin.pl drop <env_name>,
```

where <env_name> is the name of the billing environment.

The environment entities are deleted from the database tables in batches of 10,000 records. The batch size is hardcoded.

The administrator can manage environment deletion as follows:

- **Monitor environment deletion progress** – you can view the total number of entities to be deleted and the number of already deleted entities;
- **Estimate the deletion time left** – compare the total number of entities to the number of already deleted entities and the time spent on deletion.

For example, it took 10 mins. to delete 10,000 entities. There are 100,000 more entities left. Thus, an administrator estimates that it will take about 100 mins. to delete the remaining entities;

- **Stop the deletion process and restart it later** – you can stop the deletion process by using the `Ctrl+C` combination. To restart the environment deletion, rerun the script. The system rechecks already processed tables. If there are no new entities, the environment deletion continues from where it was stopped.

The environment deletion flow:

Let's say that an administrator has planned the environment deletion for 10 a.m. They run the `porta-admin.pl` script at the designated time and monitor the deletion progress. In a few hours the administrator notices that the system is overloaded. To prevent service degradation, they stop the script execution.

The administrator reruns the `porta-admin.pl` script during off-peak hours. In about 3 hours the environment is completely deleted from the database.

This feature enables you to better control the environment deletion and prevent the degradation of services on Oracle-based installations.

Other features and enhancements

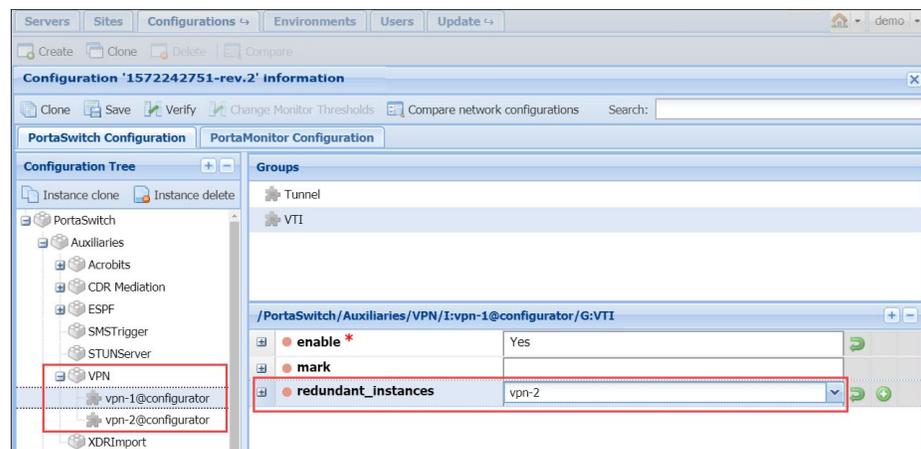
- **Redundant VPN tunnels for PortaSwitch®** – VPN tunnels are used to interconnect PortaSwitch® sites. For instance, when one site is deployed on the premises and the other one – in the cloud. The encrypted traffic is then routed between them through virtual tunnel interfaces (VTI).

With this release, you can configure redundant VPN tunnels. This meets the Oracle Cloud Infrastructure recommendations. When the main tunnel is offline for maintenance, the other tunnel is used to send traffic between the sites.

This ensures fault tolerance and improves the reliability of PortaSwitch®. End users do not even notice that maintenance is being performed since services continue to be available without interruption.

To enable redundant tunnels between sites, you must set up the following:

- 1) The VPN instance for the cloud-based site.
After configuration you receive:
 - A public IPv4 address (unique for each VPN instance);
 - A pre-shared key (unique for each VPN instance);
 - Two subnetwork addresses (common for all VPN instances).
- 2) The VPN instances for an on-premises site.
On the Configuration server:
 - Configure the VPN instances (main and backup) on the same server, e.g. Configurator.
 - Enable the VTI mode for VPN instances.
 - Open the “main” VPN instance and select VTI group.
 - In the **redundant_instances** option, select the other VPN instance from the list.



Once the configuration is applied, the system automatically uses the other VPN instance as a backup.

You can configure the redundant VPN tunnels for:

- The sites deployed on the premises and in the cloud.
- The sites deployed on the premises in separate datacenters.
- Dual-version PortaSwitch®: for source and target systems.

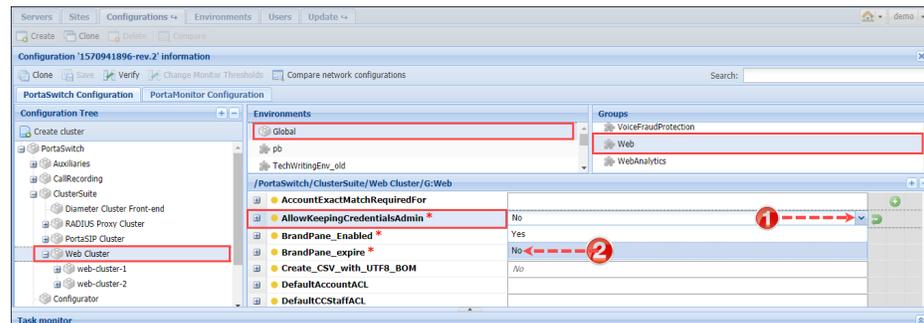
We recommend that you configure a separate Internet connection for each VPN tunnel for every on premise installation.

This enhancement improves the stability of PortaSwitch®.

- **Disable storing admin credentials in browsers** – Administrators often store credentials to PortaBilling® web GUI in password managers. The best security practice is to store the passwords encrypted. However, a browser's password manager does not encrypt passwords by default and those passwords might be stolen (e.g. by means of malicious software, when the device is lost, etc.).

To prevent this, you can now disable storing credentials in browsers' password managers. Thus, every administrative user must specify their login and password every time they log in to PortaBilling®.

To disable storing credentials, set **AllowKeepingCredentialsAdmin** option to **No** on the Configuration server.



The option to disable storing credentials in browsers for reseller, representative, distributor and customer care staff web interfaces will be added in future releases.

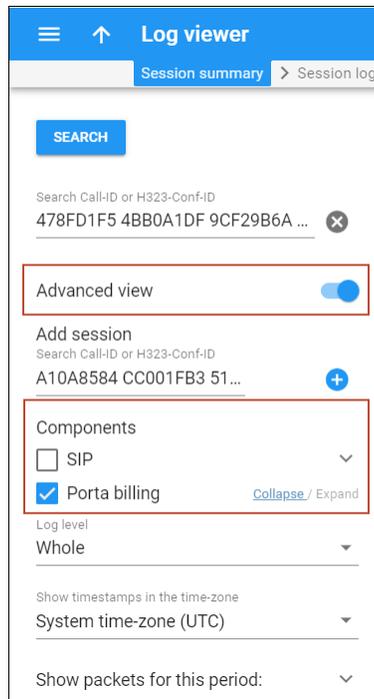
This feature helps you improve your system security.

- **The Malay language is now supported for IVR applications** such as prepaid calling cards, voice mailbox, auto attendant, etc. Find the full list of supported IVR applications in the [PortaSIP® Media Applications](#) guide.

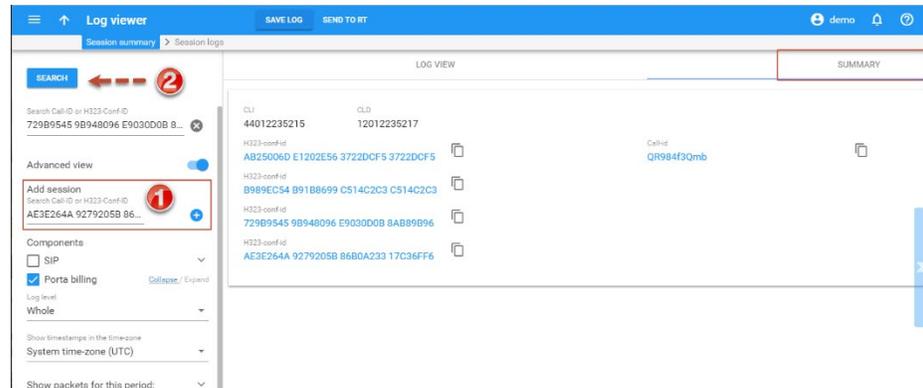
Consequently, service providers can reach a new market by offering their services to Malay-speaking customers in their own language.

Web interface changes

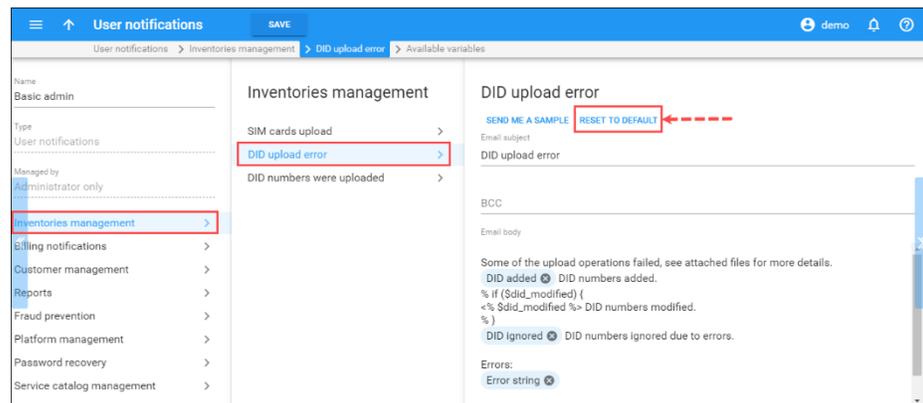
- **Redesigned Log viewer** – Find these changes that speed up data search when troubleshooting on the **Log viewer** page:
 - You can now switch between SIP and BE logs with a single click. System components are grouped into **SIP** and **PortaBilling** groups, so you just clear the check box next to the corresponding group.



- When you open **Log viewer** for the first time you now see logs in advanced view and with the fullest detail. This saves you several clicks when troubleshooting. If you don't need extended log details, simply switch the log display to the basic view. PortaBilling® remembers your settings to display subsequent logs in the selected view.
- A log summary is now a separate tab where you can find the H323-conf-ids of all related billing sessions (e.g. the call transfer log includes billing sessions produced for the caller, the transferor and the transfer target). Click the H323-conf-id link to view the log part that you are interested in (e.g. transfer details). To view several sessions, click  to copy the Call-ID / H323-conf-id and add it via the **Add session** field.



- There are only billing logs for services such as Internet access, WiFi, etc. Therefore, when you open any session log, you always see the billing log first.
- **Reset notification templates to default settings** – If you’ve made changes to a notification template and do not like the result, you can now reset the template to its default settings in just one click.



The **Reset to default** option is available for user and customer class notification templates.