

PortaBilling Administrator Guide

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Conventions



Exclamation mark draws your attention to important actions that must be taken for proper configuration.



Timesaver means that you can save time by taking the action described here.



Tips provide information that might help you solve a problem.



Archivist explains how the feature worked in previous releases.



Gear points out that this feature must be enabled on the Configuration server.

Hardware and software requirements

Server system recommendations

- Four (4) Linux Servers for the PortaBilling®:
 - Real-time billing engine (RADIUS).
 - Main database server.
 - Server for web-interfaces (web interface for administrators and self-care portal, XML API services, periodic tasks, invoicing) and replica database.
 - Configuration management (this server is also used for monitoring the other servers and collecting and processing log information).
- A minimum of 250 GB of available disk space on each billing server. On the average, 200,000 CDRs take up about 1 GB of disk space (this includes database files, indexes and binary logs, raw RADIUS detail files, billing engine log files and other related information), plus you need to reserve an amount of free space roughly equal to the projected database size for performing operations such as backup. RAID is recommended in order to improve performance and reliability.

The Configuration server requires about 500 GB of free disk space if you are using PortaSwitch® (where log files from the PortaSIP® dispatching and processing nodes need

to be processed), and 250 GB of free disk space if you are using the PortaBilling® standalone.

- A 64-bit processor (Xeon, Opteron).
- At least 8 GB of RAM, 16 GB recommended.
- Two Gigabit network ports (can be two separate network adapters or a single dual-port adapter).

For additional details and configuration advice, see the *Hardware*

Recommendations topic on our website:

<http://www.portaone.com/support/hw-requirements/>

For information about whether particular hardware is supported by Oracle Enterprise Linux used as the operating system in PortaSwitch®, consult the related document on the Oracle or RedHat website: <https://hardware.redhat.com/>.

Client system recommendations:

- **OS:** MS Windows XP or above, Linux/BSD, Mac OS X 10.6 or above.
- **Web browser:**
 - Google Chrome 55 or above, Mozilla Firefox 50 or above.
 - JavaScript and cookies must be enabled.
- **Spreadsheet processor:** MS Excel, OpenOffice Calc, LibreOffice Calc, Google Sheets.
- **Display settings:** a minimum screen resolution of 1366 × 768.

Installation

PortaSwitch® installation ISO files contain everything required for installing Oracle Enterprise Linux (64-bit version), PortaSwitch® and the supplementary packages that are necessary for convenient system administration and maintenance.

After the installation is complete you will assign roles (e.g. RADIUS, web interface, etc.) to individual servers using the Configuration server tool – this will automatically enable the required components of PortaSwitch® software on each server.

PortaSwitch® installation and configuration are automated and integrated within the main installation process. This allows you to install a completely functional PortaSwitch® environment from scratch in less than one hour!

For detailed installation instructions, please refer to the **PortaBilling®** [Installation Guide](#).

What is new in maintenance release 72?

Added:

- The **IP aliasing** section to Web cluster chapter.

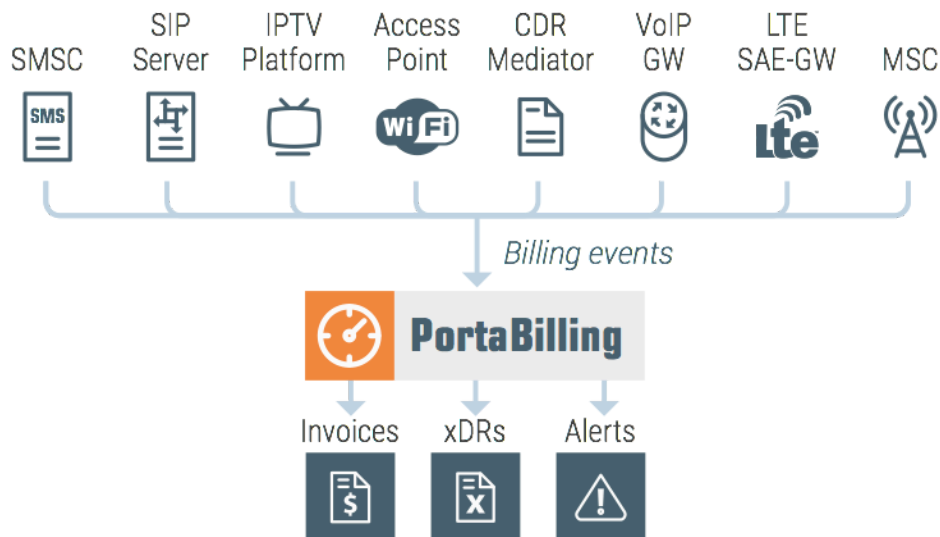
Updated:

- The **xDR mediation concept** chapter.

1. System architecture

Overview

PortaBilling® is a carrier-grade converged billing / provisioning system for communication service providers. It communicates with elements of your network (such as VoIP gateways or WiFi/DSL access points), provides these nodes with authentication or authorization (determining whether a customer should be admitted and provided with a service), and gathers billing events, i.e. data about services rendered to your customers. Based on this information, it performs rating for the services, creates transaction records (also called xDRs - eXtensible Detail Records), and modifies customers' balances accordingly.



All this happens in real time, so the billing data is updated as soon as a session is completed (e.g. the customer hangs up his phone, or an SMS message has been sent). PortaBilling® provides a unified platform for multiple services, which allows you to use it to charge clients for their voice calls, messages, and data transfer, thus effectively deploying triple-play on your network.

PortaBilling® will act as the nerve center of your network. After you have entered information about your services, rates, customers and so on via the web interface, PortaBilling® will communicate in real time with elements of your network to supply information regarding which customers the service should be provided to (and which not), as well as exactly how it should be provided. Customers whose balance has run out will be disconnected immediately after exceeding the maximum session duration and (since billing happens in real time) funds will be withdrawn from their account and service denied if they make another attempt to use the service.

Components

Billing server

The billing server hosts the billing engine which communicates with the nodes via the RADIUS protocol. It can also process Diameter requests that are received from nodes provisioned for services via the Diameter protocol.

The billing engine provides:

- **Authentication** – It tells the node whether the subscriber (identified by phone number, PIN, IP, or the like) is allowed to use a specific service (e.g. voice calls or wireless Internet access), and returns attributes such as current balance.
- **Authorization** – It tells the node whether the subscriber (identified by phone number, PIN, IP, or the like) is allowed to initiate a session with specific parameters within a service (e.g. calling a particular phone number), and returns session attributes such as the maximum allowed session duration or the allowed amount of bandwidth.
- **Interim** (also called keep-alive) accounting processing – This is used for services like Internet access, when nodes constantly update the billing about usage for the current session.
- **Accounting processing** – Based on information from the gateways, it bills the session and writes transaction records to the database.

Web and replica database server

Web server

The web server hosts the following:

- Web interface, consisting of:
 - Admin interface.
 - Account self-care.
 - Customer self-care.
 - Reseller's helpdesk (self-care; customer care).
 - Distributor self-care.
 - Vendor self-care.
 - Representative self-care.
 - Online web signup interface.
- Scripts for generating invoices, calculating various statistics and producing reports.
- Optional IVR (TFTP) server.
- XML API (SOAP) interface for integration with external applications.

Replica database server

The replica database server hosts the second copy of the database.

This database is used for all data mining activities (e.g. calculating a summary for the invoice or producing reports) and can be used to restore billing data in the event that the main database is lost.

2. System concepts

Appendix 1. Title and headings

Title

Heading 1

Heading 2

Heading 3

Heading 4

Paragraph text.

Code - Subtitle

Appendix 2. Tables

Header							
1234							

Appendix 2. Code

```
Amount_Charged =
```

```
= (Connect_Fee +  
+ First_Interval * Price_First/60 +  
+ 8 * Next_Interval * Price_N/60) *  
* (1+Post_Call_Surcharge/100)
```