

PVSR Release Notes

Version 4.9

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1 Developments supported by VKE_17

The development of the following functions was done with the support of the VKE_17 program of the National Research, Development And Innovation Office (<https://nkfih.gov.hu/>). The identifier of the project is 2017-1.3.1-VKE-2017-00042. The list also contains the corresponding chapter in the PERFORMANCEVISOR USERS GUIDE, ADMINISTRATION AND INSTALLATION MANUAL

- Snap7 data collector (14.1.31)
- Modbus data collector (14.1.27)
- Common Industrial Protocol data collector (14.1.26)
- REST data collector (14.1.28)
- MQTT data collector (14.1.29)
- Multi-tenant functionality with variable threshold and report processing engines (5.11)
- Irregular measurement intervals (6.2.3)
- GPS measurements (7.2.1)
- Unified dashboard (13.3)

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Name	Module	Description
Quick eval	Thresholds	Most of the normal thresholds can be configured as quick evaluation threshold, which means that the collected data is immediately forwarded to the threshold processing engine, so it can be evaluated as soon as possible, even before it is written into the database
Threshold engine ping utility	CORE	The new utils/test_threshold_server.pl script can be used to test the connectivity between the collector servers and the threshold servers
Server events	CORE	New server events relating to the connectivity between the collectors and the threshold servers
Data collection log and time statistics	CORE, API and WEB	The data collection processes can send error, warning and info messages into the system relating to any equipment and they can measure the time it took to collect the data from the equipment. Both information can be viewed on the UI, in detailed and in a TopN form
User preferences	Alarms	There are new user preferences relating to the Alarms menu and to the Alarm summary area: <ul style="list-style-type: none"> • The object shown in the Alarm summary area • The alarm summary shows only the unacknowledged alarms • The alarm summary shows the Normal state • Show measured values for current alarms in real-time mode
Language	WEB	The language of the UI cannot be changed on the user preferences page if the user can choose between the languages on the login page
Measurement rights	WEB	Measurement level rights can only be granted if it is configured in the CONFIG_INI.pm file
Resolution	Charts	The chart resolution (number of points on it) depends on the screen resolution
GPS measurements	Measurement types	The system supports GPS coordinate measurements: they are shown on maps as points or as a path, instead of a simple chart
Bulk equipment creation with XLSX	Configuration	Now besides CSV files XLSX Excel files can also be used to bulk create measurements. In this case some of the overall parameters (site icon, UDAs, ...) can be specified per equipment in the upload file
Regular expression filters	Search, Alarms and Thresholds	Regular expression can be used as search/filter criteria in the Search menus, in the Name filter field on the Alarms page and in the equipment and measurement filters during template based threshold creation
Site level setting	Maintenance Window	Maintenance Windows can be specified for normal and virtual sites as well, not just for equipments and thresholds
Inactive equipments	Measurements menu	Inactive equipments are marked on the UI by a special icon

Telemetry collector	Telemetry collector	PVSR has a Telemetry collector which can collect Cisco MDT and gNMI telemetry data
Snap7 collector	Snap7 collector	PVSR has a Snap7 collector which can collect data from Simatic PLC devices
SNMPv3	SNMP collector	SNMP collectors support the Context Name SNMPv3 setting
Parallel processing	SQLLDR	The SQLLDR module can work in parallel modes: <ul style="list-style-type: none"> • It can fork parallel processes to download the measurement files simultaneously • It can keep downloading files while importing the downloaded ones into the database
Parallel processing	Application manager	The application manager can fork additional processes for the virtual site synchronization and just for the module status checking
Optional threshold/report modules	Tenants	Tenants can be configured without threshold or report processing modules
Source IP filtering	Events	SNMP trap event definitions can contain filtering based on the IP address of the trap source
Search for unsuccessful measurements	Configuration	Administrators can search for only those inactive equipments which have current alarms on them
Linux8 and Oracle18/19	CORE	PVSR supports RedHat/Centos/OracleLinux 8 and Oracle clients 18 and 19
SOAP	CORE	Modified SOAP classes: <ul style="list-style-type: none"> • NormalThreshold New SOAP classes: <ul style="list-style-type: none"> • TelemetryEquipment • TelemetryJob • Snap7Equipment • Snap7Job

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Name	Module	Description
Grafana plugin	WEB	PVSR has a plugin for the free Grafana dashboard (https://grafana.com/) for displaying equipment and alarm list as well for showing measurement charts. The package also contains example dashboards for several equipment types
Irregular data collection	Data collectors	The data collection framework supports irregular data collection as well. In the regular data collection mode PVSR collects data periodically, i.e. every minute, 5 minutes, 15 seconds, ... unlike the irregular data collection mode when data can arrive in the system at any time
Multi-tenant	CORE	PVSR fully supports multi-tenancy. The collector groups can be assigned to tenants and each tenant has its own threshold and report processing modules, running independently from each other
Clickable separator texts	WEB	The separator texts can be clicked on, after which the GUI shows only the charts belonging to that separator text. A separator text object can also be opened directly using a properly constructed URL
Chart gray background turn off	WEB	Users can turn off on the preferences page the gray background area indicating a data outage
UDA bases quick search	WEB	Users can select user defined attributes for the quick search function
Cisco WLC diagnostic page	SNMP collector	The page shows APs and clients
Equipment display template selection in the right-click menu	WEB	When someone right-clicks on an equipment on the Measurement page then he can select the equipment display template to be used before selecting any of the "Open in..." menu items
Adjustable K/M/G/T prefix	Netflow collector	The byte unit can be changed on the top talkers and on the netflow analysis page (Kbyte, Mbyte, ...)
NETinv screen integration	WEB	When PVSR is configured to contain Netvisor NETinv identifiers then a NETinv object can be opened directly from the PVSR GUI
Alarm level ignore for bulk emails too	Alarms	Email alarm notifications can be disabled based on alarm level for bulk email notifications as well
No "clear" notification on exclusion / maintenance window start	Alarms	When an alarm is cleared because an exclusion window or a maintenance window starts then PVSR does not send a clear notification
Modified alarm table	Alarms	Several changes were made to the alarm list table: <ul style="list-style-type: none"> Redesigned table ordering Several columns are not shown if they do not contain data The measured values are shown when viewing the table in real-time mode

Default filtering	Reports	The report view definition can contain a default filtering. The default filtering is applied on the Measurement page as well, although it cannot be changed there
Server events	CORE	The server events can be Warnings as well, not just Errors and the administrators can choose which level they want to be notified for. Bulk notification can be configured as well in which case maximum only one summary email will be sent daily
REST API	REST API	PVSR has a REST API for querying objects, alarms and measurements
start_stop_pvsvr	CLI	The start_stop_pvsvr CLI utility has a check_version option which checks the PVSR version on all of the servers and it also has start/stop/status options for the new tenant configuration
Default threshold type	Alarms	A threshold type can be configured to be the default one
Watchdog	Server modules	The server modules send into the system watchdog events and the system issues alarms if a watchdog is not received in the configured time
Status page	Threshold / Report / SQLLDR	The processing statuses for these three modules can be viewed on the GUI
Database usage	WEB	PVSR's database usage and data storage options can be viewed on the GUI
Job parameters	Config	New job parameters: creation timestamp and last run error
Selectable Jaga for equipment templates	Config	An equipment template can refer to a Jaga (PING) equipment in such a way that the user can pick from the different Jaga equipments during equipment creation
Equipment renaming	Config	When an equipment is renamed then PVSR automatically renames the charts, thresholds and Jaga measurements belonging to it
Equipment modification	Config	The equipment modification page shows those measurements which are not present on the equipment anymore and which will be deleted because of this
Virtual equipment	Config	The virtual equipment modification page uses the same search framework as the Search menu
Excel XLSX support	Config	The equipment and threshold bulk operations support the Excel XLSX format on Linux 6/7
External UDAs	UDA	PVSR may contain external UDAs, which are not modifiable on the GUI, only through the SOAP API
Template changes	Thresholds	<ul style="list-style-type: none"> • Threshold templates can contain filtering based on measurement names as well • The equipment and measurement name filtering can be regular expression • Automatically applied threshold templates can be re-created, for example after an expression change
Config view	Thresholds	Non-administrator users are allowed to view the threshold configurations and the threshold maintenance configurations

Configuration	Scheduled reports	The administrators can configure the scheduled equipment and report sending belonging to other users as well
Configuration	User preferences	New user preferences page
Event naming	Events	The PVSR equipment name can be used in naming an SNMP trap or syslog based event
New options and config page	User rights	The user granted rights page have been redesigned and two new options were added: <ul style="list-style-type: none"> • Disable collector pages • Disable bulk CSV/XLSX measurement export and equipment measurement page sending via email
REST collector	REST collector	PVSR has a configurable REST based data collector for collecting data coming in JSON format
MQTT collector	MQTT collector	PVSR has a configurable MQTT collector which can process data coming in MQTT queues and in simple text or JSON format
NAGIOS measurements	Synthetic transaction collector	The textual result of the NAGIOS check command is sent in the threshold notification email and it is also shown on the Alarms page
Custom command	Unix/Linux collector	User defined attributes can be used in the Custom command measurements
SNMPv3 noAuthNoPriv	SNMP collector	The SNMPv3 noAuthNoPriv mode is supported as well
Host cluster	VMware collector	PVSR discovers the Host cluster value into an UDA
SOAP	CORE	<p>Modified SOAP procedures:</p> <ul style="list-style-type: none"> • addJob • modJob • listJobCustomUDAs <p>Modified SOAP classes:</p> <ul style="list-style-type: none"> • ReportVar • GroupThreshold • GenericJob • UserRightType <p>New SOAP procedures:</p> <ul style="list-style-type: none"> • addExternalUDA • modExternalUDA • delExternalUDA • listExternalUDAs • listTenants <p>New SOAP classes:</p> <ul style="list-style-type: none"> • Tenant • RestEquipment • RestJob • MQTTEquipment • MQTTJob • ExternalUDA

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Name	Module	Description
Mobile client	Mobile	PVSR has a downloadable mobile application for Android and iOS. The app features are: <ul style="list-style-type: none"> • Viewing and acknowledging the current alarms • Charts showing the last couple of hours • Turning on real-time measurements on charts • Push notifications for alarms
Push notifications	Preferences	Users can turn on and off the mobile notifications and change whether to receive separate notifications for the events or just one bulk notification
Push notifications	Threshold / Event	Thresholds and event definitions have a new parameter, called mobile notification. Users and so called mobile notification groups can be specified as mobile notification recipients
User info page	WEB	Users can see their own user parameters, including the last mobile login time and the device used
Chart sizes	Measurements	Charts can be arranged into four columns, not just into one, two and three columns
Excel export	Measurements	The measured values Excel export contains the potential hourly averages as well, not just the kept raw data
Unknown alarm suppression	Threshold	The system does not generate unknown alarms if the measurement in its definition was created or modified in an hour
Email notification rate limit	Threshold / Event	Each email can have a rate limit set: if the given number of emails are generated in the given amount of time then PVSR will stop to send emails for a specified amount of time
SNMPv3 support	Event	PVSR can process noAuthNoPriv and authNoPriv SNMPv3 traps
Copy operation	Templates	Users can copy-create new templates: <ul style="list-style-type: none"> • Threshold templates • Equipment templates • Chart templates
Bulk option add	User defined attributes	If the user defined attribute is a radio button or a select list then the user can bulk add multiple options to its list
Custom email	Threshold	The custom email fields can contain references to other custom email field values. The system also contains a default custom threshold email template which reproduces the same email as the built-in default email
CentOS7 + Oracle 11 support	CORE	PVSR supports Oracle 11 client on RedHat/CentOS/OracleLinux7
CIP collector	CIP collector	PVSR can monitor CIP (Common Industrial Protocol) devices
MODBUS collector	MODBUS collector	PVSR can monitor MODBUS devices

HTTP POST measurements	Synthetic transaction collector	PVSR supports HTTP POST measurements, not just HTTP GET measurements
Raspberry Pi support	CORE	Several of the PVSR collectors can run on Raspberry Pi
Discovered UDAs	Data collectors	<p>New discovered UDAs:</p> <ul style="list-style-type: none"> • Windows and Hyper-V <ul style="list-style-type: none"> ○ Windows cluster name ○ Swap ○ Memory • Linux <ul style="list-style-type: none"> ○ Swap ○ Memory
SOAP	CORE	<p>Modified SOAP classes:</p> <ul style="list-style-type: none"> • HyperVEquipment • UnixEquipment • WSMANEquipment • GenericThreshold • EventDefinition • Email <p>New SOAP classes:</p> <ul style="list-style-type: none"> • MobileUserGroup • CipEquipment • CipJob • ModbusEquipment • ModbusJob

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Name	Module	Description
Unknown alarm level	Alarm	PVSR has a new alarm level besides the old ones (Critical, Major, Warning and Minor), called Unknown. If a measurement has thresholds but neither of them is violated if the measurement is unsuccessful then PVSR creates automatically an Unknown threshold. These thresholds are violated if the measurement is unsuccessful for a given number of minutes or a given number of collection cycles
New acknowledgment window	Alarm	Users can now cancel the acknowledgement operation and also use a multi-line acknowledgement comment field
Refresh cycle	Alarm	The refresh cycle can be changed on the real-time alarm pages (the default is still set on the Preferences page) and the time until the next refresh cycle is displayed on the page as well
Synchronized refreshes	Alarm	If the current tab shows an alarm page and it is refreshed/changed then PVSR automatically refreshes the alarm summary in the upper right corner, regardless of when the next refresh cycle should occur
Detailed alarm page	Alarm	The measured values are formatted (K, M, G and enumeration values) and the threshold expression is displayed for non-administrator users as well
Acknowledged alarms + alarm levels	Preferences	The user can change in the preferences whether PVSR should show acknowledged alarms by default or not. The alarm levels to be shown can be set in the preferences as well (multiple-choice list)
Threshold description	Threshold	Description can be added to thresholds and is displayed in the alarm console table if the user places the cursor over the threshold name
Description and comments in the Excel export	Alarm	The description is present in the Excel export, as is any alarm comments written by the users
Maintenance window for individual thresholds	Threshold	Maintenance windows can be specified for individual thresholds as well, not just for equipments
Custom email notifications	Threshold	Additional parameters can be used in the custom email notifications: <ul style="list-style-type: none"> • Business hours • Expression • Notification emails • Separate pre-post texts for Unknown threshold levels User can specify a custom email template when specifying an email address with bulk threshold notifications, in which case PVSR will use the pre and post texts from that email template
Threshold export	Threshold	Users can search recursively by any parent site and equipment (normal and virtual) on the threshold export page

Connection loss notification	WEB	PVSR displays a red notification if the connection to the WEB server is lost
Element paging	WEB	PVSR can be configured to display only a maximum number of sites/equipments on the Alarms/Measurements/Site and equipment configuration page at once
Version change notification	WEB	If the PVSR version is changed and the client side Javascript library version is not matching the server version then the user receives a notification
Submenu display	WEB	If the submenus do not fit on the area allocated to them then PVSR displays a drop-down menu instead of a scrollable menu area
Print option	WEB / JavaScript charts	The print page option is allowed for JavaScript charts as well, not just for image charts
Equipment UDAs	On-demand reports	On-demand reports can display equipment user defined attributes too
Parent site specification	Measurements – Virtual equipment creation	The parent site can be set when creating a virtual equipment on the Measurement page and the system automatically offers a suitable parent site
PostgreSQL collector	PostgreSQL collector	PVSR can monitor PostgreSQL databases
Oracle VM collector	Oracle VM collector	PVSR can monitor Oracle VM virtualization
Images and summary	Thick-client collector	The application monitoring log diagnostic page shows the images searched for by the test and it also shows a summary for the checkpoints, including their result and when they occurred
New calls	Thick-client collector	The application monitoring framework includes new Python subroutines
Heatmaps	WEB	Several data collectors offer heatmap visualization as collector pages, based on the collected values: <ul style="list-style-type: none"> • Storage • VMware • Oracle VM • Hyper-V
Cluster discovery	Hyper-V collector	PVSR handles the machines in a cluster environment, meaning that even if just one cluster element is specified in PVSR, it will still discovery every cluster element and every VM running on them and it can also handle the migration of a VM from one machine to the other
Data collection cycle statistics	Servers	PVSR shows for each active collector server and each data collection cycle the number of seconds remaining at the end of each collection cycle

Discovered UDAs	Data collectors	<p>PVSR includes UDAs which are not modifiable on the UI but which are discovered and re-discovered automatically using the data collector API:</p> <ul style="list-style-type: none"> • MS Hyper-V • Microsoft SQL • MySQL • Oracle • OracleVM • PostgreSQL • Unix/Linux • VMware • WS-Man
Icons	WEB	New equipment icons are added to PVSR
Non-existing measurements	Equipment template reapply	The “Run equipment template” and the automatic template reapply both can be used to delete non-existing measurements (i.e. measurements which were discovered before but are no longer available for the equipment)
Test email	Email	PVSR can send a test email to a configured email address
Multiple source email addresses	Email	PVSR can be configured so that the different modules (report, threshold and web) use different source addresses when sending out an email
Configuration session	CORE	When the user logs in on the UI, PVSR starts a configuration session and all the changes made during that session are grouped together
User name and group-in-group	LDAP authentication	The LDAP authentication can be configured to use a separate LDAP attribute as the name of the user. The module can also handle group-in-group Windows AD configuration
New/modified measurement types	Synthetic transaction collector	<ul style="list-style-type: none"> • AJP ping • SSL certificate • SSL support for POP3/SMTP measurements
New/modified measurement types	Unix/Linux collector	<ul style="list-style-type: none"> • SW raid • TNS ping • NTPd state • DNS availability • Number of files opened by a process • Number of files opened by a user • Interface bond • Process measurements filter by user name and arguments
New/modified measurement types	Oracle collector	<ul style="list-style-type: none"> • Process count • Session count • Uptime

Supported systems	Installer	<p>PVSR now supports Red Hat / CentOS / Oracle Linux 7 with Oracle 12 client and the Oracle 12 client is also supported on Red Hat / CentOS / Oracle Linux 6. Solaris and SUSE Linux is no longer supported.</p>
SOAP	CORE	<p>Modified SOAP classes:</p> <ul style="list-style-type: none"> • HyperVEquipment • MSSQLEquipment • MySQLEquipment • OracleEquipment • UnixEquipment • VmwareEquipment • WSMANEquipment • JMxEquipment • GenericThreshold • JMXJob <p>New SOAP classes:</p> <ul style="list-style-type: none"> • PostgreSQLEquipment • PostgreSQLJob • OracleVMEquipment • OracleVMJob <p>Modified SOAP types:</p> <ul style="list-style-type: none"> • ThresholdLevelType

6 Version 4.5

Name	Module	Description
TopN charts and chart templates	Chart / chart template	Charts can be defined as TopN, meaning that they only show the TopN members and the sum of the remaining members is shown as Other
Global filtering and chart names	Chart template	The chart template can contain a global filtering regular expression and only the measurements matching it are put on the chart. The name of the chart can be specified as well (previously it was the name of the equipment + the name of the template) and the matching groups of the regular expression can be used in the name of the chart
Element naming	Chart template	Both the discovered measurement description and the measurement index can be used in naming the chart element
Automatic chart creation	Chart template	When an equipment is modified on the UI then the application immediately reapplies the chart templates, not just when someone views the equipment on the Measurement page. PVSR takes the equip_filter and site_filter template parameters into consideration when automatically creating a chart using a template
Equipment display template	Equipment display template	The equipment display template replaces and extends the previous chart order template feature: <ul style="list-style-type: none"> • The system contains several out-of-box templates • Templates can be default or not (i.e. should PVSR automatically use it or not) • The user can change the applied template on the Measurement page • The template can hide all the measurements / charts which are not specified in it explicitly • The template can turn off the automatic “hide duplicate instances” feature, so a measurement can appear on multiple charts on the same page • The template can contain simple separator texts • The template can contain multiple instances separator texts: the chart and the measurement names must match the regular expression specified at the separator text to which they belong and the regular expression match groups can be used in the naming of the separator text. Each different name will result in a different separator text • The optional sysObjectId filter is now a regular expression
Chart order	Preferences	The chart order user preference does not exist anymore

Manual chart ordering	WEB	The manual chart ordering feature on the Measurement page stores the ordering on a per equipment display template basis
Scheduled equipment send	Configuration	The user can specify the equipment display template to be used
Alarm deduplication	Alarm	PVSR can deduplicate threshold and trap/syslog alarms, meaning that when a new alarm is created for the same threshold or trap/syslog event then PVSR can reopen the previous closed alarm. The actual alarming timespans are still visible and the alarm duration shows the sum of these timespans.
Comments	Alarm	The user can add comments to an alarm
Maintenance window	Alarm	Maintenance windows can be specified for any group of equipments. During the window PVSR doesn't create alarms for these equipments
Deactivated data collection	Alarm	PVSR doesn't create alarms for equipments for which the data collection is disabled
Enumeration values	Alarm	When viewing an alarm details or sending an email notification then PVSR displays the measurement enumeration instead of the number value
Email notifications	Alarm	If there are two or more thresholds for the same measurement or group of measurements with different level then the email notifications are handled together. For example if first the Warning level is reached, then the Critical and then the Critical level alarm is cleared then PVSR sends out the Warning notification again, instead of a Critical level cleared notification
Delayed email notification	Email	The user can specify a delay interval for the emails. If an alarm is created or reopened then PVSR doesn't send email notification until the specified number of minutes has passed.
Chart	Email	The user can put measurement charts into the custom threshold email notifications
Threshold creation	Measurements	The user can create a new threshold when viewing a chart. PVSR can also show immediately the times when an alarm would have been raised if the threshold would have been created earlier.
Creating template from threshold	Threshold template	The user can create a threshold templates based on an already existing threshold
Continuous alarm	Threshold	The "Continuous alarm" feature is not applicable to the email notifications, only for the trap notifications
Public and private emails	Email	Emails can be public, meaning that everyone can use them in threshold configuration or scheduled equipment / report sending
Tree view	Measurements	There is a new view on the Measurement page, called tree view. The different entries in the tree can be opened without selecting the actual element. When the user clicks on an equipment or chart then the tree view can be displayed by clicking on the + icon in the hierarchy area on the page, even if not the tree view mode is selected currently

Split view	Measurements	User can right click on an element and open it in split view or alternatively if the element is a chart then add it to split view, i.e. browsing among charts and add the most interesting ones to an on-the-fly group on the right side of the screen. This group can also be saved as a virtual equipment. The split view can be closed by clicking on the X icon
Split view and Chart settings	Measurements	The Split view and the Chart settings browser area groups are opened by default
Baseline trend	Chart	PVSR can display a baseline trend line on the charts
Multiple zoom	Chart	When the user uses client-side zooming-in then PVSR can zoom in the other charts on the same tab as well
Automatic virtual sites	Virtual sites	Besides the regular virtual sites the user can create automatically created virtual sites and automatically filtered virtual sites <ul style="list-style-type: none"> Automatically created: PVSR creates them based on an equipment parameter and puts the matching equipments under them Automatically filtered: PVSR puts the matching equipments automatically under it
Attributes for any equipments	Equipment UDA	An user defined attribute can be assigned to multiple equipment types not just one
Virtual equipments and sites	Icons	There are new default icons for the virtual sites and virtual equipments
Autonomous systems	Netflow	The Netflow collector handles the AS numbers, both as filters and as analysis reports
Interface reports	Netflow	The Netflow collector has interface based analysis reports
Data retention	Netflow	The analysis data retention can be set on a per equipment basis
Processing status	Netflow	The UI displays the calculation percentage
Top talkers	Netflow	The user can configure top talkers calculation for equipments and measurements. This means that PVSR constantly calculates the top talker hosts
Custom email / trap	Threshold	When the user adds a custom email or trap element then he doesn't have to specify the measurement type any longer
ExtJS help	Help	The PVSR WEB-based help is using a new ergonomic ExtJS based page
Simple object creation	Site and equipment configuration	The user can switch to a simple site and simple equipment creation option
New splash screen	WEB	New login splash screen
Measurement discovery	Measurement types	A measurement type can be configured as non-discoverable, meaning that by default PVSR will not try to discover them when a user edits an equipment configuration
Re-calculation	Report	The user can choose to re-calculate every pre-defined report variable beginning at any day
Equipment group report	Scheduled reports	The user can group equipments into a virtual site and send only these equipments in the scheduled reports
Windows AD-based discovery	Equipment configuration	PVSR can discover equipments using Windows AD groups and create them as WS-Management (WMI) or SNMP equipments

Data migration checks	Server event	PVSR checks periodically the last modification of the data migration log file
Oracle data file free space checks	Server event	PVSR sends the free space in the data file as well the remaining auto extend free space. The user can chose to receive a server event only if the free space + auto extend free space is lower than 5%
show_js_chart for chart objects	Links	The show_js_chart option works for charts as well, not just for measurements
New parameters	Links	The user can specify the background and hide the chart menus if he uses any of the show_*_chart options. He can also specify the name of the measurement
Number of object columns	Alarms / Measurements	When displaying site/equipment object icons PVSR automatically determines the number of columns based on the screen width
Status measurement	VMware	VMware virtual host status measurement
Datastore	VMware	Datastore diagnostic page
Collection deactivation	VMware	The data collector automatically deactivates the data collection for deleted VMs and moves them under a separate site
Hyper-V 2012R2	Hyper-V	The collector supports 2012R2
Automatic equipment creation and deactivation	Hyper-V	The data collector automatically creates new VMs and deactivates the data collection for deleted VMs and moves them under a separate site
Method measurement	WS-Management	The collector supports method based measurements
Process measurements	WS-Management	New process measurements (count, I/O)
ToS byte	Cisco IP SLA	The collector handles the ToS byte configuration
Equipment template + TopN interface charts	SNMP	The create_topn_interface_charts.sql script can be used to extend PVSR with interface traffic and error + status TopN charts and equipment template
New measurements	SNMP	<ul style="list-style-type: none"> • Cisco infrastructure measurements • FortiGate
IPEXplorer	Measurements / Alarms	The PVSR UI can display a link to IPEXplorer
Virtual equipment configuration	Measurements	When using the Virtual equipment configuration menu on the Measurements page then PVSR only selects an element if it is shown (expanded) and also handles the separator texts
Interface error measurements	Configuration	PVSR doesn't allow to configure error measurement for an interface if it doesn't support the interface error counters
Description parsing	SNMP MIBs	The MIB upload page parses and stores the object descriptions
Measurement type code	SNMP MIBs	The user can change the automatically assigned measurement type code when creating a new measurement type using an SNMP MIB
Data purge	CORE	PVSR can automatically delete the old report, alarm and audit trail data
Screenshot pages	Thick-client collector	The user can view screenshots about the measurement when it detected an error
Report variable deletion	Report	User can delete a report variable not just deactivate it
Search	Quick search	The quick search doesn't search for a substring if the user uses the * character

Deactivated equipment	Measurement	The Measurement page shows if the viewed equipment is deactivated
Tab names	WEB	The tab names are based on the submenu names under the Settings menu
Automatic site / equipment creation	Configuration	When the user uploads a license file then PVSR also automatically creates a site for each collector and also creates a Jaga equipment if the user uploads a Jaga license as well
Python support	Collector framework / SOAP	PVSR contains a client side SOAP Python library and also a data collector framework written in Python
PVSR_CURRENT_A_STATUS4* views	Database	The views contain acknowledge information as well
SUSE 11	CORE	PVSR supports SUSE 11 as its operating system
Oracle checks	Installer	The installer checks the Oracle user rights instead of the roles it has
System password	Installer	The installer can work without the Oracle System password during installation if the Oracle PVSR user already exists
Silent installer	Installer	The installer can work in a full silent mode, meaning that no question is asked and if there is an error then the installer exists
Oracle 9	CORE	Oracle 9 as a backend database is no longer supported
Add new equipment using HP NNM	Equipment creation	This feature doesn't exist anymore
Naming	Business hours	The Exclusion window feature is renamed to Business hours
SOAP	CORE	<p>Modified SOAP classes:</p> <ul style="list-style-type: none"> • NetflowEquipment • Chart • EventViolation • ThresholdViolation • CurrentViolation • Email • VirtualSite • VirtualEquipment <p>New methods:</p> <ul style="list-style-type: none"> • getLastLoadedDataTimestamp • addChartsForEquipment • changePassword • syncAutoVirtualSites

7 Version 4.4

Name	Module	Description
Licence points	CORE	The application can be licenced based on licence points instead only on number of equipments
Licence history	WEB	The user can view the historical trend of the available and used licences
On-demand report print screen	Reports	The user can open a print preview screen from the on-demand reports too
New menu system	WEB	The menus and submenus are redesigned to offer a better view and maximize the available space
Browser area hide	WEB	The browser area can be hidden
No-tab mode	WEB	PVSR UI can be used with tabs (old mode) but without tabs (new mode) as well. When the user does not use PVSR tabs then he can use the browser's back button to go back in history under the Measurements, Alarms and Reports menu
Flash charts	Charts	The flash charts are no longer supported, except with Internet Explorer 6-7-8
Operation drop down list	WEB	The operation drop-down list was redesigned: it contains icons for most entries and the user set these entries as favorites so it is displayed not just in the list but also next to it
Open in new tab	WEB	Not just the submenus and the search list entries can be opened in a new tab, but every link under the Measurement, Alarms and Reports menus can be opened in a new tab
Open in new browser tab	WEB	The user can open these elements not just in a PVSR tabs but also in new browser tab
Ctrl left click	WEB	At places where the user can choose to open the element in a new tab, he can also use the Ctrl + left click to open it in a new tab automatically: if the user uses PVSR tabs then it will be opened in a PVSR tab, otherwise in a new browser tab
Context sensitive help	WEB	The system has now a searchable context sensitive help on the UI
Quick search	WEB	The system has a quick search functionality which can be used to quickly look for sites and equipments, displaying the results immediately
Chart ordering	Measurements	The default chart ordering can be changed with chart order templates
Expand/collapse items	Measurements	The separator texts in virtual equipments can be expanded and collapsed similar to the charts
SCCD incidents	Alarms	PVSR can create an SCCD incident based on an alarm and display the incident parameters for that alarm
Bulk acknowledgement	Alarms	Multiple alarms can be acknowledged in one step and multiple event alarms can be bulk deleted
Hidden passwords	WEB	The password fields are hidden by default until the user reveals it with a click of a button
Setting the user rights	WEB	<ul style="list-style-type: none"> • The restricted administrators can have only read access to objects • The object lists can be filtered

Popup calendar	WEB / Preferences	The user can choose that the popup calendar for the custom time span setting should remain visible until he actually chooses a date
Hierarchy	WEB / Preferences	If the user opens a custom menu under Alarms or Measurements then he set PVSR so that it will display the whole hierarchy and not just starting from the menu object
Filterable table	WEB	The user can easily clear the filters set in a filterable table with the Clear button
Print preview	WEB	The print preview screens contain the report/object names and the selected time span
Send equipment via e-mail	WEB	The currently viewed equipment or virtual equipment under the Measurement menu can be send via e-mail immediately, not just in a scheduled periodic way
Bulk alarm email	Emails	The user can configure the subject of the bulk alarm emails
PVSR links	Emails	The emails sent out by PVSR (alarms, reports and charts) can contain a link which can be used to open the same page in PVSR
Automatically created chart extension	WEB	If a new measurement is created which would have been placed on an automatically created chart then PVSR automatically adds that element to the chart
CAS authentication	WEB	The WEB user interface supports the CAS authentication server which allows single-sign-on functionality
IE 11	WEB	PVSR supports Internet Explorer 11
ifAlias	SNMP collection	Not just the Cisco specific description but also the interface alias can be shown for each interface on the UI
New coloring	Site and equipment configuration	The system differentiate between disabled equipments and equipments which are active but they are not collected
Equipment creation	Site and equipment configuration	The equipment creation process is the same for all equipment types (SNMP, non-SNMP, non-discoverable): once the basic parameters are given, the system creates the equipment and immediately goes to equipment modification mode
Multiple equipment creation using a template	Site and equipment configuration	The feature is also available for the following equipment types: JMX, WS-Man, Oracle, MYSQL and MS SQL
Equipment creation using a template	Site and equipment configuration	The user can specify the collector group and he can also create a non-discoverable equipment using a template
Equipment modification using templates	Site and equipment configuration	<ul style="list-style-type: none"> • User can re-run an equipment template on the currently viewed equipment • An equipment template can be associated with an equipment and so more easily be used during bulk operations • The JAGA measurements are handled by the equipment modification features when using a template

Equipment template	Configuration	<ul style="list-style-type: none"> The “other” measurement sections can filter based on the “interface” section A template can be strict, meaning that if it is used during modification then all the non-matching measurements are deleted Easier equipment template configuration
Easy measurement type creation	Configuration	The user can easily create new measurement types from SNMP MIBs
Measurement type test	Configuration	The measurement type formulas can be tested with sample values
Measurement UDAs	Customization	User defined attributes of measurements can be configured as well
Event processing	Events	The SNMP and Syslog event processing can be further fine-tuned (processing order, processing stop, event naming)
Event instance configuration	Events	The event instances can be more easily modified and deleted
Maximum number of Flash/JavaScript charts drawn	Preferences	The number of charts drawn can be more easily set
Real time view time span	WEB / Preferences	The preference is only a default value, the user can change that on the Measurement page
XLSX export	WEB	PVSR can export into Excel XLSX files if it is running on Linux 6
utils directory	CORE	The most important CLI commands are put into a new utils directory
Extra UI	CORE	The necessary UI modules can be started on additional servers as well
Schematic maps	WEB	The schematic maps feature is no longer supported
ToS byte processing	Netflow collection and analysis	The Netflow module processes the ToS byte information and the users can use this in measurement filters and in Netflow analysis
Parallel processing	Netflow collection and analysis	PVSR can process the Netflow packets for the measurements and for the analysis in a parallel way
Netflow analysis	Netflow analysis	<ul style="list-style-type: none"> Users can create new Netflow measurements from the Netflow analysis results The DNS resolution is disabled for the analysis by default The Excel export contains information about the filters used for the report
Correlated server events	Servers	The error and the OK messages are correlated on the Server events page and the application shows a different status on the Start / Stop / Status page if the server has an open error situation
Load late arrived data files	Servers	<ul style="list-style-type: none"> The page can load files from the imperror directory as well, not just from the skipped directory Files from multiple data collector servers can be loaded in one step
CallManager collection	CallManager collection	PVSR can connect to Cisco CallManager and measure its performance similar to the Cisco Real Time Monitoring Tool measurements

SNMPv3	SNMP collection	PVSR also supports for SNMPv3 the AES128 protocol
Measurement groups	Storage collection	The storage measurements are grouped together by monitored object (volume, controller, ...)
LDAP measurement	Synthetic transactions	User name and password can be specified for the LDAP measurements
Equipment template	Configuration	The equipment template can be longer than 4000 characters
Undo tablespace sizing	Linux installer	The Linux installer asks for confirmation before changing the UNDO tablespace size
Commits	Data compression	The compress module commits its operation more often based on the number of rows processed
SOAP	CORE	<p>New SOAP classes:</p> <ul style="list-style-type: none"> • CallManagerJob and CallManagerEquipment <p>Modified SOAP classes:</p> <ul style="list-style-type: none"> • EventDefinition • GenericJob and its child classes (SNMPJob, ...) <p>New methods:</p> <ul style="list-style-type: none"> • runEquipmentTemplate • listLastUsedEquipmentTemplate • moveMeasurement

8 Version 4.3

Name	Module	Description
Proxy collector	Data collection	PVSR can collect data through Proxy servers, which have three advantages: <ul style="list-style-type: none"> • Oracle data connection is not required from the collectors • For normal data collectors PVSR must be able to connect to them and they must also be able to connect to PVSR. For Proxy servers only one direction is required, so for example a Proxy collector could also work behind a home gateway • A Proxy server can run also on a small openwrt based device
New measurements	Synthetic transaction	FTP upload and download speed tests
New measurements	SNMP data collection	PVSR contains predefined measurements for: <ul style="list-style-type: none"> • BladeCenter • BrocadeSwitch • F5 load balancer
Storage	Data collection	PVSR supports storage monitoring for the following manufacturers: <ul style="list-style-type: none"> • IBM • EMC • Dell • NetApp • SMI-S capable storages
Thick-client application monitoring	Data collection	PVSR can run any Windows application, simulate user transactions on its graphical user interface and monitor the response time and state
Hyper-V	Data collection	PVSR can monitor Hyper-V virtualized servers
New measurements and analysis	Netflow collector and WEB	PVSR support Netflow 9 and IPFIX. The collector is now completely scalable, processing up to 1 million flow per minute on a quad-core CPU. The Netflow analysis can show data based on multiple Netflow sources and display flow dispersion on pie charts
New measurements	WS-Man data collection	PVSR contains predefined Exchange 2010 and SharePoint measurements
HTML5 charts	Charts	HTML5 JavaScript based charts are also supported besides the image and Flash based charts. This new option offers the same functionality as the Flash charts, but offers a better performance and lower resource consumption on the client side
Enumeration measurements	Charts	Measurement types can be defined as enumerations, in which case the system displays each enumeration value as a different chart element and showing for each of them the percentage of time when the measurement had that particular value

Formattable chart values	Charts	Measurement value display can be formatted for Flash/HTML5 value balloons and Excel exports, for example displaying an uptime value measured in seconds as “1 day 02:15:24” instead of 94524
Links	WEB	Links (URLs) can be created now to show a measurement Flash or HTML5 chart
Customizable relationships	WEB	Administrators can create any custom relationship types which can be used to connect normal or virtual two equipments to each other. Several predefined relationships are also available, for example “Hosts” or “Connected to”. Users can navigate in the object hierarchy using these relationships as well
User groups	WEB	Administrators can create user groups and bind users to them. In this case the authorization is based on the rights assigned to the group and not on the rights assigned to the user. PVSR can automatically change a user’s group when using the LDAP based authentication
Lockable admin user	WEB	The user “admin” can be locked and its privileges assigned to other users
Show/hide and user preferences	Reports / Measurements	Users can hide and show the reports on the Measurement pages and the default option can be saved in the user preferences
Bulk threshold modification	WEB	Thresholds can be exported into a text file, modified and imported back into PVSR, allowing bulk modification of threshold parameters, like level or exclusion window
Equipment configuration page	WEB	The configuration page of an equipment now shows for each measurement whether there are thresholds defined based on it or not
Loading skipped files	WEB / SQLLDR	If PVSR cannot communicate with a data collector for a while then the data collected by it is not loaded into the system. Users now can load these data files into the database through the user interface as well
Automatic template reapply	Automatic rediscovery	PVSR can automatically create new measurements using equipment templates. The module combines the functionalities of the “Bulk measurement discovery” and the “Search for unsuccessful measurements” pages on the user interface
Chart server	Flash / HTML5 charts	PVSR has a new module called “Flash/Js chart server” which now is responsible for generating the Flash and HTML5 chart data on the server side, thus improving the chart generation performance
SOAP	CORE	<p>New SOAP classes:</p> <ul style="list-style-type: none"> • StorageEquipment and StorageJob • CustomRelationshipType • CustomRelationship • AppMonEquipment • HyperVEquipment and HyperVJob <p>Modified SOAP classes:</p> <ul style="list-style-type: none"> • User: added the UserGroup and IsGroup attributes

9 Version 4.2

Name	Module	Description
Documentation	WEB	The reference documentation is accessible from the WEB
Reports on Measurement pages	Reports / Measurements	Reports can appear on Measurement pages when viewing an equipment or a measurement. It is also possible to show the last collected value in this case instead of actual calculated report aggregation
Predefined reports	Reports	PVSR contains several predefined reports which can be activated. These reports can be modified freely after activation
Predefined reports from on-demand reports	Reports	The users can create predefined reports from their on-demand reports
Site changes elimination	Reports	If an equipment is moved from one site to another and the report does not contain any site attributes then PVSR will not show the equipment twice in the report
Automatic measurement grouping	Reports	On the measurement hierarchy level PVSR will automatically show so called measurement groups instead of measurements if more than one KPI type is present in the report and those KPIs belong to the same “real-life” object: for example if a report shows the size and the usage of Oracle tablespaces
New aggregation	Reports	Previously the Average weekly-monthly-annual aggregation showed the average of the daily values. Now there is a new option for that and Average now shows instead the average for the whole time-span (the difference occurs if on different days different number of measurements were successful)
Date columns	Reports	Now the date columns can show in a report also the last time when PVSR saw the minimum or maximum during the selected time-span, not just the first time
Copying a hierarchy level	Reports	The hierarchy level from one report can be used to overwrite the hierarchy level of another report, for example copying what the report should show for the equipments from one report to another
Show non-violating thresholds	Alarms	PVSR can also show non-violating thresholds on the alarms page. Users can set the default of this behavior in their preferences
New alarm list page	Alarms	The alarm list page has been redesigned, now it contains a filterable table
New equipment alarms page	Alarms	The equipment alarm page has been redesigned: now it shows the threshold definitions instead of the measurement charts. PVSR can also group the threshold definitions together if they refer to the same measurements, for example showing just one row for the CPU > 80% and CPU > 90% thresholds
New site alarms page	Alarms	PVSR can also show all the threshold definitions below a site, similar to the new equipment alarm page
Alarm info on Measurement pages	Alarms / Measurements	In real-time view the Measurements page also show the current highest alarm when viewing an equipment

Sound notifications	Alarms	The users can specify alarm sound to each alarm level and PVSR can play them if an alarm occurs
Long/short info	Measurements	Previously the users could only set the number of information to be shown for an equipment in their preferences. Now this can be changed also when viewing an equipment under the Measurements menu and now the long information page is the default
Chart ordering	Measurements	The ordering of charts can be changed individually for each equipment using a drag-and-drop chart ordering feature. The same feature can also be used to change the chart ordering for virtual equipments
Chart columns	Measurements	The default number of chart columns (small-medium-large charts) can be set in the preferences. The default setting is medium (two columns)
Show/hide charts	Measurements	Now every chart below an equipment can be shown or hidden with the use of the new Display options drop-down list
Display deleted button	Measurements	The display deleted button is replaced with the Display options drop-down list
Chart export	Measurements	Charts can be bulk exported into a CSV file besides the Excel XLS format
Tab name	Alarms / Measurements	The name of the tab changes when navigating in the hierarchy
Microsoft SQL collector type	Data collection	PVSR can monitor Microsoft SQL databases and display the following collector pages: <ul style="list-style-type: none"> • Sessions • Databases • Blocking sessions • Every statistic • Custom select
Vmware collector type	Data collection	PVSR can monitor Vmwares and display the following collector pages: <ul style="list-style-type: none"> • Virtual machines • Hosts • Datastores • Events
WS-Man collector type	Data collection	PVSR can monitor Windows using the WS-Man (Winrm) protocol and display the following collector pages: <ul style="list-style-type: none"> • Processes • Services • Events • Exchange mailbox information • Custom select
New Cisco SAA measurements	Data collection	<ul style="list-style-type: none"> • ICMP Path Jitter • ICMP Path Echo

SNMP	Data collection	<p>PVSR contains predefined measurements for:</p> <ul style="list-style-type: none"> • Juniper • Juniper IVE • Juniper Netscreen • TiMetra (Alcatel) • APC UPS • HP Enterprise Switch • Cisco ASA
New collector pages	WEB / SNMP collector	<p>The following new collector pages are available for the SNMP devices:</p> <ul style="list-style-type: none"> • Cisco ASA IPSec Tunnels • Cisco ASA IPSec Remote Sessions
Apache	Data collection	<p>The synthetic data collector can measure Apache WEB servers</p>
SNMP pages	WEB	<ul style="list-style-type: none"> • The user can choose to display octet strings as hex numbers on the custom SNMP query page • Interface aliases are shown as tooltips on the interface collector pages
Virtual equipment parameters	WEB	<p>Virtual equipments can also have user defined parameters, not just equipments</p>
User defined parameters	WEB	<p>Users can define new parameters for equipments and virtual equipments</p>
Bulk collection cycle modification	WEB	<p>The collection cycle can be bulk-changed for measurements belonging to the same equipment</p>
Bulk measurement discovery	WEB	<p>The user can use up to 20 parallel slave discovery process when doing a bulk measurement discovery, so that the whole operation can finish in less time. He can also specify that PVSR should use the names determined by the template for the already existing measurements and to ignore the names they currently have</p>
SNMP discovery caching	WEB	<p>If an SNMP equipment contains too many possible measurements then by default PVSR do not show all rows, instead it shows a table having multiple pages. Previously each time the user changed from one page to another or changed the filtering in this case, PVSR rediscovered the equipment. Now it caches the discovery result from the first discovery instead</p>
Creating virtual equipment from search results	WEB	<p>When creating a new virtual equipment from the results of a search the user can specify the site under which it should be created</p>
Email subject	WEB	<p>The subject of emails sent out when a violation occurs can be customized</p>
Links	WEB	<p>Links can be created now to:</p> <ul style="list-style-type: none"> • Open a measurement under an equipment, for example an interface with index XXX under the equipment YYY • Show a measurement image chart
Nagios	WEB / SynthTrans collector	<p>PVSR includes a Nagios config parser which can automatically create measurements based on Nagios configuration</p>

Measurement types	WEB	PVSR shows a warning in someone wants to save a measurement type with the Table parameters set to No but without a .PORT variable in the formula and vice versa
License info	WEB	Administrators are allowed to view the current license entries and license usage
Server events	CORE	SNMP traps can be sent in case of a server event
Server events	CORE	The tablespace usage checks can be disabled entirely. This way PVSR does not require the SELECT_CATALOG_ROLE role
Server info	WEB	The server module IDs and the collector group IDs are shown on the Start/stop/status server page
Summary info	WEB	The Device and measurement summary page only shows equipments for which the data collection is enabled
Measurement deletion	CORE	By default now PVSR automatically deletes measurements if the auto-discovery detects that they no longer exist. This does not apply to upgrades of previous PVSR versions.
Oracle	CORE	Oracle 11gR2 is supported
CentOS	CORE	CentOS 6 is supported
SOAP	CORE	<p>New SOAP classes:</p> <ul style="list-style-type: none"> • VmwareEquipment and VmwareJob • WSMANEquipment and WSMANJob • MSSQLEquipment and MSSQLJob • SAAEquipment and SAAJob <p>Modified SOAP classes:</p> <ul style="list-style-type: none"> • VirtualEquipment: added the Parameter element

10 Version 4.1

Name	Module	Description
Split view	WEB	The Measurement page can be split into two half, each showing a different part in the object hierarchy
admin preferences	WEB	The user “admin” is able now to set his preferences (for example key bindings)
Expand/collapse charts	WEB	In the previous releases PVSR showed all the charts for an equipment if someone had opened it under the Measurement menu. Now each user can change this default behavior to Collapse mode, meaning that PVSR only shows the name of the chart, unless the chart is expanded. PVSR also remembers this choice for every single chart, i.e. regardless of the user’s default settings it will show an equipment page as it was shown the last time
Client-side table ordering and filtering	WEB	The tables shown on the collector pages are sorted and filtered on the client side
Auto applied threshold templates	Thresholds	PVSR can automatically create thresholds based on threshold templates, i.e. if a new equipment is created then it can automatically ensure that the necessary threshold definitions are created for it
Improved template expression capability	Thresholds	If the threshold template does not contain any user input parameter then any type of expression can be used and if it does contain then on the left side of the comparison the user can use the + - / and * mathematical operations. New valid threshold template expression examples: <ul style="list-style-type: none"> • $X + Y > Z + W$ • $(X + Y) * 1.5 / Z > W$ • $X + Y - Z > INPUT$
Start/stop without database connection	Collectors	The data collectors can start without a database connection. In this mode they resume the data collection with the last settings
New self-testings	CORE	PVSR notifies the administrators if the log files of the following modules remain unchanged for more than two hours: <ul style="list-style-type: none"> • SQLLDR • Threshold processing • Report calculation
Lock/unlock Oracle user	CORE	PVSR contains a script to lock and unlock its Oracle user, and by doing so allowing to enter into a maintenance mode (for example for backing up the data)
User configuration	CORE	The user right changes are noted in the audit trail
Threshold template export/import	WEB	The threshold templates can be exported from a PVSR and imported into another
Report export/import	WEB	The predefined report definitions can be exported from a PVSR and imported into another
Scheduled equipment configuration	WEB	The parent site and the template to be used can be changed

Interface speed	SNMP	PVSR uses the <code>ifHighSpeed</code> SNMP parameter to determine the speed of an interface if it is present
Cisco CDP page	WEB/SNMP collector	PVSR displays the IP address for the remote device on the Cisco CDP page
Supported systems	Windows installer	PVSR supports Windows 2008R2 with a 32bit Oracle client. PVSR is also able to automatically recognize Oracle XE and the user can also manually specify an Oracle home directory
MySQL collector type	Data collection	PVSR can monitor MySQL databases and display the following collector pages: <ul style="list-style-type: none"> • Connections • Databases • Tables • Status variables • Server parameters • Custom select
New collector pages	WEB / Oracle collector	The following new collector pages are available for the Oracle databases: <ul style="list-style-type: none"> • Wait events • Statistics • Server parameters
Error CTL file directory	SQLLDR	The SQLLDR module stores a CTL collector result file in a new separate directory then the default <code>tmp/done</code> if it encountered any error during the data loading and the system never deletes files from this directory
SOAP	CORE	New SOAP classes: <ul style="list-style-type: none"> • MySQLEquipment • MySQLJob

11 Version 4.0

Name	Module	Description
Common indicator	Flash charts	If we move the mouse cursor above a chart then the indicator is displayed and functioning also for the other charts, i.e. the measurement values on the other charts are also displayed in balloons
Automatic scaling	Flash charts	The Y axis values are automatically displayed in K, M, G or T units
Real-time data collection	Flash charts	<p>The user can select the real-time monitoring for charts displayed on the current tab under the Measurements and under the Alarms menu, if all the measurements on the chart belong to the same equipment and they support the real-time data collection. Even the 1 second data collection can be chosen and the collected data is immediately displayed on the chart without any delay. The following measurements support this function:</p> <ul style="list-style-type: none"> • SNMP • Oracle • Cisco SAA • Cisco QoS • Unix/Linux • JMX • JAGA • Cisco RPING
Collector specific pages	WEB/SNMP collector	<p>The user can view additional information pages when viewing an SNMP equipment under the Measurements or under the Alarms menu. The specific pages are:</p> <ul style="list-style-type: none"> • Processes • Disks • Interface information • Ports • MAC addresses • IP addresses and routing • TCP and UDP connections • Cisco CDP data • Cisco VLANs • Custom query: this is only available for administrators
Collector specific pages	WEB/UnixLinux collector	<p>The user can view additional information pages when viewing a UnixLinux equipment under the Measurements or under the Alarms menu. The specific pages are:</p> <ul style="list-style-type: none"> • Processes, detailed process information, process killing • Mounts • Logins • Custom command: this is only available for administrators

Collector specific pages	WEB/ Oracle collector	<p>The user can view additional information pages when viewing an Oracle equipment under the Measurements or under the Alarms menu. The specific pages are:</p> <ul style="list-style-type: none"> • Sessions, detailed session information, session killing • Blocking sessions • Tablespaces • Data files • Redo logs • Archive settings • Backups • Users • Segments • Custom query: this is only available for administrators
Collector specific pages	WEB/ JMX collector	<p>The user can view additional information pages when viewing a JMX equipment under the Measurements or under the Alarms menu. The specific pages are:</p> <ul style="list-style-type: none"> • Core data
Horizontal guide lines	Flash charts	Horizontal guide lines can be placed on a flash chart at any time
Case sensitivity, ? and*	Searching	Every searching and filtering field is case insensitive and the special characters ? (one character) and * (any string) can be used everywhere
Unique results	Searching	Measurement menu Search sub-menu: an object is only displayed once in the result by default. For example an equipment is only shown under its site and not under any of its virtual sites, unless the user searched for it by specifying parameters of the virtual site or disabled the unique results feature
Customer name	WEB	The customer name present in the license file can be displayed next to the version information on the UI
SNMP IP address	WEB	The non-administrator users can view the SNMP IP addresses if it's enabled on the server
New print page	WEB	The new print page does not start automatically the print process and if the WEB authentication used is not Basic then the page can be copy-pasted into Word
Time zones	WEB	The user can specify the time zone to be used under the Measurement, Alarms and On-demand reports
Business hours	WEB	The user can use a business hours setting when viewing the charts under the Measurements menu
Equipment parameters	Configuration	Each equipment can store the time zone and business hours for its measurements and these parameters can also be specified in an equipment template
Links	WEB	<ul style="list-style-type: none"> • It can find an equipment based on its additional parameter (for example IP address) • The link can store the status of the menu bar (hidden or not) as well the status of the main area (maximized or not) • The collector specific pages can also be accessed with this feature

Bulk equipment update	Configuration	The user can export normal and virtual equipments, modify the export text file and bulk update them by importing the text file
JAGA measurement deletion	Configuration	If the user deletes an equipment and there are JAGA (availability) measurements for it then the system offers the deletion of them as well
On-demand report	WEB	By right-clicking on the name of one of the result table row, the user can open that object on a new tab
Excel export	WEB	When a normal or virtual equipment is displayed under the Measurements menu then the user can export every chart into one Excel file
SNMP testing	WEB	The system can test the SNMP availability of an IP address range using any community string and display the reachable equipments and whether they are present in PVSR or not
New measurements	UnixLinux	PVSR can run any command and interpret its output as a measurement value (if enabled)
New measurements	Oracle	<ul style="list-style-type: none"> • Wait classes (only for Oracle 10) • Transactions / second
New measurements	Synthetic transaction	Multi-step HTTP browser transaction simulation and measurement
Scheduled reports	Scheduled info sending	Custom prefix and postfix can be specified for any scheduled report. The user can specify the screen width used for chart image size calculation
Scheduled equipment send	Scheduled info sending	Any normal or virtual equipment Measurements page can be sent periodically via e-mail
New custom threshold Trap field	Threshold	The violation time can be sent in the format YYYY.MM.DD. HH:MI:SS
Custom e-mail notification	Threshold	The alarm e-mails sent for threshold violations can be customized
Threshold template	WEB	Not only the measurements belonging to the same equipment can be paired up, but also those having the same description
Browsers	WEB	The supported browsers are: <ul style="list-style-type: none"> • Firefox 3 and 4 • Internet Explorer 7, 8 and 9 • Chrome from 4 to 10
RedHat6	CORE	RedHat6 is supported on the server side
Mirrored backup system	CORE	The whole PVSR, along with its data in the database can be mirrored onto a backup system. PVSR synchronizes the data to the mirrored system continuously. The backup system can be used in read-only mode. This feature does not require any third-party cluster service
Encrypted password	CORE	The PVSR database password can be stored in an encrypted format
New option	Installer	The Linux-Solaris installer has a new option, -p for specifying manually the PATH to be used during the installation
Performance increase	Data moving	PVSR can skip the PVSR_MON_RES_ARCHIV table entirely when using an Oracle with the partitioning option or when using partition emulation

Manual data loading	SQLLDR	A new script called run_sqlldr.pl in the bin directory can be used to correctly load manually a data file skipped by the SQLLDR into the database
Concurrent connections	SOAP	The number of concurrent SOAP connections can be limited
Unique sorting	SQLLDR	The SQLLDR module can eliminate duplicated rows from the data files (when there are more than one server in a server group) and sort the data in them before giving them to the Oracle sqlldr command
Jaga equipment	WEB	There is an additional hierarchy level between the Jaga equipment and the measurement. PVSR groups the measurements pinging the same address together into a so called measurement group
EthernetOAM equipment	WEB	There is an additional hierarchy level between the EthernetOAM equipment and the measurement. PVSR groups the measurements with the same MEP address together into a so called measurement group. PVSR supports the a Primary VID MA name type-
SOAP	CORE	New/modified SOAP operations: <ul style="list-style-type: none"> • The equipment UDAs can be listed and modified separately from their equipment • The data for the collector specific pages can be queried • List of time zones The SOAP interface supports not just the envelope but also the literal communication type

12 Version 3.7.1

Name	Module	Description
EthernetOAM	EthernetOAM	There is a new delay and a new availability measurement base on the Loopback message and the user can manually start a Loopback or a Linktrace test

13 Version 3.7

Name	Module	Description
Partitioning emulation option	Data migration	PVSR creates periodically new tables for storing the raw collected data. If this option is selected then the application does not compress the data by calculating hourly averages
Chrome support	WEB	Google Chrome 3.x and 4.x are supported at the client side
CentOS support	CORE	CentOS 5 is supported at the server side
EthernetOAM	EthernetOAM	IEEE P802.1ag/D8.1 and ITU-T Y.1731 based Ethernet OAM data collector server
Asynchronous DNS	SNMP	The SNMP data collector uses asynchronous DNS name resolution
Host MIB measurements	SNMP	New process CPU and memory measurements
Advanced measurements	SNMP	PVSR can process complex SNMP tables: <ul style="list-style-type: none"> • It can use an OID value as the part of the OID needed to be queried • Choosing indexes matching a condition • Choosing the last N indexes • Choosing those indexes which were not previously detected • Analytic functions on the result set
Filtering out invalid values	Cisco SAA	The Cisco devices sometime report invalid IP SLA values, PVSR treats them as unsuccessful measurements
Nagios	Synthetic transaction	PVSR is capable of running Nagios check scripts and interpret them as measurements as well displaying their result
Unsuccessful measurement after configuration change	Data collectors	If the Index parameter of a measurement has been changed and the measurement type takes into account the previously collected data (for example counter measurements) then the next data collection will be skipped
Counter type measurements	Data collectors	In case of a counter type measurement (when PVSR displays the difference between two measured values) PVSR was capable of handling the counter overflow in the previous versions. In this version the administrator can specify to handle the overflow as a counter reset instead of overflow
64bit interface traffic measurement	SNMP	The counter overflow is handled as counter reset

Server events	WEB and CORE	<ul style="list-style-type: none"> • A new indicator icon is displayed next to the alarm counters when there are new server events (like module stopping, not enough successful measurement, etc...). When clicked on it the server event page is displayed • PVSR remembers for every user the events which were seen by the user • The Unknown server status is displayed as an error message • The Oracle tablespace and disc checking can be turned off • If the Application Manager module runs on the same server as the Oracle server then it checks the size of the Oracle SQL*Net log file • The disc checking alerts when the free space is lower than 1000M instead of 100M • If the SQLLDR finds during the processing of a measurement result file then it automatically restarts and creates a server event as well
Site creation	WEB	Sites can be bulk-created from CSV files
Equipment creation	WEB	The site to be used can be specified for each equipment separately during the bulk-equipment creation
Equipment template	WEB	Exclusion condition can be used in the equipment templates: if a measurement matches it then it will not be created
Bulk measurement creation and modification	WEB	<p>PVSR discovery can be run for more than one equipment at once. The application groups the measurements together based on their types and whether they are new or already existing measurements. It also divides the interface measurements into different groups based on their interface type.</p> <p>The equipment templates can be used as filtering during the rediscovery process. After the discovery the measurements can be bulk-created or bulk-modified</p>
Bulk deletion	WEB	Virtual and normal sites, virtual and normal equipments, measurements, charts and thresholds can be bulk-deleted
Unsuccessful measurements	WEB	The unsuccessful measurements or those equipments for which there are no successful measurements can be listed. Both types can be bulk-deleted or in case of the equipments they can be bulk-deactivated. These deactivated equipments can be bulk-reactivated
Measurement creation	WEB	In case of non-discoverable measurements (like the Jaga availability and round-trip-time) the user can specify a common name prefix. If it is specified then PVSR uses it and the measurement type instead of the Index parameter and measurement type

Equipment modification	WEB and SOAP	If the equipment is discovery capable (for example SNMP) then its measurements are automatically modified if there were changes in the device configuration and the user begins the equipment modification or calls the discoverEquipment SOAP function
Cisco interface descriptions	SNMP	By default PVSR no longer uses the Cisco interface descriptions when naming the interface measurements. Instead it displays the Cisco name alongside with the interface name
SNMP measurement discovery	SNMP	SNMP measurement types can be created in a way that PVSR will not do a probe measurement when the discovery is running. Instead it will only use the Description OID for discovering the measurement instances. If the Description OID is empty then it will not discover the measurement at all, in this case the user has to create the measurement manually
Threshold creation using template	WEB	<ul style="list-style-type: none"> • If the threshold is created using a template then PVSR will not create it if a threshold already exists with either the same name or the same expression • The threshold name does not contain any more the threshold level by default • If the template contains more than just one measurement (for example availability and round-trip-time) then PVSR can be told to pair only those measurements together which belongs to the same equipment
Reports	WEB	<ul style="list-style-type: none"> • On-demand reports can display only the first or the second measurement values (for example only input or output traffic) • The bar reports shows the measurements with % unit in a way that the value can be easily compared to 100% • The result table sorting can be saved for the on-demand reports as well • The "Show links" feature is available for the predefined reports as well, so the user can directly open a specific report for a specific object and a specific time span
Authentication	WEB and SOAP	There are three new authentication methods besides the already existing method. All three new methods allows log out and re-login with a different user name <ul style="list-style-type: none"> • Using the same Apache authentication file as the old authentication • LDAP • Radius
Users	WEB and SOAP	Not just the admin user but also the other administrators are allowed to view the administrator users in the system, although they are not allowed to modify them

14 Version 3.6

Name	Module	Description
Element show/hide	Flash	The user can show or hide every element on a chart at once
Trend lines	Flash	Several different trend lines (like linear, polynomial, ...) can be drawn on a flash chart
Minimum/maximum	Flash	The minimum and maximum of a flash chart can be set individually on the client, without any client-server communication
New self-testing	CORE	The SQLDR modules alerts the administrators if a measurement file is skipped over, or if the data loading process slowed down
History	WEB	The user can go back to a previously visited object or date/time when navigating under the Measurement or Alarms menu
Tab order	WEB	The ordering of the tabs isn't changed when a tab is selected (i.e. made active)
Key bindings	WEB	The user can use different key bindings for different UI operation, these key bindings can even be configured by the users
Language	WEB	The users can set the language of the UI, currently English and Hungarians are supported. It is important to notice that this affects only the messages on the UI and not the names of the objects in the database. For example the "Processor usage" measurement type will remain "Processor usage" even if the user set the language to Hungarian
Browsers	WEB	IE8 and FF3 are supported
Server check	WEB	If a user checks the server modules from the WEB using the Start / stop / status menu, then the application shows the PIDs for each server modules
Virtual site	WEB	More than one element can be added to a virtual site at once
Virtual equipment	WEB	A new virtual equipment can be created under the Measurement menu by adding to it measurements from the selected equipment. Virtual equipments can be temporary, meaning the system will delete them after the specified date. The order of the elements can be set more easily and the user can separate the elements with arbitrary text information
Links	WEB	Three different links can be shown by the system under the Measurement or the Alarms menu: <ul style="list-style-type: none"> • The first can be used to open the same object under the same submenu and same object hierarchy • The second can be used to set the same from/to date and time as the ones the user is currently viewing • The third can be used to set every element on the Browsing area to the same value as the ones currently set (for example same chart maximum)

Charts	WEB	It's easier to change the ordering of the chart elements. The user can create so called advanced chart elements on a chart: these can show arbitrary aggregations of other measurements (for example the sum of two interface input traffic)
Search	WEB	The user can search for deleted objects under the Measurement menu. When using the search expression X Y on the Search menu, the system tries to search for "X", "Y" and "X Y". The user can use the * and ? wildcard characters in every searching or filtering under the Alarms-Measurements-Reports menu, and all of those searches are case insensitive
Measurement index	WEB	The index parameter of a non SNMP data collector measurement can be changed. For example changing the Index parameter of a Jaga measurement, i.e. changing the IP address to be used in the ping messages
Deleted objects	WEB	Even the normal and the restricted administrators can access the deleted objects (sites, equipments and measurements). The users even can search for these objects and a so called linked-in measurement will be shown for an equipment even after deletion
Jaga configuration	WEB	In the case of an equipment with IP address parameter, the user can easily "synchronize" the measurements: creating new one, modifying existing ones (for example changing the IP address) or deleting them
Alarm object detailed list	WEB	Instead of showing only the highest alarm status, the detailed object view under the Alarms menu shows the number for each alarm level
Forecast-bases alarms	Threshold	Not only the actual measurement values can be compared to threshold limits, but future extrapolations based on trend calculations as well
Threshold configuration	WEB	It is easier to configure complex threshold expression, even without any Perl knowledge. The configuration page aids the threshold creation with several aid functionality
Tabular reports	WEB	Different bar representations can be used when showing tabular reports
Event-based alarm deletion	WEB	If the user deletes an event-based alarm on the UI then the application calls the same script and/or sends the same e-mail as if the alarm would have been automatically deleted by the system itself
Unmanaged events	WEB and Threshold	An event instance (like the up/down event of a particular interface) can be made unmanaged, meaning that the events won't generate an alarm on the UI
Event correlation	WEB and Threshold	The variables seen in an event can be combined in different ways to search for a PVSR object
Windows 2008	CORE	The application supports the operating system Windows 2008
Data handling improvements	CORE	The data loading, as well the data moving operations have been optimized for large amount of data
Analysis	Database	The application disable the table analysis after installation or upgrading on the PVSR_MON_RES... tables
SOAP	CORE	The SOAP interface supports the SNMP Walk and Get operations

15 Version 3.5

Name	Module	Description
New Flash based charts	WEB	The users can choose to use the new, Flash based charts, which offer different client-side interactivity
Linux/Solaris CLI installer	Installer	The installation of PVSR on Linux and Solaris platforms is aided by a CLI install application
On-demand reports	Report	On-demand reports can be created: these do not require any pre-configuration, do not take up space in the database, but they generation takes more time
Automatic charts	WEB	Automatic chart creation can be specified on a per chart template basis: if someone opens an equipment in the Measurement menu then the chart is automatically created based on the template
Chart filtering	WEB	When configuring charts from an equipment configuration page, then the users can choose to display only those charts which contain measurements from that equipment
Searching	WEB	The users can search by specifying any attribute and there is a new quick-search possibility on the submenu area
Measurement parameter change	Jaga	The Timing parameter isn't supported any more. There is a new parameter called QoS and the user can use not just IP addresses as the Index but FQDNs as well
JMX collector type	Data collection	Java applications can be monitored using JMX
Supported OS	Unix/Linux	The Unix/Linux data collector can measure IBM AIX servers

16 Version 3.4.5

Name	Module	Description
License	CORE and WEB	The new license file contains both the customer name and the database ID
SNMP trap	Threshold	Custom SNMP traps can be sent out when a threshold violation occurs (configurable trap OID and content)
Alarm state	Threshold	The threshold expression can contain a references to previous alarm states: for the actual or for any other threshold
New self-testing	CORE	The SQLLDR component alerts if a collector server with the running state has too few successful measurements. The SQLLDR alerts also if the log file of the application manager doesn't contain new lines
Server commands	CORE	New server commands have been implemented
SOAP	CORE	New/modified SOAP operations: <ul style="list-style-type: none"> • Easier chart member creation • Report variable modification • Threshold type query • Data collector type query • Chart color query • Several get operations for querying the last report variable values

17 Version 3.4.4

Name	Module	Description
Interface speed rediscovery	SNMP data collection	The SNMP data collector automatically rediscovers and modifies the interface speeds.
Server group start and stop	CORE	With the start_stop_pvsr command the user can start and stop a particular server group
Memory usage	CORE	Decreased memory usage for the PVSR server
Direct load	SQLLDR	The Oracle direct data load method can be used for non-partitioned databases as well, which decreases the time needed for the data loading
Limited measurement number	Data collection	One data collection server won't collect data for more than 370 000 measurement by default.
Data reading	Report and Threshold	The report and the threshold processing read the measurement values directly from the SQLLDR files if possible
Server group creation	WEB	PVSR creates automatically a new server group and server during the license uploading if no server group had been existed for that type before
Automatic module restarting	SQLLDR, Report and Threshold	The SQLLDR module on Windows automatically restarts itself once every day, while the report and the threshold processing restarts themselves according to the configuration in CONFIG_INI.pm
Automatic data deletion	Archive data	Beside and/or instead of the hourly average calculation there is the possibility to automatically delete the old data

18 Version 3.4.3

Name	Module	Description
Windows GUI install	Installer	The installation of PVSR on Windows XP platforms is aided by a GUI-based install application.
Windows service	CORE	PVSR can be run as a service on Windows XP, i.e. it can be started automatically

19 Version 3.4.2

Name	Module	Description
Negative values	Data collection	Negative gauge values can be collected
Test modules	API	Test applications and modules for the data collection API
Module control	CORE	The start_stop_pvsvr command line tool can be used to restart a module and to control more than just one module at once
Trap	Threshold	The threshold trap contains the measured values as DisplayStrings rather than Integer32
Equipment modification	WEB	If the measurement table contains more than 100 rows and the user uses Internet Explorer then the input elements are not be disabled even for the not-selected measurements

20 Version 3.4.1

Name	Module	Description
Netflow reports	WEB	Detailed reports can be queried for the Netflow equipments. The reports can display every source-destination communication in the given time period or to filter and group them according to the need of the user.
Float values	Data collection	Float values can be collected
File deletion	CORE	PVSR doesn't use the cron application for the deletion of log and other files, instead the task is done by the application manager
Report variable	Report	The report calculation can take the different exclusion windows into consideration even when calculating the measurement statistics, not just when calculating the site and equipment statistics.
Restricted administrator	WEB	There is a new user type, called restricted administrator. A restricted administrator is similar to the normal users, i.e. he can only see those objects for which he received the right; but unlike the normal users he can also modify them.