THE WORLD'S LEADING PERFORMANCE MANAGEMENT PRODUCT SUITE AND CLOUD ENABLEMENT SOLUTION FOR Z/VM AND LINUX ON IBM Z

VELOCITY SOFTWARE SINCE 1988

OVER 30 YEARS OF TOP PERFORMANCE

Velocity Software develops, distributes and supports performance management software for the z/VM operating system, with a focus on Linux on IBM Z and our new Cloud enablement tools.

With the introduction of Linux on Z, Velocity Software's view of performance management has expanded to include Linux. Today we provide a single pane of glass, including full network management, systems management and applications management.

Velocity Software's Performance Suite further provides full z/VSE performance management, performance management for distributed Linux and Microsoft servers. The latest version of Velocity Software's flagship product "zVPS" also provides z/OS data collection and display functionalities.

Our strong customer commitment is the driving force behind the continuing growth of our worldwide customer base.

Velocity Software is based in Mountain View with offices in Columbus, Ohio and Mannheim, Germany. Since the beginning, our business philosophy has been to lead the industry in performance knowledge and products that utilize every new measurement facility within each release of z/VM. Our business philosophy of putting our customers first has indeed put us at the forefront of the z/VM performance market.

OPTIMIZING PERFORMANCE THROUGH TECH SUPPORT AND TRAINING

Velocity Software offers responsive technical support to fully back our installations with product and z/VM expertise that includes ongoing product upgrades. Our highly trained support staff is knowledgeable and experienced with all aspects of z/VM performance analysis, capacity planning and private cloud enablement for IBM Z.

To ensure you receive full use of our products, Velocity Software provides on-site assistance for installation of Velocity Software products. Maintenance and support contracts include:

- Data analysis
- Report review and consultation
- Product Installation
- New implementations
- Review of specific procedures that use our products

Velocity Software, Inc. Located in Mountain View, California,
Columbus, Ohio and Mannheim, Germany.
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VELOCITY SOFTWARE'S PERFORMANCE SUITE

These products and compontens are included in zVPS:

zVIEW
Graphical Performance Displays for z/VM and Linux on IBM Z

zMON
Real-time Monitor

zMAP
Historical Reports

zTCP
Performance Measurements for Linux and Network Servers

zVWS
Velocity's High Speed Web Server for z/VM

zOPERATOR
Full Operator Console

zALERT
Full Operations Alert Support

zPORTAL
A package that can be used to manage certain zVPS functions

These products are add-on products:

zPRO
Complete Systems Management and Cloud Enablement for z/VM and Linux on IBM Z

zTUNE
z/VM and Linux Rules Based Analysis and Performance Services

zOSMON
z/OS Data Collection and Display

zVPS: VELOCITY SOFTWARE'S PERFORMANCE SUITE

zVPS: VELOCITY SOFTWARE'S PERFORMANCE SUITE

zVPS measures, monitors, and controls the performance of today's complex IT systems. Today's IT systems include Linux, VMware and Windows servers, mainframes with complex networks and numerous applications. Managing each component is important to your business and it requires a totally integrated performance management solution for your enterprise.

zVPS addresses the needs for:

Managing Performance: Providing real time metrics on all facets of the performance of each of your servers — including z/VM, z/VSE, Linux and other distributed servers — zVPS allows immediate analysis of real-time problems.

Capacity Planning: zVPS provides a full performance database (PDB) and interfaces for popular enterprise capacity planning facilities such as MXG and MICS. The PDB includes data from z/VM and all the servers being monitored.

Chargeback and Accounting: By providing complete and accurate data for both Linux applications and z/VM virtual machines, zVPS fulfills the need to provide data for chargeback and accounting purposes.

Operational Alerts: When managing hundreds or thousands of servers, automated analysis is required for all servers to ensure performance and capacity issues are immediately detected and reported. zVPS provides alerts via a 3270 interface, via a web-based browser and via SNMP alerts to integrate into your management console — similar to HP OpenView.

Measuring Linux Issues: All other measurement facilities fail in measuring Linux under z/VM for three reasons:

- The overhead of collecting the data
- The accuracy of the data
- The inability to provide complete data collection

Velocity Software's zVPS effectively addresses all of these issues.

Managing Performance in Today's Heterogeneous Environments: Managing performance today requires the ability to measure and manage all components of a sometimes complex infrastructure. zVPS provides measurement and performance reporting far beyond a simple z/VM performance monitor. zVPS provides data necessary to manage all of the following:

z/VM performance and all subsystems for all releases of z/VM

- Velocity MIB support on SUSE and Redhat servers. Data available from other Linux servers via SNMP.
- Support for Linux servers running SLES7, SLES8, SLES9, SLES10, SLES 11, RHEL3, RHEL4, and RHEL5, RHEL 6, RHEL7, SLES12, SLES15, Ubuntu.

Linux Accounting: Installations requiring charge-back for Linux can use zVPS to provide accurate data on VMWare, Websphere, DB2, and Oracle servers by process and by user.

Web Based Access: zVPS real-time screens, along with historical reporting and trending reports are accessible over the internet/intranet with your web browser. Website security is fully supported by the utilization of IBM's z/VM TCPIP SSL servers. For more in-depth information on SSL with zVWS see: www.velocitysoftware.com/sslview.html

Consolidation Capacity Planning: zVPS will measure the resource requirements of an application, prior to consolidation, to enable effective consolidation capacity planning. By measuring the servers prior to and after consolidation, Velocity Software renders consolidation capacity planning trivial.

Instrumentation Measurement: zVPS will show system-by-system and application-by-application storage, processor and I/O requirements. In this way you can run each workload on the most appropriate platform. This feature contributes directly to the corporate bottom line by utilizing corporate equipment resources to their best advantage as well as utilizing hardware to its best efficiency.

Operations Exception Monitoring and Reporting: Problems are fixed before users can even notice. zVPS offers an automated facility that recognizes error and excessive load conditions (and other installation-defined exceptions) based on installation-defined criteria. zVPS then optionally performs corrective action. Additionally, zVPS displays a visual representation of potential bottlenecks and system problems.

z/OS Data Collection and Display: Velocity Software has recently added z/OS to it's performance management suite. As the industry leader in z/VM performance management for over 30 years, and as the industry leader in Linux on IBM Z performance manage-ment for almost 20 years, many zVPS installations have requested support of z/OS metrics in our modern and fexible graphical interface. zOS-MON currently fully exploits the SMF records 30, 70 and 110. With the ability to collect data from all the z/OS LPARs in an enterprise, there is one centralized database for the enterprise. With such a low cost of operation, data can be processed in multiple locations for full redundancy.

zVPS is the best solution for metrics that will measure performance of your z/VM resources, Linux servers, Network and Network servers and application data such as Websphere, Oracle, Docker, Mongo DB, Spectrum Scale (GPFS), …

zVPS: VELOCITY SOFTWARE'S PERFORMANCE SUITE

zVIEW

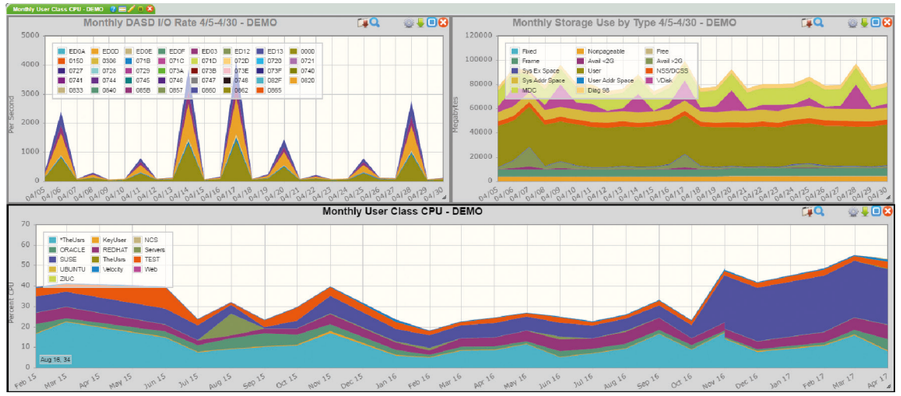
zVIEW: GRAPHICAL PERFORMANCE DISPLAYS FOR z/VM AND LINUX ON IBM Z

zVIEW is the browser based extension to view performance data. Installations can view real-time and/or historical performance data in columnar or graphical views and easily move from view to view.

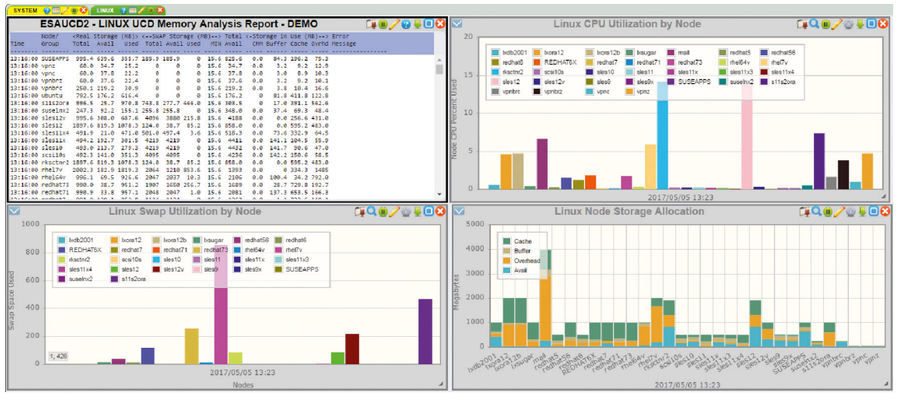
zVIEW can be used to view related system performance metrics, assist with capacity planning and trend analysis or be used to perform quick "health checks" of the system. Velocity Software provides several preconfigured screen arrangements to assist with quick analysis of how the system is performing. In the following examples, we demonstrate several examples of how zVIEW is used to view data, including a view of CPU utilization over a 30 minute period along with the correlating I/O for the same time frame. In addition we can see installation defined user groups including the collection of users contained within a selected group for the current moment in time.

System Health Check panel

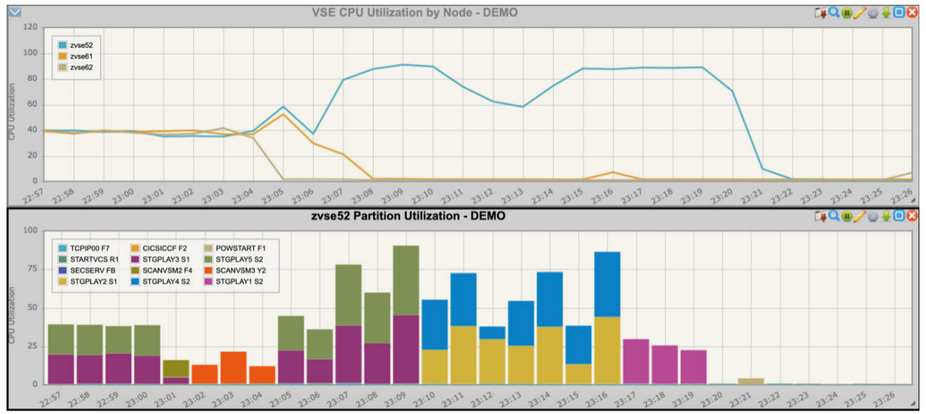
zVIEW: CONTINUED



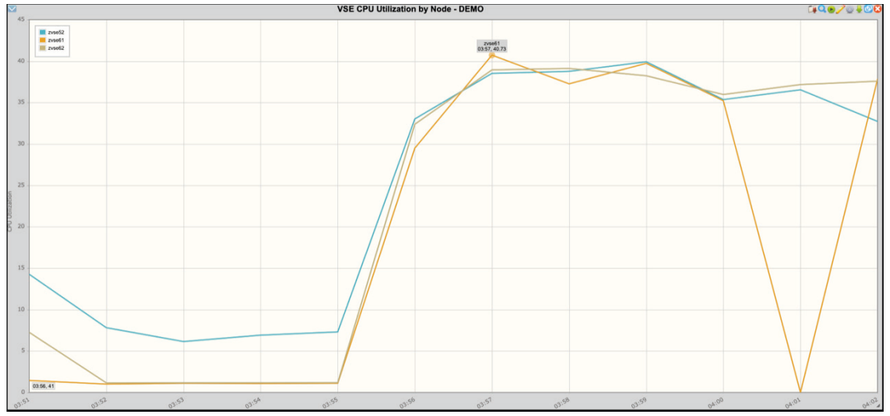
Month Long View of Capacity and Trending Data



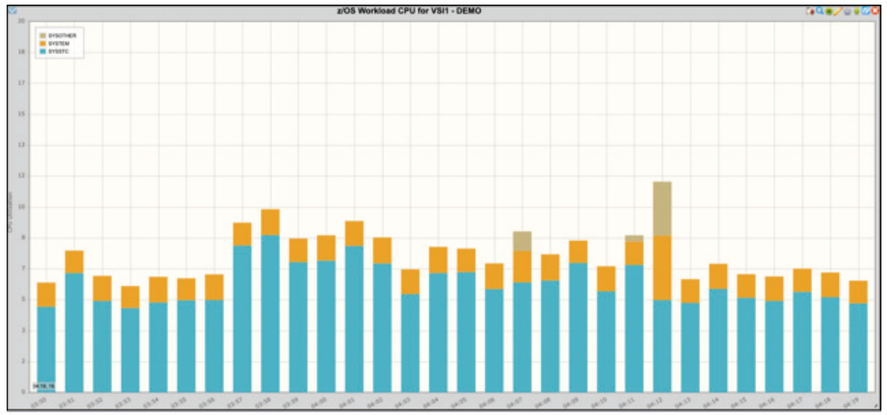
Summary for Linux Nodes/CPU, Swap, and Storage Use



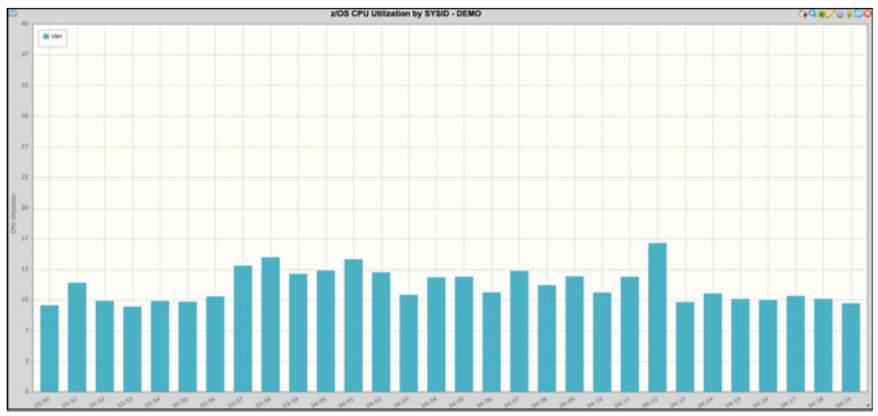
CPU utilization of all z/VSE systems and an individual jobs running on a specific z/VSE system



Full screen view of the CPU utilization of all z/VSE systems



z/OS CPU utilization by Service Class



CPU Utilization of all z/OS systems

zVPS: VELOCITY SOFTWARE'S PERFORMANCE SUITE

zMON

zMON: VELOCITY'S REAL-TIME MONITOR MODELED AFTER OUR FLAGSHIP PRODUCT–zMAP

zMON is an on-line real-time display facility that gives you up-to-the-minute information on the performance of your z/VM or Linux servers running on IBM Z. Since 1989, zMON has continued to gain market share as the most comprehensive z/VM performance monitor on the market. If you have a performance problem, it's critical that you have all the information available to you. Our zMON product provides the necessary function to make that possible.

zMON can display resource contention, consumption levels, transaction response times, user service levels and much more – for groups of users or for individuals. It can analyze CPU, storage and I/O performance in depth and lets you define classes of virtual machines for detailed study of applications, user communities and services. zMON helps you understand system events as they unfold, to pinpoint problems and quickly correct them.

FEATURES AND BENEFITS

- Over 190 easily navigated screens from high-level overviews to detailed subsystem displays, including statistical summaries, full DASD cache analysis, SFS analysis, device analysis, Minidisk Cache, Oracle and Java screens, and even seeks analysis – all critical for performance management.
- Screens can be tailored to meet individual or installation requirements. This includes the ability to set alert conditions, highlighted in the user's choice of color and video characteristics.
- zMON provides a powerful real time programming interface that allows you to program your own responses to performance criteria.
- zMON presents data for Linux servers as well as Microsoft servers
- zMON reports and presents your real time data in a very intuitive format. zMON screens are automatically updated with up-to-the-minute performance information.
- zMON provides significant resource savings over other monitors when monitoring users and transactions; even with seeks enabled.
- Based on the CP monitor facility, installation requires no "hooks" into the operating system. New releases of z/VM are supported immediately upon availability.

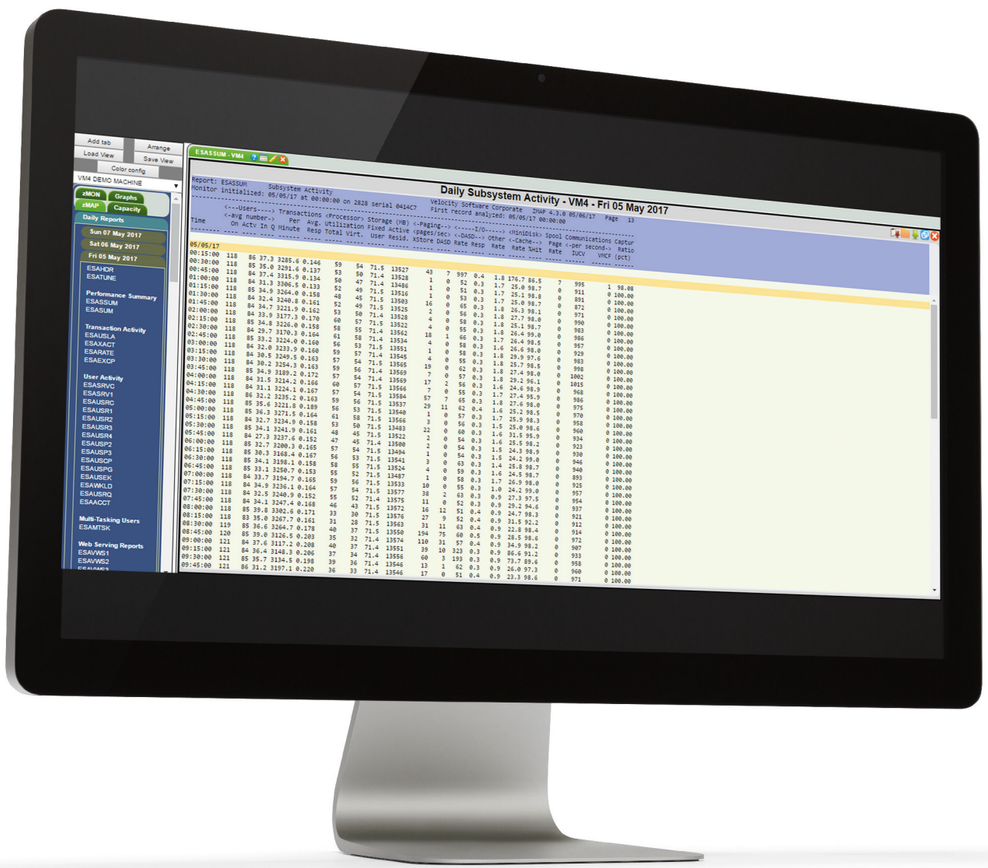
zMON also provides input such as condensed history files and monitor record extracts that can be employed with other CPM products such as:

- zMAP to provide tailored performance reports and accounting for z/VM, distributed servers and networks
- MXG® for enterprise reporting, including Linux and network performance data
- MICS® for enterprise reporting

1. Graphs and text reports can be combined, the layout saved and recalled for later viewing.
2. Graphics can be displayed as individual charts or combined for the purpose of comparing spikes in resource usage to servers and applications that are active during that period.

zVPS: VELOCITY SOFTWARE'S PERFORMANCE SUITE

zMAP



zVIEW can also be used to display data collected by zMAP

zMAP: HISTORICAL REPORTS

zMAP provides the ultimate in performance reporting. It is a comprehensive reporting facility based on IBM's CP monitor. To simplify tuning and capacity planning, several hundred reports are available by function within a performance hierarchy.

zMAP reports look much like zMON displays. This means whether you are looking at historical reports or real-time displays, the formats are the same. The report options include complete system reporting with statistical summaries, disk seek analysis, full DASD cache analysis, device analysis, and service level agreement (SLA) reporting. As IBM continues to strengthen zVM, Velocity Software continues to enhance zMAP.

Subsystem Analysis. All subsystems are analyzed, including processor, storage, paging, minidisk cache, DASD, cached DASD, SFS, TCP/IP, FICON, ESCON, PAV, and various vendor applications. Including interfaces to MICS, MXG, and SAS.

Performance Database. The PDB functions included contain the ability to extract and plot values, and to create your own reports.

zVPS: VELOCITY SOFTWARE'S PERFORMANCE SUITE

zTCP MONITOR

zTCP MONITOR

The networks of today are increasingly based upon TCP/IP, which means critical business applications rely on its performance and availability. One can safely assume that your network assets are critical to business success. They must have high levels of accessibility and availability for the applications they are supporting. For this reason, monitoring for network problems has become a key element of our zTCP Monitor. zVPS and zTCP offer the best solution for metrics that measure the performance of both z/VM and your network resources.

zTCP is the solution for monitoring performance, availability, and service levels of your TCP/IP networks.

It allows you to measure the traffic of every node in your network including IBM's System p, Solaris, HP, Dell, Windows, Microsoft, and VMWare. You then know immediately when a node stops responding, if there are implementation issues, or if the network is experiencing bottlenecks. It provides a complete and accurate view of your current environment as well as the metrics and relevant data to anticipate future problems.

With Velocity Software's zTCP monitor, you can monitor IP resources and data rates down to the interface.

TCP/IP "drill down" for Linux Node Network Activity

zVPS: VELOCITY SOFTWARE'S PERFORMANCE SUITE

zVWS

zVWS: VELOCITY'S HIGH SPEED WEB SERVER FOR z/VM

Webserver for z/VM

In today's cloud environment world, it is imperative to distribute information instantly on the web for both external and internal corporate customers. Industry analysts confirm that more than 70% of corporate information is found on mainframes. Velocity Software's webserver is an order of magnitude faster than any available web server and can support a higher transaction hit rate while reducing CPU overhead. zVWS is used worldwide by financial institutions, computer companies, non-profits and others because of its performance, security and easy implementation.

Just some of the features we have designed to drive better performance include the following:

- Internal cache is provided to eliminate I/O.
- Support of HTTP's persistent connection reduces TCP/IP output requirements.
- IF-MODIFIED-SINCE: request header entry is supported meaning, if there have been no modifications to a requested file, the browser can use its cached version.
- Full performance instrumentation is present.
- zVWS supports the SSL (Secure Socket Layer) protocol.

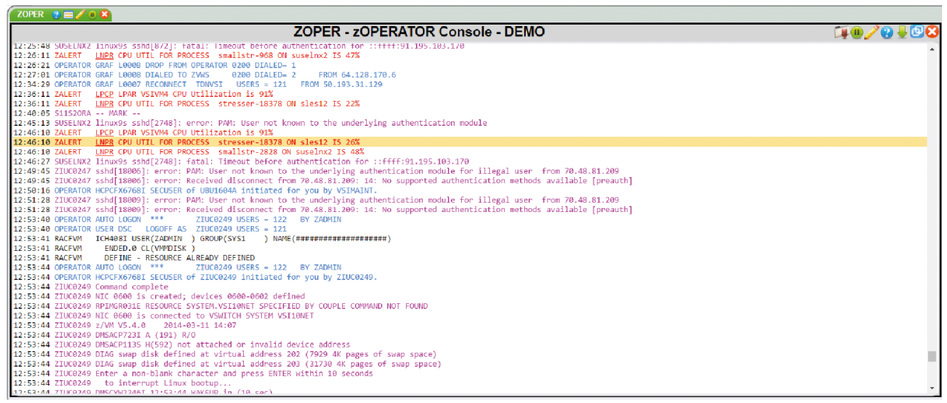
The complete feature set for zVWS includes:

- Ease of installation
- Support of: HTML, Image, EBCDIC, ASCII, CGI, SSI (server side includes), Tilde Hack, file list, GET, POST, HEAD, SFS, minidisk
- SSL Security
- REXX and CMS Pipeline interface
- Redirection/load balancing
- Multi-home hosting
- CERN formatted log records
- SMSG interface
- Auto index support
- ALIASing support
- Extensive logging facilities
- If-Modified-Since support
- "Shadow Migration Aid"

zOPERATOR

FULL OPERATOR CONSOLE

zOPERATOR provides a full console function using the existing 3270 technology as well as providing a browser interface. Fully integrated into zVIEW and zMON, it provides a powerful console with which no other vendor can compete.



zALERT

FULL OPERATIONS ALERT SUPPORT BASED ON ZVPS DATA

zALERT provides a full alert function allowing alerts to be set for any range of performance metrics.

With the ability to send alerts via SMS, email, or via snmp to other management consoles, zALERT provides for the full operational needs.

VSIVM2 - Exceptions Analysis Alerts - 19/06/05 at 15:16 - VM2

Code	Alert Description
LNCP	CPU utilization on Linux node linux9 is 115.10%
LNDX	Filesystem '/dev/shm' on DOCKER is 90% full
LNDX	Filesystem '/' on lxora12 is 90% full
LNDX	Filesystem '/opt/oracle/oradata' on lxora12 is 95% full
LNDX	Filesystem '/' on mongo01 is 99% full
LNDX	Filesystem '/' on mongo02 is 99% full
LNDX	Filesystem '/' on redhat6 is 100% full
LNDX	Filesystem '/' on redhat6M is 100% full
LNDX	Filesystem '/' on redhat6S is 100% full
LNDX	Filesystem '/' on redhat6x is 95% full
LNDX	Filesystem '/' on redhat62 is 100% full
LNDX	Filesystem 'L: Label:Linux64 Serial Number' on win64 is 98% full
LNDX	Filesystem 'C: Label:Windows7_OS Serial Nu' on WIN7 is 88% full
LNSU	Swap utilization for Linux node DOCKER is 100%
LNSU	Swap utilization for Linux node lxora12 is 71%

zPRO: CLOUD ENABLEMENT

zPRO: COMPLETE SYSTEMS MANAGEMENT AND CLOUD ENABLEMENT FOR z/VM AND LINUX ON IBM Z

Improve the productivity of anyone on your IT team by enabling them with a simple to use web interface for managing the z/VM platform and multiple servers. zPRO provides a turn-key approach to private cloud implementation. Something that would normally take weeks to implement can now be accomplished in hours or minutes.

As installations move towards IBM Z in virtualizing their servers, there is an increasing need for a web based interface suitable for system administrators as well as end-users.

Velocity Software is providing zPRO — a web based interface for z/VM systems management. zPRO is an add-on product of zVPS, Velocity's Performance Suite for IBM Z, utilizing the web serving functionality provided for z/VM.

As a "native" z/VM based application, all functions are performed using native z/VM facilities. This architecture provides several advantages including ease of use and the ability to leverage the strengths of z/VM to the fullest. zPRO ships with a built-in Directory Manager called zDIRECT. zPRO also supports the use of DIRMAINT and VM:Secure for Directory Management and RACF and VM:Secure for Security Managmeent.

Features currently provided by zPRO
Systems management and cloning capability for:

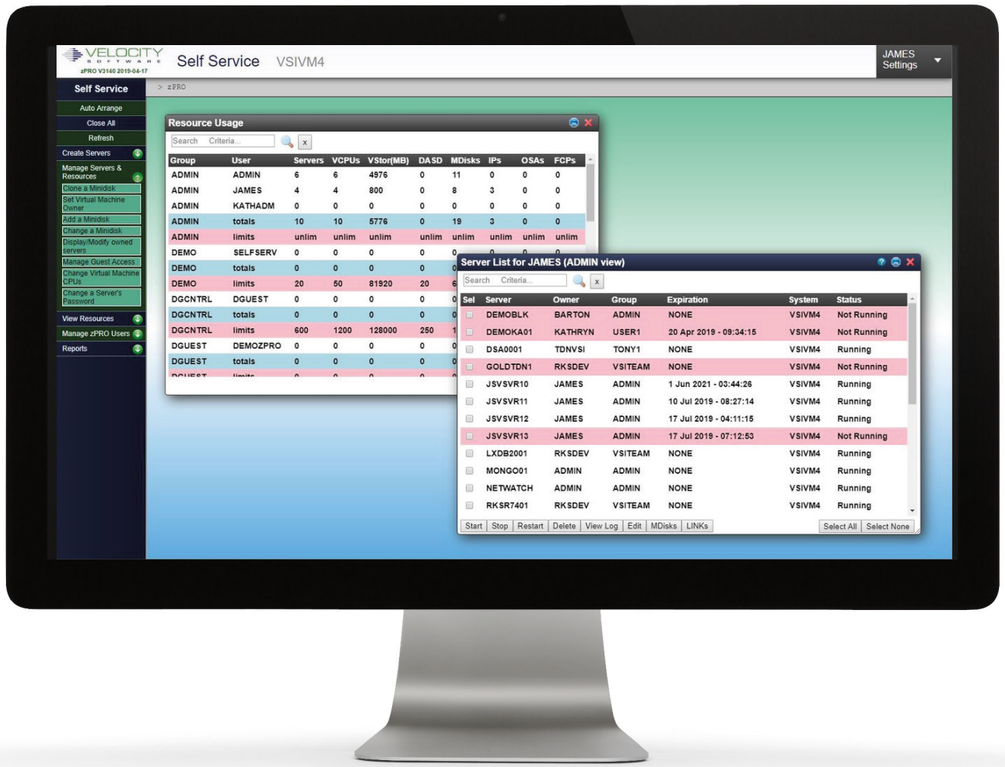
- Linux servers
- z/VSE
- CMS users
- Administrators define servers based on "golden images" and delete servers when they are no longer required. Deletion is done manually or automatically if a specific lifetime is designated.

Server configuration management:
Allow administrators to manage their servers virtual CPUs, storage and disks via a browser interface without the need for z/VM skills.

Other zPRO features:

- Automatic resource allocation and reclamation
- Resource consumption limits by individual or group
- Functional decentralization
- Live Guest Relocation (LGR) in an SSI Cluster
- Installation extensibility

zPRO: CONTINUED



Manage your z/VM Cloud with zPRO and empower your end-users to manage their servers, while maintaining strict control of system resources.

zTUNE: PERFORMANCE SUPPORT SUBSCRIPTION

zTUNE: z/VM AND LINUX ON IBM Z PERFORMANCE SERVICES

The Performance Health Checker for Linux on IBM Z:
From the leaders in z/VM and z/Linux performance monitoring, zTUNE is a unique services offering for z/VM and Linux on IBM Z (z/VM) installations. Velocity Software offers full performance services by providing a subscription rules-based analysis of your system and expert analysis of your data whenever requested. Once the data is electronically sent, Velocity Software will analyze and deliver recommendations that maximize your system performance.

Tuning Recommendations. zMAP includes embedded artificial intelligence. Each time you run this report, zTUNE flags potential performance bottlenecks and provides tuning recommendations.

Your data will be handled in strict confidence. At no time will Velocity Software distribute or make available information from any company unless permission has been granted.

zTUNE provides:
Configuration Analysis to ensure optimal configuration
- Electronic-based Health Check for Linux and z/VM
- Analysis of your performance and capacity data
- Recommendations to improve performance and capacity

CALL US TODAY FOR YOUR FREE TRIAL OF ZVPS:
+1 650 964 8867

WHAT EVERY IT PROFESSIONAL SHOULD KNOW

Functional requirements for managing Linux performance under z/VM:

- Performance Measurement functions to ensure current service levels are met. This includes current performance measurements and the ability to analyze performance from previous time frames.

- Capacity Planning functions to ensure future needs are met, including a full performance database and the ability to transfer data to MICS or MXG.

- Operational alerts that allow operations to detect current issues such as looping processes, exceeding disk capacity, etc., for hundreds of servers. Alerts can be sent to any SNMP based management console, 3270, or a browser on a workstation.

- Chargeback capability to provide data used in a mainframe business model to charge for resources consumed either using zVPS facilities or MXG or MICS.

Achieving these results introduces the following challenges:

- Accuracy of the Data – The data provided by Linux in a virtual environment prior to SLES10 is normally wrong. Velocity Software was the first to understand this issue and offers the ONLY product to correct the results.

- Complete Data Collection
  · Multi-platform Data Collection – Through the use of a standard interface (SNMP and NETSNMP) an installation using zVPS may monitor many different platforms (Linux, Sun, HP, Windows, VMware).
  · Ability to collect data from 100s or even 1000s of servers.
  · A 100% Capture Ratio insures that you know exactly how much system resource is being used and by whom, down to the process level.

- Cost of Data Collection – Cost of collecting data should be kept to a minimum. Some management tools require as much as 5% of the processor. Velocity's target is .1% or less.

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