

**VELOCITY**  
**S O F T W A R E**

# Introduction to Modernizing Performance Management and your Z environment

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Constant Delivery (since 1988)

Performance Management and demonstration:

- zVPS – Velocity Performance Suite

Single pane of glass

- z/VM
- Linux
- Network
- VSEMON
- zOSMON
- Applications (Docker, MongoDB, **OpenShift**)
  
- zTUNE, zVRM

Modernizing z/VM with zPRO

Follow up discussions

1988: XAMAP (now zMAP) (First VM/XA performance reporting)

1989: XAMON (now zMON)

1999: ESATCP (now zTCP)

2000: ESAWEB (now zVWS)

2002: Linux Support (continuous enhancements since 2002)

2005: Websphere, Oracle metric reporting

2007: zTUNE

2018: zPRO – Very successful

2019: zOSMON – delving into an interesting market

2021-2022: zPRO zScheduler, zSpool, zBackup, zDIRECT

2022: zVM, Linux Tuning Guide

2023: OpenShift/Kubernetes/zCX, zVRM

Performance **Management** is a process, four components

- Performance Analysis
- Operational Alerts
- Capacity Planning
- Accounting/Charge back

zVPS Target Users:

- Centralized performance management
- Data analyst / Linux admin
- Enterprise capacity planning
- Accounting
- Centralized Operations
- Dashboards

## Our Product Design Objectives:

- Data Accuracy, product longevity, **scalability, extensible**
- Minimize complexity - Keep it Simple (and elegant)
- Ease of use, easy to support
- Modernization (browser based, cross enterprise)
- **Low resource consumption** for zVPS (1% of one engine)
- Low resource consumption for data collection
- Provide data to dashboards (Grafana, splunk, etc)

## Longevity requires consistency and standards

- Correct data implies standard data
- Data sources must be consistent, low overhead, integrated
- **zVPS uses standard sources** (mostly....)

z/VM: CP Monitor (IBM) Exclusively

Networks: snmp mib-ii (standard, open source)

Linux: net-snmp (standard with Linux, “z” and “x”)

- Standard Net-snmp is 1% “agentless” agent (ucd mib, host mib)
- Velocity Software snmp mib (“**z**” and “**x**”) replaces most metrics for .1%
- ALL Distributions (suse, redhat, ubuntu), all releases (z & x)

VSE: IBM snmp mib, Velocity Software mib, CICS (DMF) (2021)

- (“<http://VelocitySoftware.com/vsecics.html>”)
- BSI/CSI TCPIP from the vendors

z/OS: SMF records (IBM/logstream) (70/30/75/113, CICS, DB2, etc)

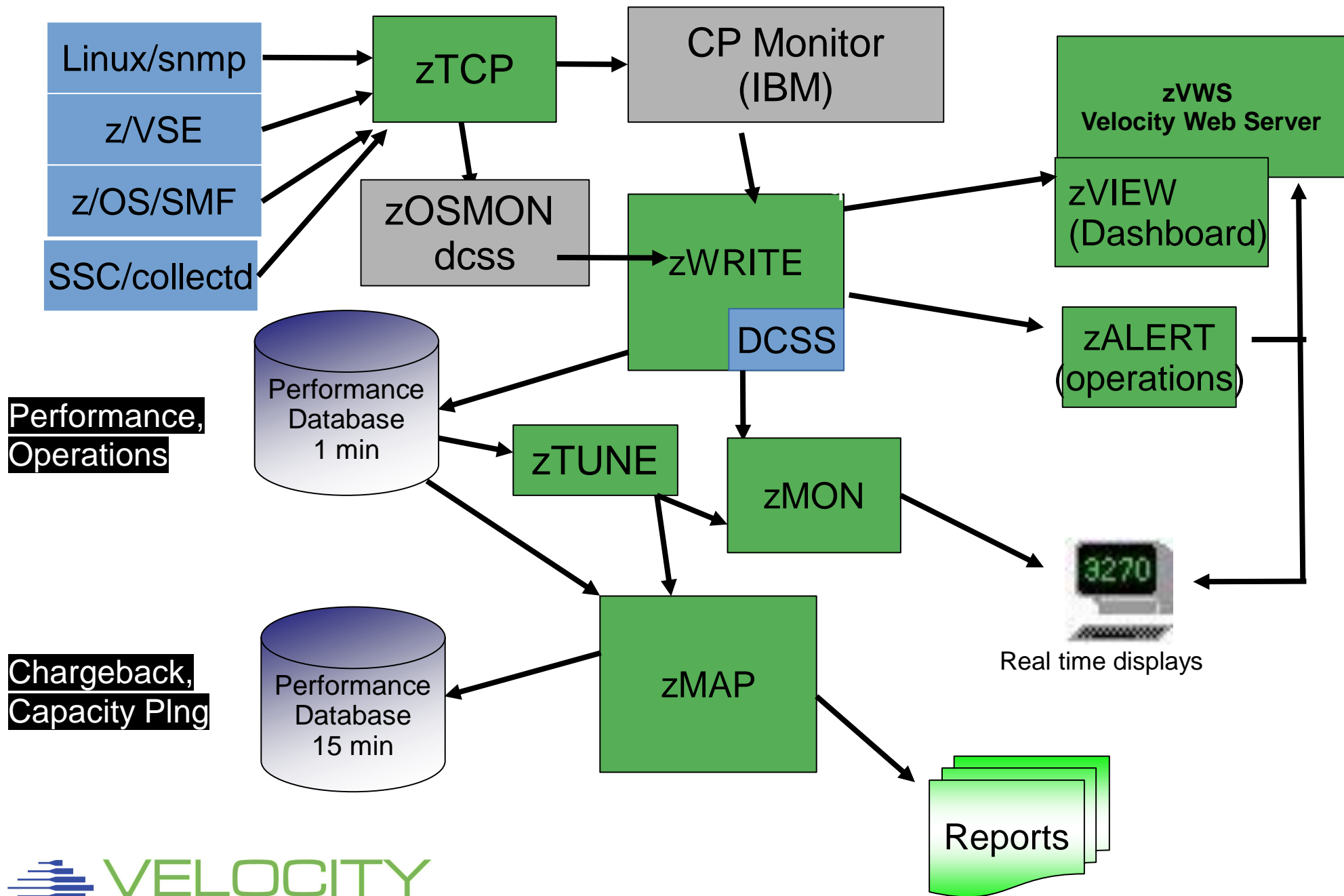
IBM SSC: collectd

## zVPS Components

- zMAP - Performance reporting, long term performance data base
- zMON – Real time interface, short term performance data base
- zVWS – Native webserver
- zTCP – Data collector (snmp, collectd, smf, dmf)

## No charge components with graphical interface

- ESAEXTR – build your own reports, analyzer
- zVIEW – performance management dashboard
- zOPERATOR
  - Fully integrated operations console (replaces Ops Mgr)
- zALERT
  - Performance alerts and notifications (integrated)
  - Alerts to SNMP management console (NETCOOL, HPOpenView)
  - Email alerts, Cell phone text alerts





## Why zTUNE?

- Mainframes/LinuxOne environments are Complex
- Many things get overlooked even by experts
- Experts become experts by seeing many many performance problems
- What causes problems??????
- When same problem multiple times, create a rule to look for it
- Checks for configuration “best practices”
- Inexpensive insurance to **have the best skills when there is a problem**

## zTUNE Components

- zTUNE RULES – 100+ performance items that get checked
- ESATUNE report produced by zmap, display on zVIEW
- **Performance assistance on demand** from Velocity Software experts
- Upload data for analysis at any time
- Ptrack ‘ztune’ sev1 alerts velocity management phones....

Focus more now on simplifying problem resolution

User reports that applications complained about Linux on Z WAS performance:

Report: ESATUNE            Tuning Recommendation Report

-----  
The following changes are suggestions by Velocity Software  
to enhance performance of this system.

However, Velocity Software takes no responsibility -  
all tuning is the responsibility of the installations.  
Please call 650-964-8867 if you have any questions about  
these values, or suggestions on report enhancements.

USR2 User LINUX160 is paging excessively (75.0 per second)  
This user can be protected using SET RESERVED

SPL5 Spool utilization is 100% full.  
Perform Spool file analysis and purge large  
spool files, or force users currently writing  
excessively to spool.

\*\*\*\*\*zTUNE Evaluation       \*\*\*\*\*

XAC1 User total PROCESSOR WAIT excessive at 33 percent.  
Current reporting threshold set to 20.  
This is percent of inqueue time waiting for  
specific (PROCESSOR)resources to become available.

**LPR3 LPAR share is too low, causing USER CPU Wait**

VM LPAR allocated share: 0.94 percent of total  
VM LPAR used 389 percent of allocated share

## zVWS: Native generalized z/VM Webserver

- CMS Based
- Written in Assembler, because that is just fast
- Generalized server – **completely eliminates need for SMAPI**

## VelocitySoftware.com (all runs on z/VM natively)

- VelocitySoftware.com, VelocitySoftware.de, etc
- VelocitySoftware.net
- Linuxvm.org, MVMUA.org
- **VMWorkshop.org (great conference for VM)**
- **GGWSC.ORG**

## Velocity Applications provided by Velocity Software

- **zVIEW (Performance data presentation “dashboard”s)**
- **zPORTAL (GUI interface to managing zVPS)**
- **zPRO (No smapi, no java, No linux server requirements, no complexities)**

## All Platforms provided, one technology

- z/VM (CP monitor)
- Networks (snmp)
- Linux (“z” and “x”) (snmp)
- z/VSE (VSEMON – no charge, snmp, DMF)
- z/OS (zOSMON: SMF record input)
- SSC (IBM Secure Software Container – collectd)
- Microsoft (snmp – no charge)
- VMWare/ ESX (snmp – no charge)

## Many Applications

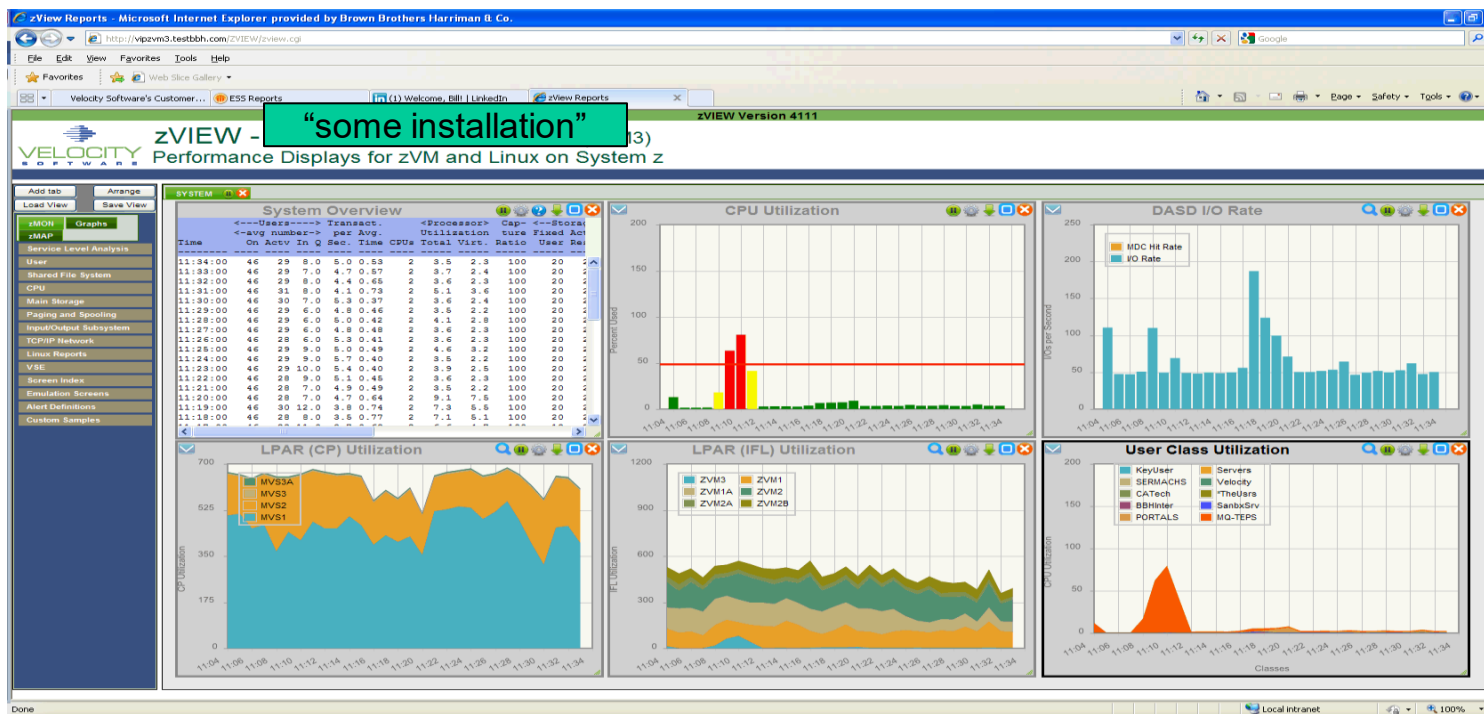
- Oracle (snmp)
- JVM (snmp)
- GPFS (snmp)
- Docker, Kubernetes (OpenShift, Rancher)
- MongoDB Enterprise

End users define their dashboard(s)

Many dashboards are provided (VSE, z/OS, Linux)

Not just for Systems Programmers. (Applications, operations)

Menu driven



## Single pane of glass

- Data from “Many” multiple LPARs(50) / geographies(3)

The screenshot displays the 'Enterprise Performance Summary' interface. At the top, there's a search bar and a navigation menu. Below, the data is organized into sections: DC1, DC2, and CDL. Each section contains a grid of LPARs with columns for LPAR ID, status, IFL Total, and percentage. Each LPAR entry includes an 'Expand' button. A red box highlights the text 'some installation' in the top right area of the interface.

DC1			
V1P1	Expand	V1P2	Expand
V1P1 08:48 IFL Total (48) @ 726.84%		V1P2 08:48 IFL Total (48) @ 1134.08%	
V1N1	Expand	V1N2	Expand
V1N1 08:48 IFL Total (18) @ 817.16%		V1N2 08:48 IFL Total (24) @ 837.95%	
P107	Expand	P108	Expand
P107 08:48 IFL Total (40) @ 1016.48%		P108 08:48 IFL Total (20) @ 594.37%	
P113	Expand	P114	Expand
P113 08:48 IFL Total (24) @ 558.13%		P114 08:48 IFL Total (24) @ 576.48%	
DC2			
V2P1	Expand	V2P2	Expand
V2P1 08:48 IFL Total (48) @ 796.48%		V2P2 08:48 IFL Total (48) @ 846.38%	
V2P5	Expand	V2P6	Expand
V2P5 08:48 IFL Total (40) @ 897.73%		V2P6 08:48 IFL Total (40) @ 454.40%	
P209	Expand	P210	Expand
P209 08:48 IFL Total (56) @ 1572.48%		P210 08:48 IFL Total (64) @ 1739.40%	
P213	Expand	P214	Expand
P213 08:47 IFL Total (40) @ 1173.87%		P214 08:48 IFL Total (56) @ 1265.42%	
P217	Expand	P218	Expand
P217 08:48 IFL Total (40) @ 975.88%		P218 08:48 IFL Total (40) @ 768.21%	
C203	Expand	C204	Expand
C203 08:48 IFL Total (32) @ 862.11%		C204 08:48 IFL Total (32) @ 585.28%	
C207	Expand	C208	Expand
C207 08:48 IFL Total (24) @ 649.58%		C208 08:48 IFL Total (24) @ 793.87%	
V2N3	Expand	V2C1	Expand
V2N3 08:48 IFL Total (20) @ 490.91%		V2C1 08:48 IFL Total (24) @ 974.38%	
V2C2	Expand		
V2C2 08:48 IFL Total (24) @ 423.22%			
CDL			
VLB1	Expand	VLB2	Expand
VLB1 08:48 IFL Total (52) @ 2840.84%		VLB2 08:48 IFL Total (36) @ 2868.00%	
VLB5	Expand	VLB6	Expand
VLB5 08:48 IFL Total (48) @ 648.12%		VLB6 08:48 IFL Total (28) @ 2287.44%	
ZS02	Expand	VLBX	Expand
ZS02 08:48 IFL Total (16) @ 9.82%		VLBX 08:48 IFL Total (3) @ 99.90%	
VLB3	Expand	VLB4	Expand
VLB3 08:48 IFL Total (40) @ 2373.59%		VLB4 08:48 IFL Total (38) @ 2291.49%	
VLB8	Expand	ZS01	Expand
VLB8 08:48 IFL Total (24) @ 1623.21%		ZS01 08:48 IFL Total (16) @ 113.72%	
HIL1	Expand	HIL2	Expand
HIL1 08:48 IFL Total (64) @ 85.85%		HIL2 08:48 IFL Total (60) @ 392.92%	

## Tailorable, expandable, zoomable

Today is Monday 2 Dec 2013

zVIEW Version 4159

**VELOCITY SOFTWARE**  
zVIEW  
Enterprise View - Velocity Software - VSIVM4 (DEMO)

### First level

VSIVM1					VSIVM2					VSIVM3(old)				
VM1	13/12/02	18:29	CP Total (2)	6.63%	VM2	13/12/02	18:29	IFL Total (1)	0.91%	VM3	13/12/02	21:29	024B42-0	99.22%
Linux Nodes (Distributed Servers)					Linux Nodes (z/VM-Guests)					Linux Nodes (z/VM-Guests)				
LINUX9 (9)			3.93%		RH5X161			0.43%		000000-64			99.22%	
suselnx3 (9)			2.57%		RH5Z161			0.37%						
REDHAT (2)			2.30%											

### Demo System V4

Demo	13/12/02	18:29	IFL Total (1)	17.77%
Linux Nodes (z/VM-Guests)				
roblx1			2.83%	
redhat6			1.18%	
oracle			0.82%	
redhat56			0.47%	
redhat5x			0.43%	
lxsugar (2)			0.41%	
redhat64			0.31%	
sles8 (2)			0.31%	
sles10			0.29%	
redhat5			0.27%	
redhat3			0.25%	
redhat6x			0.24%	
suselnx2			0.22%	
sles11 (2)			0.22%	
sles11x			0.20%	
sles11x3			0.19%	
sles9x			0.18%	
scsil0s			0.17%	
sles10x4			0.17%	
sles9			0.16%	

**Demo System V4**

Demo	13/12/02	18:29	IFL Total (1)	17.77%
Linux Nodes (z/VM-Guests)				
roblx1			2.83%	
redhat6			1.18%	
oracle			0.82%	
redhat56			0.47%	
redhat5x			0.43%	
lxsugar (2)			0.41%	
redhat64			0.31%	
sles8 (2)			0.31%	
sles10			0.29%	
redhat5			0.27%	
redhat3			0.25%	
redhat6x			0.24%	
suselnx2			0.22%	
sles11 (2)			0.22%	
sles11x			0.20%	
sles11x3			0.19%	
sles9x			0.18%	
scsil0s			0.17%	
sles10x4			0.17%	
sles9			0.16%	
Linux Nodes (Distributed Servers)				
linux93 (2)			100.00%	
opensuse (2)			8.97%	
JIRA (2)			5.88%	
vpnbrz			5.50%	
vpnbrc			4.76%	
mail (9)			3.42%	
vpnz			2.35%	

Close

### Second level

#### Times Test System

TimL2	13/11/27	13:09	IFL Total (1)	0.10%
Linux Nodes (z/VM-Guests)				
			1.85%	
			1.50%	
			0.85%	
			0.57%	

## End users define their dashboard(s)

- Linux administrator dashboard provided, everything in one click
- Secure, no need for logon to Linux (no ssh, top)
- Fast and efficient, no restriction on numbers of viewers

Wednesday 7 Nov 2018 00:46 zVIEW Version 4310

**VELOCITY SOFTWARE** zVIEW - Velocity Software - VSIVM4 (DEMO)  
Performance Displays for zVM and Linux on System z

The screenshot displays the zVIEW interface with several panels:

- mylinux**: A list of Linux processes with columns for Node, Process Name, ID, and P. Processes include systemd, kthreadd, kworker, mm\_percpu\_wq, ksoftirqd, rcu\_sched, rcu\_bh, migration, cduhp, kdevtmpfs, netns, khungtaskd, oom\_reaper, writeback, kcompactd, ksm, crypto, kintegrityd, kblockd, md, cio, watchdogd, kworker, cmmthread, kauditd, kswapd, ecryptfs-kthrea, kthrotld, khvcd, kmcheck, ipv6\_addrconf, kworker, jbd2/dasda1-8, ext4-rsv-conver, vfio-ccw, qeth\_wq, kworker, systemd-journal, systemd-udev, systemd-timesyn, and cron.
- ESALNXP - VSI Linux Percent Usage by Process - DEMO**: A table showing CPU usage by process.
 

Time	Node	Name	ID	PPID	GRP	Tot	sys	user	syst	usrst	valu	prty	Size	RSS	Peak	Swap	Data	Stk	EXEC
00:46:00	lxdb2001	*Totals*	0	0	0	0.6	0.1	0.1	0.1	0.3	0	0	4549	322	4557	0	1391	4.8	3.8
00:46:00	lxdb2001	init	1	1	1	0.0	0.0	0.0	0.0	0.0	0	20	2.4	0.9	2.4	0	0.2	0.1	0.0
00:46:00	lxdb2001	snmpd	2200	1	2199	0.1	0.1	0.1	0.0	0.0	-10	10	29.7	13.4	37.1	0	17.3	0.1	0.0
00:46:00	lxdb2001	cron	2223	1	2223	0.1	0.0	0.0	0.0	0.0	0	20	2.6	0.9	2.7	0	0.2	0.1	0.0
00:46:00	lxdb2001	db2fmcdd	2245	1	2245	0.4	0.0	0.0	0.1	0.3	0	20	50.9	13.9	51.0	0	3.5	0.2	0.1
00:46:00	lxdb2001	db2sysc	2833	2831	2833	0.0	0.0	0.0	0.0	0.0	0	20	877	91.6	877	0	262	0.1	0.1
00:46:00	lxora12	*Totals*	0	0	0	1.2	0.3	0.9	0.0	0.0	0	0	3970	724	4197	115	1845	6.6	7.4
00:46:00	lxora12	amozxma0	1503	1	1503	0.0	0.0	0.0	0.0	0.0	0	20	250	10.1	314	0.9	66.3	0.1	0.4
- ESAHST2 - LINUX HOST Storage Analysis Report - DEMO**: A table showing storage utilization.
 

Time	Node/Group	Index	Size	Used	Full	Err	Units	R/W	Boot	Storage Description
00:46:00	ZPRO	0	196K	109K	55.7	0	1K			Totals
00:46:00	VPNS	0	5376	5376	100	0	1K			Totals
- ESAUCD2 - LINUX UCD Memory Analysis Report - DEMO**: A table showing memory usage.
 

Time	Node/Group	Real Storage (MB)	Used	SWAP Storage (MB)	Used	Total	Storage in Use (MB)
00:46:00	ZPRO	4500	3	1473	3192	0	2075
00:46:00	VPNS	4000	0	2012	2012	40	107
- ESAUCD4 - LINUX UCD System Statistics Report - DEMO**: A table showing system statistics.
 

Time	Node/Group	Processor Total	Pct Util	Idle	Swaps	Disk IO	Switch	Intrpt	Load
00:46:00	ZPRO	2.7	1.2	1.4	0	1188	0	0	56.7
00:46:00	VPNS	10.1	4.2	5.9	0	389	0	0	180.5
- ESAHST4 - LINUX HOST System Statistics Report - DEMO**: A table showing host system statistics.
- IFL Utilization**: A bar chart showing IFL utilization for VSIVM5, VSIVM2, VSIVM1, VSIVM4, and Overhead IFL. The y-axis ranges from 0 to 200, and the x-axis shows time intervals from 15:20 to 15:50.



## Very fast access

- Linux
- VSE
- z/OS

Cloud 1

<u>VSIVC1</u>	14:08	<u>IFL</u> Total (4) ⊕	4.21%
zOS Systems			
<u>V25A</u>		4.60%	<div style="width: 4.60%; height: 10px; background-color: #008000;"></div>
<u>V25A</u>		0.02%	<div style="width: 0.02%; height: 10px; background-color: #008000;"></div>
VSE Systems			
<u>zvse61c</u>		1.17%	<div style="width: 1.17%; height: 10px; background-color: #008000;"></div>
<u>zvse61b</u>		1.07%	<div style="width: 1.07%; height: 10px; background-color: #008000;"></div>
<u>zvse62c</u>		0.89%	<div style="width: 0.89%; height: 10px; background-color: #008000;"></div>
<u>zvse62b</u> (2)		0.70%	<div style="width: 0.70%; height: 10px; background-color: #008000;"></div>
Top 15 Linux Nodes(z/VM-Guests)			
⊕ <u>MONG505A</u> (1)		0.47%	<div style="width: 0.47%; height: 10px; background-color: #008000;"></div>
⊕ <u>VSIEXTRN</u> (1)		0.31%	<div style="width: 0.31%; height: 10px; background-color: #008000;"></div>
⊕ <u>RHKSNFS1</u> (1)		0.22%	<div style="width: 0.22%; height: 10px; background-color: #008000;"></div>
⊕ <u>JSVEXTRN</u> (1)		0.15%	<div style="width: 0.15%; height: 10px; background-color: #008000;"></div>
⊕ <u>JSVSVR13</u> (1)		0.08%	<div style="width: 0.08%; height: 10px; background-color: #008000;"></div>
⊕ <u>S15PSTG1</u> (1)		0.06%	<div style="width: 0.06%; height: 10px; background-color: #008000;"></div>
⊕ <u>SLFSRV10</u> (1)		0.05%	<div style="width: 0.05%; height: 10px; background-color: #008000;"></div>
⊕ <u>JSVSVR10</u> (1)		0.04%	<div style="width: 0.04%; height: 10px; background-color: #008000;"></div>
⊕ <u>JSVWRK01</u> (1)		0.04%	<div style="width: 0.04%; height: 10px; background-color: #008000;"></div>
⊕ <u>CBSVR010</u> (1)		0.03%	<div style="width: 0.03%; height: 10px; background-color: #008000;"></div>
⊕ <u>JSVSVR12</u> (2)		0.03%	<div style="width: 0.03%; height: 10px; background-color: #008000;"></div>
⊕ <u>RS327001</u> (1)		0.03%	<div style="width: 0.03%; height: 10px; background-color: #008000;"></div>
⊕ <u>DSYSVR01</u> (1)		0.02%	<div style="width: 0.02%; height: 10px; background-color: #008000;"></div>
⊕ <u>GOLDYM71</u> (1)		0.02%	<div style="width: 0.02%; height: 10px; background-color: #008000;"></div>
⊕ <u>JSVSVR20</u> (1)		0.02%	<div style="width: 0.02%; height: 10px; background-color: #008000;"></div>
Remaining 1 servers		0.02%	<div style="width: 0.02%; height: 10px; background-color: #008000;"></div>
Top 5 Users			
<u>ZALERT</u>		0.66%	<div style="width: 0.66%; height: 10px; background-color: #008000;"></div>
<u>ZVWS</u>		0.49%	<div style="width: 0.49%; height: 10px; background-color: #008000;"></div>

End users define their dashboard(s) – z/VSE at one click

- Secure, no need for logon
- Fast and efficient, system partitions, jobs pretty chart at one click

The screenshot displays the MYVSE dashboard interface with several data panels:

- ESAVSEC2 - VSE System Performance per CPU - VS...**

Time	Node	CPU	Disp /Sec	<CPU Utilization> Total	Mstr	Spin	All Bound	Pct NP	Second
14:15:00	zvse61b	0	489	1.3	0.7	0	94.9	51.7	6
- ESAVSES - VSE System Configuration - VSIVC1**

Time	Node	<---z/VM---> VirtID	<LogicalPart> Lvl Name	<-----CPU model-----> Nbr	<IBM/<model>/CPs/ serial	<--Partitions--> Max	<----CPU Counts----> Cur	Stat	Dyn	Tot	Actv	Quies	Inact
14:15:00	zvse61b	ZVSE61B	1 VSIVM5	5	IBM 8562-A02 02 (40F782)	80	20	12	8	1	1	0	0 (100)
- ESAVSEC - VSE System Performance - VSIVC1**

Time	Node	Pages/Sec In	Pages/Sec Out	<Rate/Sec> SVC	<Rate/Sec> DSP	<CPU Utilization> Total	Mstr	Spin	All Bound	Pct NP	Seconds	Samples
14:15:00	zvse61b	0	0	500	487	1.3	0.7	0	94.9	51.9	62.3	1
- ESAVSEP - VSE Partition Performance - VSIVC1**

Time	Node	Part Id	Job Name	Phase Name	<- CPU% -> CPU	<- CPU% -> Ovhd	<---- I/O ----> Disk	<---- I/O ----> VDisk	<---- I/O ----> Other	Rtrn Code	Cncl Code	<---- Start Date	T
14:15:00	zvse61b		Totals		1.0	0.3	0	0	0			03/09/22 09:00	
14:15:00	zvse61b	F1	POWSTART	IPWPOWER	0.0	0.0	0	0	0			03/09/22 09:00	
14:15:00	zvse61b	FB	SECSERV	BSTPSTS	0	0	0	0	0			03/09/22 09:00	
14:15:00	zvse61b	F3	VTAMSTRT	ISTINCVT	0.0	0.0	0	0	0			03/09/22 09:00	
14:15:00	zvse61b	T1	BSTTINET	BSTTINET	0.4	0.1	0	0	0			03/09/22 15:00	
14:15:00	zvse61b	T2	BSTTVNET	BSTTVNET	0.0	0.0	0	0	0			03/09/22 15:00	
14:15:00	zvse61b	T3	BSTTFTPD	BSTTFTPS	0	0	0	0	0			03/09/22 15:00	
14:15:00	zvse61b	Z1	DMFSTART	DFHDFSIP	0.1	0.1	0	0	0			03/09/22 15:00	
14:15:00	zvse61b	R1	STARTVCS	IESVCSRV	0.0	0.0	0	0	0			03/09/22 15:00	
14:15:00	zvse61b	R2	STARTMAS	IESMASNM	0.4	0.1	0	0	0			03/09/22 15:00	
14:15:00	zvse61b	F2	CICSICCF	DFHSIP	0.0	0.0	0	0	0			03/09/22 09:00	
14:15:00	zvse61b	O1	CICSJA60	DFHSIP	0.1	0.0	0	0	0			03/09/22 15:00	
14:15:00	zvse61b	O2	CICSJ860	DFHSIP	0.0	0.0	0	0	0			03/09/22 15:00	
- VSE CPU Utilization by Node**

A line chart showing CPU utilization for node zvse61b from 13:46 to 14:16. The y-axis represents CPU Utilization (0.0 to 3.0). The chart shows a significant spike in utilization around 13:56, reaching approximately 2.4.

Instant z/OS system, CPU, jobs, configuration. (Tailorable)

The screenshot displays the zOSMON interface with several key components:

- ZOSCEC - z/OS CEC Detail Analysis - DEMO:** A table showing processor utilization.
 

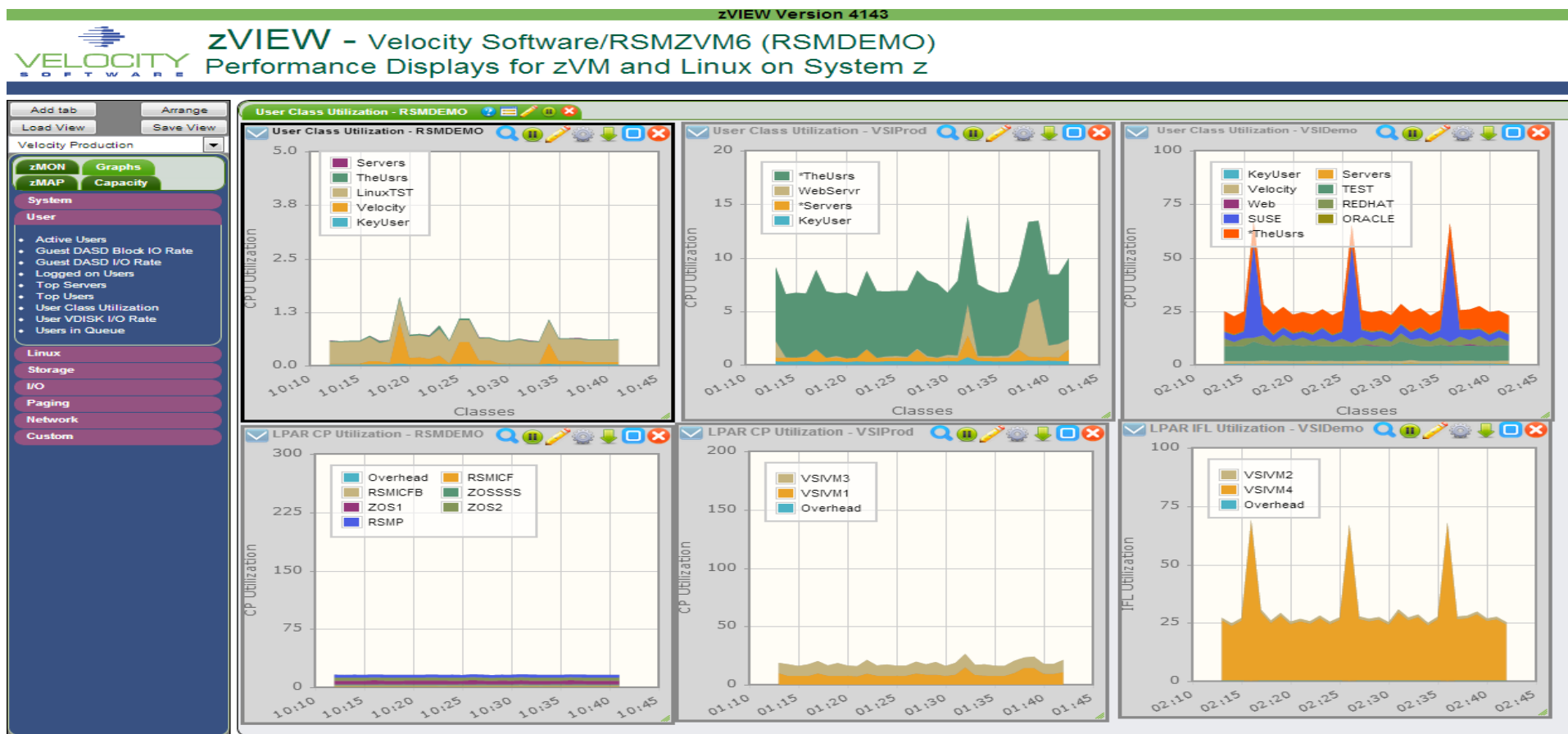
Time	Serial	Type	Cnt	DED	VCPU	Utilization	Central
						Total	Logical
						Stg(GB)	
08:58:00	0614C7	CP	2	0	5	199.7	199.5
08:58:00	0614C7	IFL	2	0	6	46.4	45.7
- ZOSCFG - z/OS LPAR Configuration - DEMO:** A table showing LPAR configuration details.
 

Time	SYSID	Name	Type	Model	Serial	Cnt	Mode	CPU	Capacity	Perms	Temp	GAU	Actual	Scale	Prod Time	Zone	CPU	MSO	I/O	SRB	Unit	
08:58:00	VSI1	VSI1PLEX	BC12	A02	0614C7	4	PR/SM	2	0	0	11	11	0	670254	64	RMF	-7	100	0	50	100	6842
08:58:00	VSI2	VSI1PLEX	BC12	A02	0514C7	0	VMguest	2	1	0	11	11	0	670254	64	RMF	-7	100	0	50	100	6842
- z/OS Workload CPU b...:** A stacked bar chart showing CPU utilization for VSI1 and VSI2. The legend includes TSO, SYSTEM, SYSSTC, and SYSOTHER. VSI1 shows a very high utilization, primarily from the SYSTEM component.
- z/OS CPU Utilization by SYSID - DEMO:** A bar chart showing CPU utilization for various SYSIDs over time. VSI1 is the primary focus.
- CPU Utilization by LPAR:** A bar chart showing CPU utilization for different LPARs: VSI1M1, VSI1M2, VSI1M3, VSI1M4, VSI1M5, and zOS. VSI1M5 shows the highest utilization.
- ZOSJCPU - z/OS Job/Step CPU/Resource Analysis - DEMO:** A detailed table showing CPU and resource usage for various jobs and steps.
 

Time	SYSID	Job Name	ID	Service Class	Total	Stnrd	SRB	Initiator	Reg	Service Units	zIIP	Percent	User									
					#1	#2		TCB	SRB	I/O	Ctl	USS	Total	CPU	SRB	I/O	MSO	Encl	Tot	Encl	Dep	Real
08:57:00	VSI1	Totals			34.1	20.5	13.0	0	0	0.6	0.0	0.0	8380.9	4805	3027	558.1	0	16.0	0	0	0	879
08:57:00	VSI1	CICSZA1	STC04376	SYSSTC	15.1	12.4	2.7	0	0	0	0	0	3544.2	2903	640.9	0	0	0	0	0	0	18.2
08:57:00	VSI1	TN3270	STC02464	SYSSTC	6.7	0.2	6.5	0	0	0	0	0	1559.1	39.3	1520	0	0	0	0	0	0	4.0
08:57:00	VSI1	TCPIP	STC09990	SYSSTC	3.2	0.6	2.6	0	0	0	0	0	738.5	132.4	606.1	0	0	0	0	0	0	5.1
08:57:00	VSI1	IZUSVR1	STC00010	SYSSTC	2.1	2.1	0.0	0	0	0	0	0.0	1036.9	500.4	3.0	533.5	0	16.0	0	0	0	240
08:57:00	VSI1	WLM	WLM	SYSTEM	0.8	0.6	0.2	0	0	0	0	0	195.3	149.4	45.9	0	0	0	0	0	0	0.0
08:57:00	VSI1	ZOSMONTK	JOB06705	SYSOTHER	0.6	0.6	0.0	0	0	0	0	0	135.3	133.9	1.5	0	0	0	0	0	0	1.0
08:57:00	VSI1	ZOSMNMV2	STC04445	SYSSTC	0.6	0.6	0.0	0	0	0	0	0	151.4	150.3	1.1	0	0	0	0	0	0	0.0
08:57:00	VSI1	VTAM	STC09992	SYSSTC	0.6	0.0	0.0	0	0	0.6	0	0	6.8	4.0	2.8	0	0	0	0	0	0	0.0
08:57:00	VSI1	ZFS	STC09985	SYSSTC	0.5	0.5	0.0	0	0	0	0	0	130.0	119.3	8.9	1.8	0	0	0	0	0	453
08:57:00	VSI1	JES2MON	JES2MON	SYSTEM	0.5	0.3	0.2	0	0	0	0	0	123.8	73.7	50.1	0	0	0	0	0	0	0.0
08:57:00	VSI1	JES2	JES2	SYSSTC	0.5	0.5	0.0	0	0	0	0	0	124.5	112.5	7.3	4.8	0	0	0	0	0	6.3
08:57:00	VSI1	DBPDEV	TSU07188	TSO	0.5	0.4	0.0	0	0	0	0	0.0	114.2	95.8	9.9	8.5	0	0	0	0	0	0.1
08:57:00	VSI1	TN3270C	STC02462	SYSSTC	0.3	0.2	0.1	0	0	0	0	0	62.3	38.5	23.8	0	0	0	0	0	0	1.1
08:57:00	VSI1	SDSFAUX	STC09999	SYSSTC	0.3	0.3	0.0	0	0	0	0	0	74.3	61.0	13.3	0	0	0	0	0	0	0.1
08:57:00	VSI1	RMF	STC09991	SYSSTC	0.3	0.3	0.0	0	0	0	0	0	71.4	60.9	10.5	0	0	0	0	0	0	0.0
08:57:00	VSI1	XCFAS	XCFAS	SYSTEM	0.2	0.2	0.0	0	0	0.0	0	0	57.3	44.7	6.2	6.5	0	0	0	0	0	3.0
08:57:00	VSI1	SMF	SMF	SYSTEM	0.2	0.2	0.0	0	0	0	0	0	41.3	35.9	5.3	0	0	0	0	0	0	0.0
08:57:00	VSI1	ZOSMNMV4	STC06255	SYSSTC	0.1	0.1	0.0	0	0	0	0	0	23.7	23.3	0.4	0	0	0	0	0	0	0.0
08:57:00	VSI1	SMS	SMS	SYSSTC	0.1	0.1	0.0	0	0	0	0	0	24.0	19.5	1.5	3.0	0	0	0	0	0	1.0
08:57:00	VSI1	SDSF	STC09989	SYSSTC	0.1	0.0	0.0	0	0	0	0	0	15.5	10.6	4.9	0	0	0	0	0	0	0.3
08:57:00	VSI1	OMVS	OMVS	SYSTEM	0.1	0.1	0.0	0	0	0	0	0	27.9	27.2	0.7	0	0	0	0	0	0	30.4
08:57:00	VSI1	MSTJCL00	MSTR	SYSTEM	0.1	0.1	0.0	0	0	0	0	0	33.6	22.5	11.1	0	0	0	0	0	0	0.0

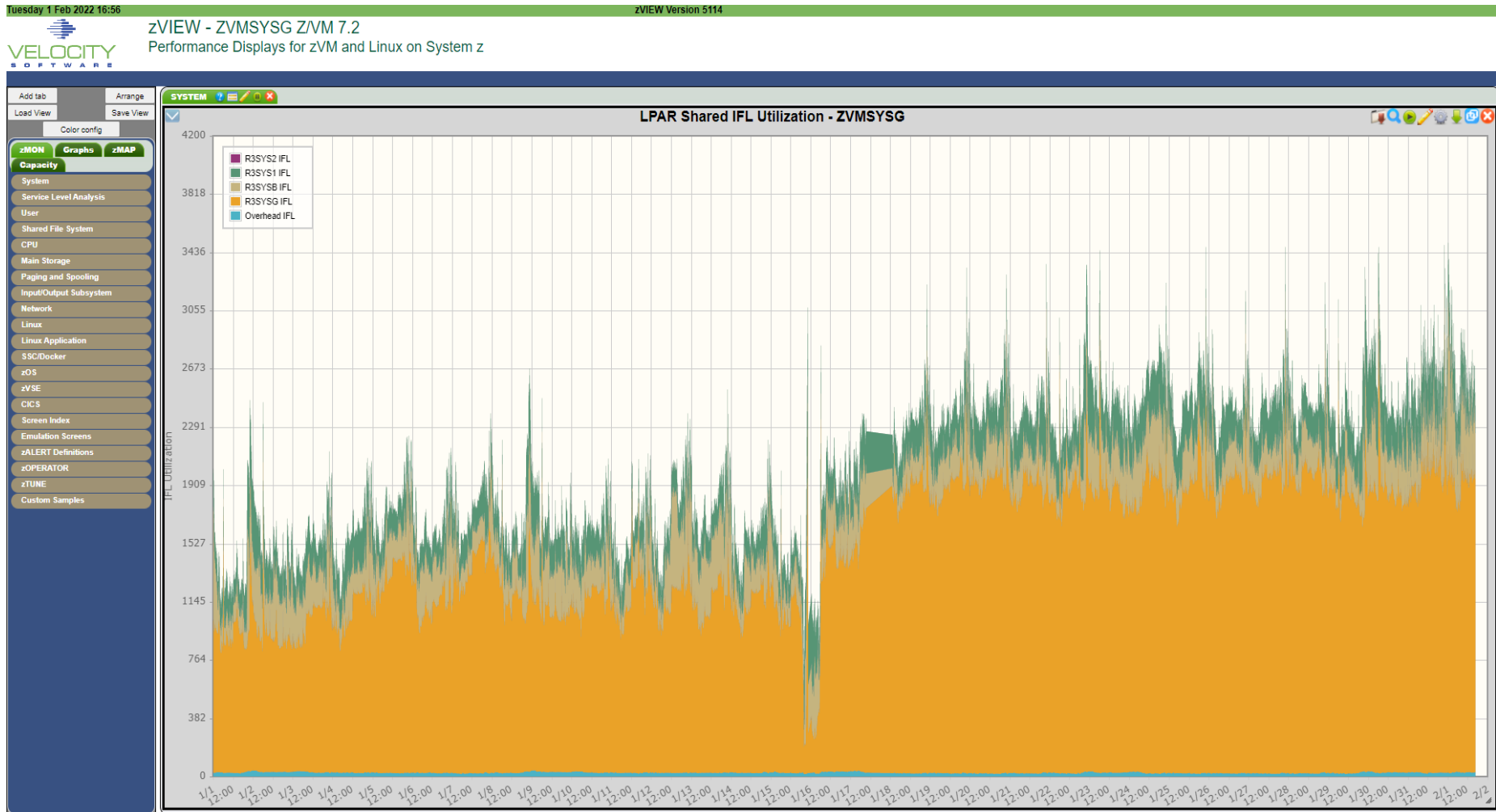
## Single pane of glass

- Data from multiple LPARs / geographies
- Menu driven end user designed view



## Dynamic Charts

Data extracted from database dynamically to create graph, example last month



## 3270 Style Alerts (50+ sample alerts provided)

```

Screen: LINALERT Velocity Software 25 Mar 2015 06:42:29
----- Exceptions Analysis Alerts -----

Type Description
LNDX / area on oracle is 79.51% full
LNDX /opt area on oracle is 82.24% full
LNDX /home area on oracle is 59.02% full
LNDX / area on RH5X161 is 32.54% full
LNDX / area on S11R20RA is 81.56% full
LNDX /boot area on S11R20RA is 2
LNDX /opt area on S11R20RA is 95
LNDX /mnt/oracle area on S11R20R
LNSU Swap utilization for Linux
LNSU Swap utilization for Linux
    
```

Today is Wednesday 25 Mar 2015 zVIEW Version 4174

zVIEW - Velocity Software - VSIVM4 (DEMO)  
Performance Displays for zVM and Linux on System z

LINALERT - Exceptions Analysis Alerts - 15/03/25 at 06:47 - DEMO

Code	Alert Description
LNDX	CPU utilization on Linux node BlakeMC is 13.86%
LNDX	/ area on lxsugar is 90.74% full
LNDX	/usr area on lxsugar is 57.59% full
LNDX	/ area on opensuse is 39.71% full
LNDX	/home area on opensuse is 53.23% full
LNDX	/iso/sles11s area on opensuse is 100.00% full
LNDX	/iso/s11sp2- area on opensuse is 100.00% full
LNDX	/iso/s11sp2- area on opensuse is 100.00% full
LNDX	/iso/s11sp3- area on opensuse is 100.00% full
LNDX	/iso/s11sdk- area on opensuse is 100.00% full
LNDX	/iso/s10sp2 area on opensuse is 100.00% full
LNDX	/iso/r64 area on opensuse is 100.00% full
LNDX	/iso/r62 area on opensuse is 100.00% full
LNDX	/iso/s10v1 area on opensuse is 100.00% full
LNDX	/iso/r7 area on opensuse is 100.00% full
LNDX	/iso/sles11s area on opensuse is 100.00% full
LNDX	/iso/s12-1 area on opensuse is 100.00% full
LNDX	/iso/s12-2 area on opensuse is 100.00% full
LNDX	/iso/s12sdk1 area on opensuse is 100.00% full
LNDX	/iso/s12sdk2 area on opensuse is 100.00% full
LNDX	/ area on oracle is 79.51% full
LNDX	/opt area on oracle is 82.24% full
LNDX	/home area on oracle is 59.02% full
LNDX	/ area on redhats is 52.26% full
LNDX	/ area on redhatsx is 32.54% full
LNDX	/ area on redhats6 is 95.80% full
LNDX	/mnt area on redhats6 is 53.23% full
LNDX	/ area on redhate is 30.60% full
LNDX	/ area on redhatsx is 94.92% full
LNDX	/dev/sim area on redhatsx is 51.42% full
LNDX	/ area on redhate4 is 36.09% full
LNDX	/boot area on rhel7v is 23.79% full
LNDX	/ area on roblnx2 is 78.74% full

Or Browser based  
Click Thru  
or SMS, email...

## Single pane of glass – all LPARs console

The screenshot displays a single-pane-of-glass interface for managing multiple LPARs. The interface is organized into a grid of terminal windows, each representing a different LPAR. Each window shows a stream of system logs and operator actions, including:

- Logon/Logout:** Multiple instances of 'OPERATOR AUTO LOGON \*\*\*' and 'OPERATOR AUTO LOGOFF \*\*\*'.
- System Messages:** Messages from RACFVM, ZWSSL, ZWVFN, and RSCS.
- Operator Actions:** 'EXEC HACKER', 'EXEC ZADWATCH', and 'ZADWatch: IP 193.142.146.214 has t'.
- Event Management:** 'DMTEVE888I Event Manager executing' and 'HCPMXE6224I Event recording is pen'.
- Directory Maintenance:** 'DIRMAINT DVHRLY3887I Hourly processing comp' and 'DIRMAINT DVHRLY3887I files processed, 1 log'.
- Resource Utilization:** 'ZALERT LRPC LPAR VSIIVM4 CPU Utilization i'.

The interface includes a 'Menu' bar at the top left and a toolbar with various icons for each terminal window. The overall layout is clean and efficient, allowing for simultaneous monitoring and management of multiple LPARs.

## Openshift data source

- Closed system, performance management not included
- Prometheus support very expensive
- Velocity Software provides containerized snmp

## Snmpd container from Velocity Software

- Very light weight (target overhead .1% one IFL per node)
- One per node
- Standard snmp data collection with zVPS
- Standard performance management provided
- Supports Openshift, Rancher, Docker platforms
- Supports zCX!



## By CPU Consumption by pod, by container

Report: ESAK8S2      Kubernetes Resource Utilization Report

NODE/ Time/ Date	PodName ContainerName	<---Container--> <---Process ID--> ProcID ProcName	<--Container CPU-----> <-----CPU Percents-----> Tot sys user syst usrt					
rhoscpl								
	console-operator-59d							
	console-operator	17395 console	0.62	0.12	0.50	0	0	
	openshift-controller							
	openshift-controller	29430 cluster-	0.38	0.08	0.30	0	0	
	kube-controller-mana							
	kube-controller-mana	12030 cluster-	1.15	0.15	1.00	0	0	
	insights-operator-7f							
	insights-operator	14827 insights	0.30	0.05	0.25	0	0	
	node-exporter-chc49							
	node-exporter	3207 node_exp	0.38	0.13	0.25	0	0	
	kube-apiserver-rhosc							
	kube-apiserver	3378 watch-te	11.1	1.04	10.1	0	0	
	kube-apiserver-cert-	5683 cluster-	0.18	0.08	0.10	0	0	
	kube-apiserver-check	6166 cluster-	0.47	0.08	0.38	0	0	
	<b>prometheus-k8s-1</b>							
	<b>prometheus</b>	<b>1817314 promethe</b>	<b>42.1</b>	<b>0.95</b>	<b>41.1</b>	<b>0</b>	<b>0</b>	
	thanos-sidecar	1817435 thanos	0.15	0.02	0.13	0	0	
	prometheus-proxy	1817486 oauth-pr	0.57	0.03	0.53	0	0	
	prometheus-operator-							
	prometheus-operator-	11347 promethe	0.17	0.02	0.15	0	0	
	vsi-snmpd-vk5vd							
	<b>vsi-snmpd</b>	<b>1762314 snmpd</b>	<b>0.53</b>	<b>0.20</b>	<b>0.33</b>	<b>0</b>	<b>0</b>	

## All CPU numbers provided by IBM with SMT broken

- Zip / zcx has same issue
- See Velocity Software's "capture ratio" presentation
- **VSI Prorated** based on HMC and MFC data

Report: ESAUSP5                      User SMT CPU Consumption Analysis  
 Monitor initialized: 03/08/23 at 07:00:01 on 8562 serial 040F78

```

-----
                <-----CPU Percent Consumed      (Total)----->  <-TOTAL CPU-->
UserID   <Traditional> <MT-Equivalent> <IBM Prorate> <VSI Prorated>
/Class   Total   Virt   Total   Virtual   Total   Virtual   Total   Virtual
-----
07:02:00 414.9   408.0   322.7     317.3   239.7   235.8   208.2   204.7
***User Class Analysis***
OpenShif 355.0   350.3   276.0     272.3   204.9   202.2   178.1   175.7
***Top User Analysis***
RHOSCP1  142.4   140.8   110.1     108.9   82.93   82.01   71.43   70.65
RHOSCP3  125.2   123.8   97.38     96.34   72.35   71.60   62.80   62.14
RHOSCP2  86.79   85.04   68.00     66.64   49.31   48.30   43.55   42.67
  
```

Time for a demo

“demo.VelocitySoftware.com/zview”

- Linux, vse, z/os
- z/VM
- Network
- Openshift (Kubernetes)
- Docker

## Very Simple architecture

- **Simple to install** (hours to install and tailor, requires zVPS)
- Uses Velocity Software's **Native z/VM Web Server (zVWS)**!
- No “smapi”, **No “linux server” requirements**, No java
- **Non-intrusive**, no system modifications
- Outside services not required
- (as compared to xcat, cma, WAVE....)

## Original Intent: Private Cloud infrastructure

- Users create and manage their servers without systems support
- Protected environment
- Linux administrators can manage their “Virtual Machine”

## Event Scheduler

- Schedule and manage events across your systems

## zDIRECT: Directory and Storage Pool management

- Add/Delete DASD volumes in your storage pools

## zSPOOL: Spool management

- Manage all spool files
- View **via browser** open or closed spool files
- Allow Linux administrators to view their Linux consoles easily

## Backup & Restore

- Backup and restore key/critical files
  - (system config, directory, TCPMAINT)
- Back up files on selected minidisks, sfs file pools

## Shared File System (SFS) Management

- Manage pool servers, users/admins, space management,
- build a new pool

## Benefits:

- Difficult time consuming tasks - simplified
- End users empowered –
- Reduced need for skilled systems programmers

## zPRO'd other complex tasks

- Lun/Edev management – connects directly to DS8K / EMC
- LPAR management – connects directly to HMC
- Linux management – API allowing Linux commands
- Directory management – DIRMAINT, VMSecure, zDIRECT
- RACF wizard
- Restful APIs available to other users

## BCP on z/OS to manage HMC? Or zPRO...

The screenshot displays the zPRO software interface with three main windows:

- CPC HMC Configurations zDIRECT:** A table showing HMC configurations.
 

Set	HMC Identifier	HMC IP1	Port	TCP Host	Userid	Debug
<input type="radio"/>	Not_Datacenter	192.168.5.225	6794	TCP/IP	jamesx	On
<input type="radio"/>	VSI_Datacenter	192.168.5.125	6794	TCP/IP	james	On
- CPC HMC VSI\_Datacenter - CONNECT:** A table showing HMC connection details.
 

Set	CPC Name	Status	OK	DPM	Overall CPU	Power_Watts	Ambient_Temp	Exhaust_Temp	Humidity	Dew_Point	Heat_BTU/hr	Time_Stamp	HMCTime	Context
<input type="radio"/>	P0040F78	operating	Yes	No	37%	1231	58.4C (65.1F)	24.6C (76.2F)	32%	9.3C (48.7F)	4203	2023-11-14 14:03:42	8928842992750075	1
												2023-11-14 19:03:31		
- CPC HMC VSI\_Datacenter - P0040F78 LPARS:** A table showing LPAR configurations.
 

Set	LPAR	Status	OK	OS Name	OS Level	OS Type	Usage	CPs	CP Wt Init/Cur	IELs	IEL Wt Init/Cur	ZIPs	ZIP Wt Init/Cur
<input type="radio"/>	VSIVM6	not-activated	Yes										
<input type="radio"/>	VSIVC1	operating	Yes	VSIVC1	7.2.0 - 2302	z/VM	shared	0		4	20 / 20	0	
<input type="radio"/>	VSIVC2	operating	Yes	VSIVC2	7.2.0 - 2302	z/VM	shared	0		2	100 / 100	0	
<input type="radio"/>	VSIVC3	operating	Yes	VSIVC3	7.2.0 - 2302	z/VM	shared	0		2	50 / 50	0	
<input type="radio"/>	VSIVM1	operating	Yes	VSIVM1	7.2.0 - 2302	z/VM	shared	0		2	25 / 25	0	
<input type="radio"/>	VSIVM2	operating	Yes	VSIVM2	7.3.0 - 2301	z/VM	shared	0		2	20 / 20	0	
<input type="radio"/>	VSIVM3	operating	Yes	VSIVM3	7.3.0 - 2301	z/VM	shared	0		2	100 / 100	0	
<input type="radio"/>	VSIVM4	operating	Yes	VSIVM4	7.3.0 - 2301	z/VM	shared	0		4	200 / 200	0	
<input type="radio"/>	VSIVC4	operating	Yes	VSIVC4	7.2.0 - 2302	z/VM	shared	1	50 / 50	2	75 / 75	2	75 / 75
<input type="radio"/>	VSIVM5	operating	Yes	VSIVM5	7.3.0 - 2301	z/VM	shared	2	75 / 75	2	150 / 150	2	75 / 75
<input type="radio"/>	ZOSLP1	operating	Yes	V25A	V2R5	z/OS	shared	2	50 / 50	0		2	100 / 100
<input type="radio"/>	ZOSLP2	operating	Yes	V24A	V2R4	z/OS	shared	2	50 / 50	0		2	50 / 50
- LPAR VSIVM5 Weight Configuration - zDIRECT:** A dialog box for updating weights for LPAR VSIVM5.
 

Update the Weights for this LPAR VSIVM5 on P0040F78 on HMC VSI\_Datacenter

CP Initial Weight  
Current Weight is 75 with 2 processors  
75

IFL Initial Weight  
Current Weight is 150 with 2 processors  
150

ZIP Initial Weight  
Current Weight is 75 with 2 processors  
75

Change Weight Settings

## “Linux on Velocity”

### **Z15 T02 ESP – Metal to Cloud in 2 days** <http://velocitysoftware.com/MetaltoCloud>

- Two “working” days after IBM code 20, PaaS cloud was ready:
- Four member SSI z/VM cluster operational
- RACF, TCPIP operational (Only IBM tools installed)
- zVPS Installed and operational
- zPRO Installed and operational, zDirect installed
- Installed Linux gold images
- Cloned Linux 155 times in 20 minutes
- Cloned 50 2G servers in 3 minutes
- (Compression on z15 very cool, implemented it in several places)



## Time for a demo

“[demo.VelocitySoftware.com/zPRO](http://demo.VelocitySoftware.com/zPRO)”

- Linux server administration
- Demo limited to “cloud” functionality
- Create servers, modify servers, delete servers
- Limited in scope to protect other servers
- Automatic life cycle management

## Empower your users

## Velocity Software demonstration site

- “<http://demo.VelocitySoftware.com>”
- zVIEW, enterprise, zPRO, zPORTAL

To register: <https://demo.velocitysoftware.com/zpro/>

Userid: **demozpro**

Password: **demodemo**

Check email for  
your login info

### Welcome to the Velocity Software zPRO Demo Site

Velocity Software maintains a cloud for demonstration purposes and for supporting your education needs.

If you do not yet have a Demo System userid, login with the userid of DEMOZPRO and password DEMODEMO to create one.

If you need assistance, contact [support@velocitysoftware.com](mailto:support@velocitysoftware.com)



#### Register for VSI Cloud

You are requesting a **limited access** id for working with Velocity Software's zPRO cloud product.

First name

Last name

User's Email address

The Velocity Software Resource Manager based on zVPS

Server modification “happens”

More CPU, RAM needed and must be added

Application resource requirements grow

Why Excessively large servers?

That’s the way they do it on Intel / VMWare

Avoid future outage, hardware changes

zVRM, Velocity Resource Manager automates management

CMM to reduce over sized storage when not needed

CMM to return storage as workload increases

Vary vcpu on/offline to meet demand

Allows definitions of oversized servers to operate efficiently

Requires zPRO APIs, zVPS for data input

## zVPS:

- Continuous enhancements for 30+ years
- Management More than z/VM

## zPRO

- Private Cloud environment
- z/VM Systems Management
- Improved productivity for all parties
- Reduces impact of lack of skills

## Velocity Software

- Worldwide customer base
- Known for Performance management,
- Modernizing the platform

Trials at no charge

Support is world wide,

Currently doing business in all geographies:

- Europe, UK
- Middle east, Africa
- Asia, Australia
- South America,
- North America

Any questions?

- Follow up sessions?
- Openshift / zCX, zPRO, zOSMON, SSC, zVRM