

Introduction to Velocity Software Performance Management

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“If you can’t Measure it,
I am Just Not Interested™”

Performance Management is a process with four key components:

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

zVPS Users:

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

Our Product Design Objectives:

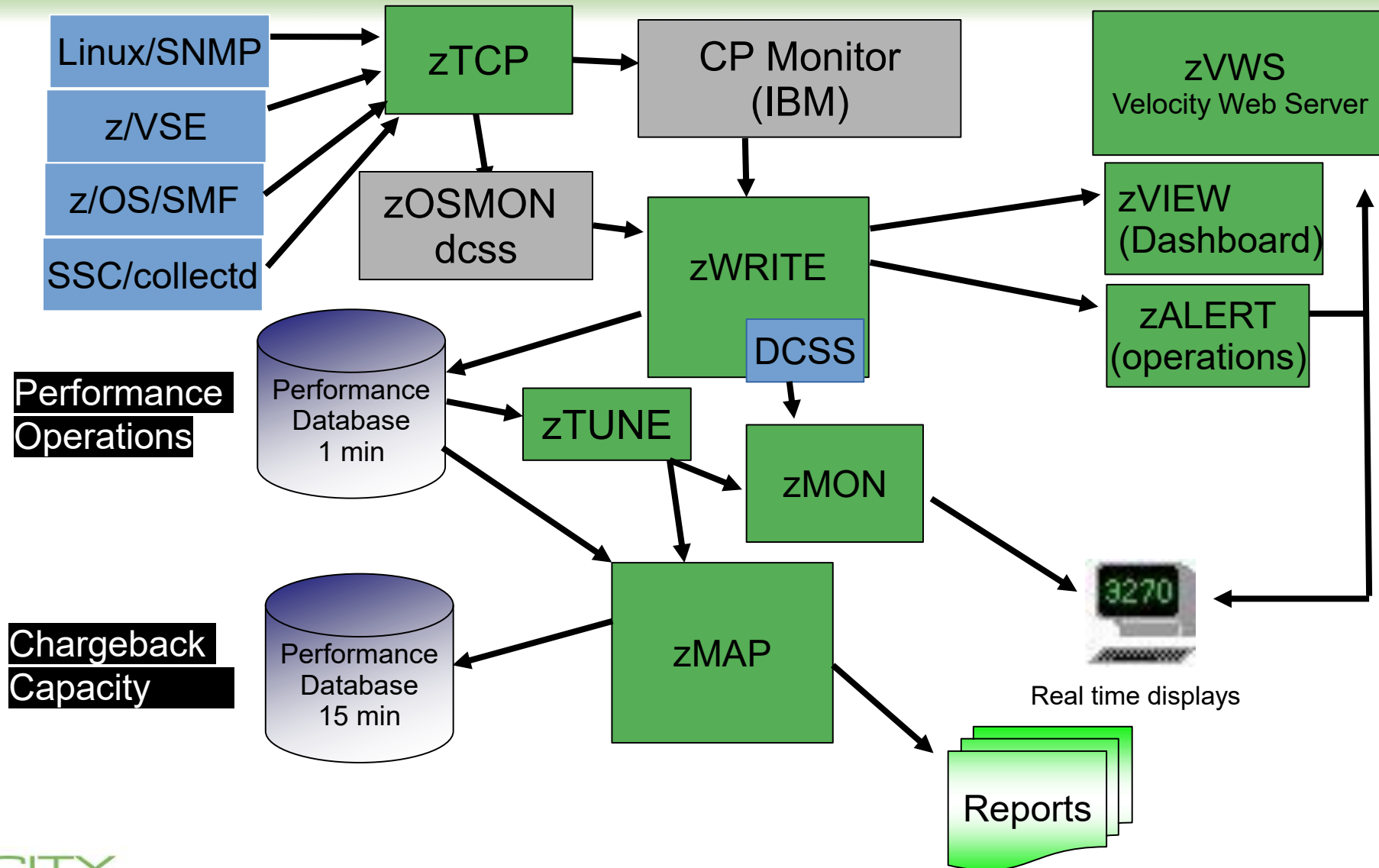
- Data Accuracy, product longevity, scalability, extensible
- Minimize complexity - Keep it Simple (and elegant)
- Flexible (easily add / change function)
- INTUITIVE (navigation, report understanding)
- Ease of use, easy to support (Start with good architecture)
- Modernization (browser based, cross enterprise)
- Low resource consumption for zVPS (1% of one engine)
- Low resource consumption for data collection
- Provide data to dashboards (Grafana, splunk, etc)

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



Performance Operations

Chargeback Capacity

Why zTUNE? (KI Based, Knowledge based, AI: Actual Intelligence)

- 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
- VERY SIMPLE AND ELEGANT ARCHITECTURE
- 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 z/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)

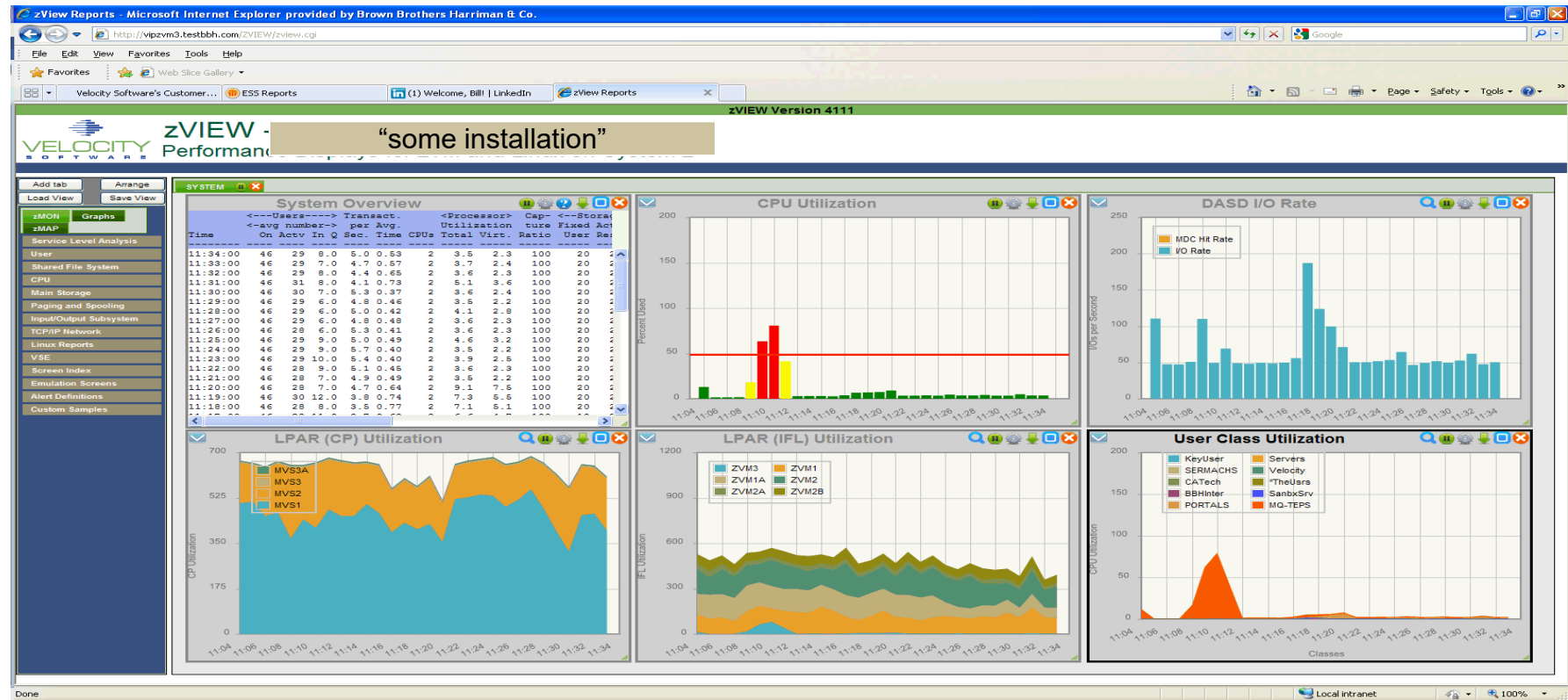
All platforms provided, one technology, one navigation architecture

- 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 to meet newer requirements

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

ADP Associate Portal | VLB6 - Enterprise View | vib6.mf.adp.com:1024/ZVIEW/

Today is Tuesday 23 Apr 2019

Enterprise Performance Summary - Automate “some installation”

Finder | Search JASS Inventory

DC1			
V1P1	08:48	IFL Total (48) @ 736.41%	Expand
V1P2	08:48	IFL Total (48) @ 1144.00%	Expand
V1P3	08:48	IFL Total (48) @ 878.00%	Expand
V1P4	08:48	IFL Total (48) @ 1083.58%	Expand
V1N1	08:48	IFL Total (18) @ 912.66%	Expand
V1N2	08:48	IFL Total (24) @ 831.05%	Expand
P105	08:48	IFL Total (40) @ 873.80%	Expand
P106	08:48	IFL Total (40) @ 871.02%	Expand
P107	08:48	IFL Total (40) @ 1016.40%	Expand
P108	08:48	IFL Total (20) @ 894.27%	Expand
P109	08:48	IFL Total (24) @ 863.91%	Expand
P110	08:48	IFL Total (12) @ 872.55%	Expand
P113	08:48	IFL Total (24) @ 858.13%	Expand
P114	08:48	IFL Total (24) @ 876.48%	Expand
DC2			
V2P1	08:48	IFL Total (48) @ 736.37%	Expand
V2P2	08:48	IFL Total (48) @ 846.35%	Expand
V2P3	08:48	IFL Total (48) @ 813.07%	Expand
V2P4	08:48	IFL Total (48) @ 899.11%	Expand
V2P5	08:48	IFL Total (40) @ 892.33%	Expand
V2P6	08:48	IFL Total (40) @ 854.40%	Expand
P207	08:48	IFL Total (56) @ 822.13%	Expand
P208	08:48	IFL Total (64) @ 1065.63%	Expand
P209	08:48	IFL Total (56) @ 1875.48%	Expand
P210	08:48	IFL Total (64) @ 1325.40%	Expand
P211	08:48	IFL Total (44) @ 822.53%	Expand
P212	08:48	IFL Total (44) @ 895.54%	Expand
P213	08:47	IFL Total (40) @ 1173.87%	Expand
P214	08:48	IFL Total (56) @ 1365.42%	Expand
P215	08:48	IFL Total (56) @ 1460.97%	Expand
P216	08:48	IFL Total (40) @ 1382.33%	Expand
P217	08:48	IFL Total (40) @ 874.89%	Expand
P218	08:48	IFL Total (40) @ 108.81%	Expand
P219	08:48	IFL Total (48) @ 856.11%	Expand
P220	08:47	IFL Total (44) @ 899.74%	Expand
C203			
C203	08:48	IFL Total (32) @ 462.11%	Expand
C204	08:48	IFL Total (32) @ 885.38%	Expand
C205	08:48	IFL Total (20) @ 85.26%	Expand
C206	08:47	IFL Total (20) @ 885.34%	Expand
C207			
C207	08:48	IFL Total (24) @ 848.58%	Expand
C208	08:48	IFL Total (24) @ 792.81%	Expand
V2N1			
V2N1	08:48	IFL Total (20) @ 895.03%	Expand
V2N2	08:48	IFL Total (20) @ 1034.47%	Expand
V2N3			
V2N3	08:48	IFL Total (20) @ 498.21%	Expand
V2C1			
V2C1	08:48	IFL Total (24) @ 874.38%	Expand
V2C2			
V2C2	08:48	IFL Total (24) @ 823.27%	Expand
CDL			
VLB1	08:48	IFL Total (52) @ 2848.84%	Expand
VLB2	08:48	IFL Total (36) @ 2868.80%	Expand
VLB3	08:48	IFL Total (40) @ 8273.80%	Expand
VLB4	08:48	IFL Total (38) @ 8291.45%	Expand
VLB5	08:48	IFL Total (48) @ 646.12%	Expand
VLB6	08:48	IFL Total (28) @ 2287.44%	Expand
VLB8	08:48	IFL Total (24) @ 8823.21%	Expand
ZS01	08:48	IFL Total (16) @ 813.72%	Expand
ZS02	08:48	IFL Total (16) @ 9.82%	Expand
VLBX	08:48	IFL Total (3) @ 89.90%	Expand
HIL1	08:48	IFL Total (64) @ 85.85%	Expand
HIL2	08:48	IFL Total (60) @ 892.92%	Expand

Tailorable, expandable, zoomable:

Today is Monday 2 Dec 2013 zVIEW Version 4159

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

First level

VM1	13/12/02	18:29	CP Total (2)	6.63%
Linux Nodes (Distributed Servers)				
LINUX9 (9)			3.93%	
suselnx3 (9)			2.57%	
REDHAT (2)			2.30%	

VM2	13/12/02	18:29	IFL Total (1)	0.91%
Linux Nodes (z/VM-Guests)				
RH5X161			0.43%	
RH5Z161			0.37%	

VM3	13/12/02	21:29	024B42-0	99.22%
Linux Nodes (z/VM-Guests)				
000000-64			99.22%	
Linux Nodes (Distributed Servers)				
LES11T			2.29%	
Linux Nodes (Distributed Servers)				
PENSUSE			7.68%	

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%	
vpuz			2.35%	

Second level

Tims Test System

Tml2	13/11/27	13:09	IFL Total (1)	0.10%
Linux Nodes (z/VM-Guests)				
			1.85%	
			1.50%	
			0.85%	
redhat56			0.57%	

End users define their dashboard(s)

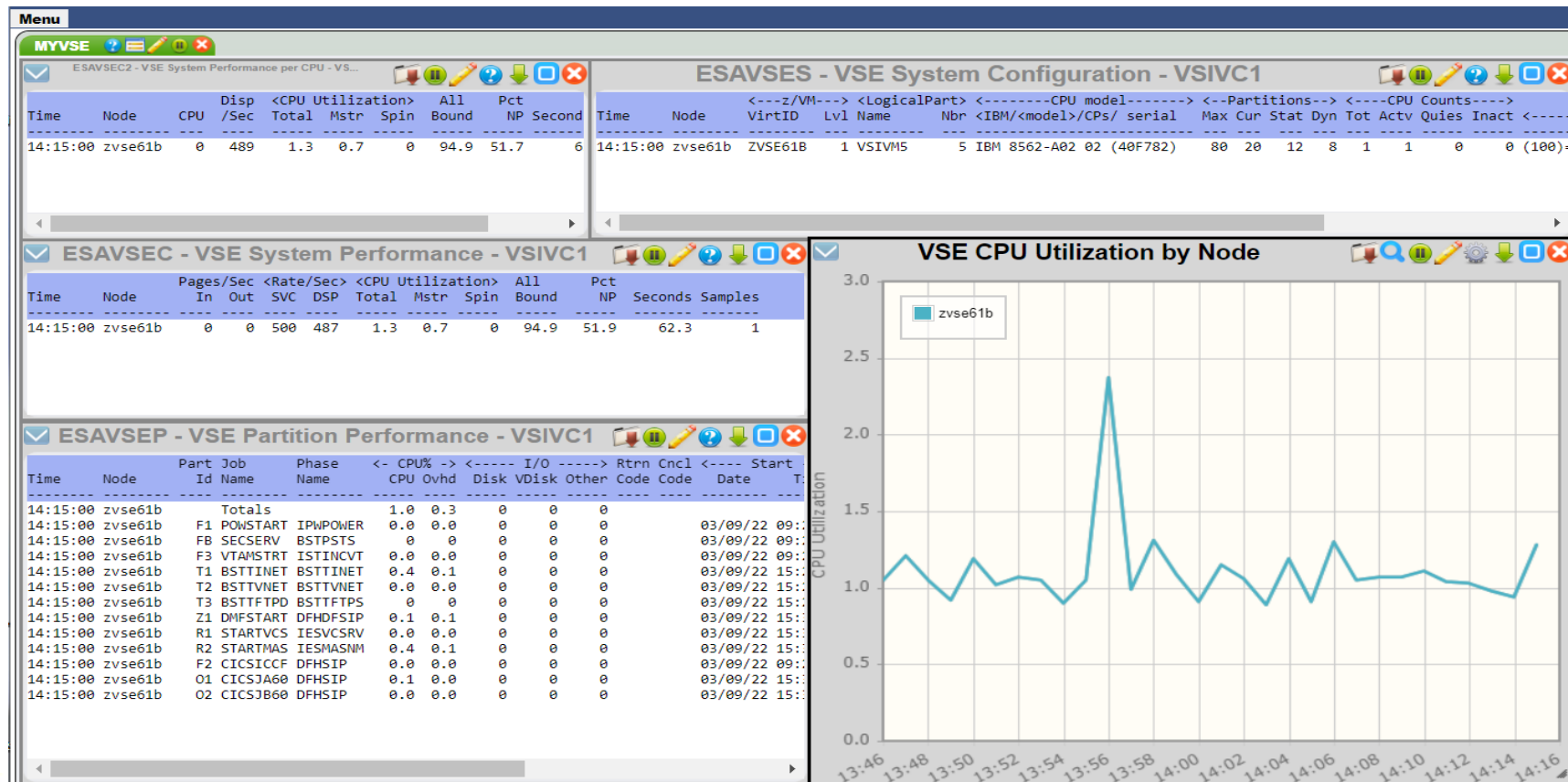
- Linux administrator dashboard provided, everything in one click
- Secure, no need for logon to Linux (no ssh, top)
- Fast and efficient, no restriction on numbers of viewers

The screenshot displays the zVIEW software interface, titled "zVIEW - Velocity Software - VSIVM4 (DEMO) Performance Displays for zVM and Linux on System z". The interface is divided into several panels:

- mylinux**: A list of processes running on the system, including systemd, kthreadd, kworker, cron, and various system services.
- ESALNXP - VSI Linux Percent Usage by Process - DEMO**: A table showing CPU usage percentages for various processes. The table includes columns for Time, Node, Name, ID, PPID, GRP, Tot sys, CPU, User, and System usage.
- ESAHST2 - LINUX HOST Storage Analysis Report - DEMO**: A table showing storage utilization metrics for different groups, including Size, Used, Full, and Error counts.
- ESAUCD2 - LINUX UCD Memory Analysis Report - DEMO**: A table showing memory usage statistics, including Real Storage, Swap, and Total Available memory.
- ESAUCD4 - LINUX UCD System Statistics Report - DEMO**: A table showing system statistics such as Processor Pct Util, Idle, and Swap rates.
- ESAHST4 - LINUX HOST System Statistics Report - DEMO**: A table showing system statistics like Num Processes, Stgs, Local, System, and System Initials.
- LPAR - IFL Utilization**: A line graph showing IFL Utilization over time for different VSIVM instances (VSIVM5 IFL, VSIVM2 IFL, VSIVM1 IFL, VSIVM4 IFL) and Overhead IFL.

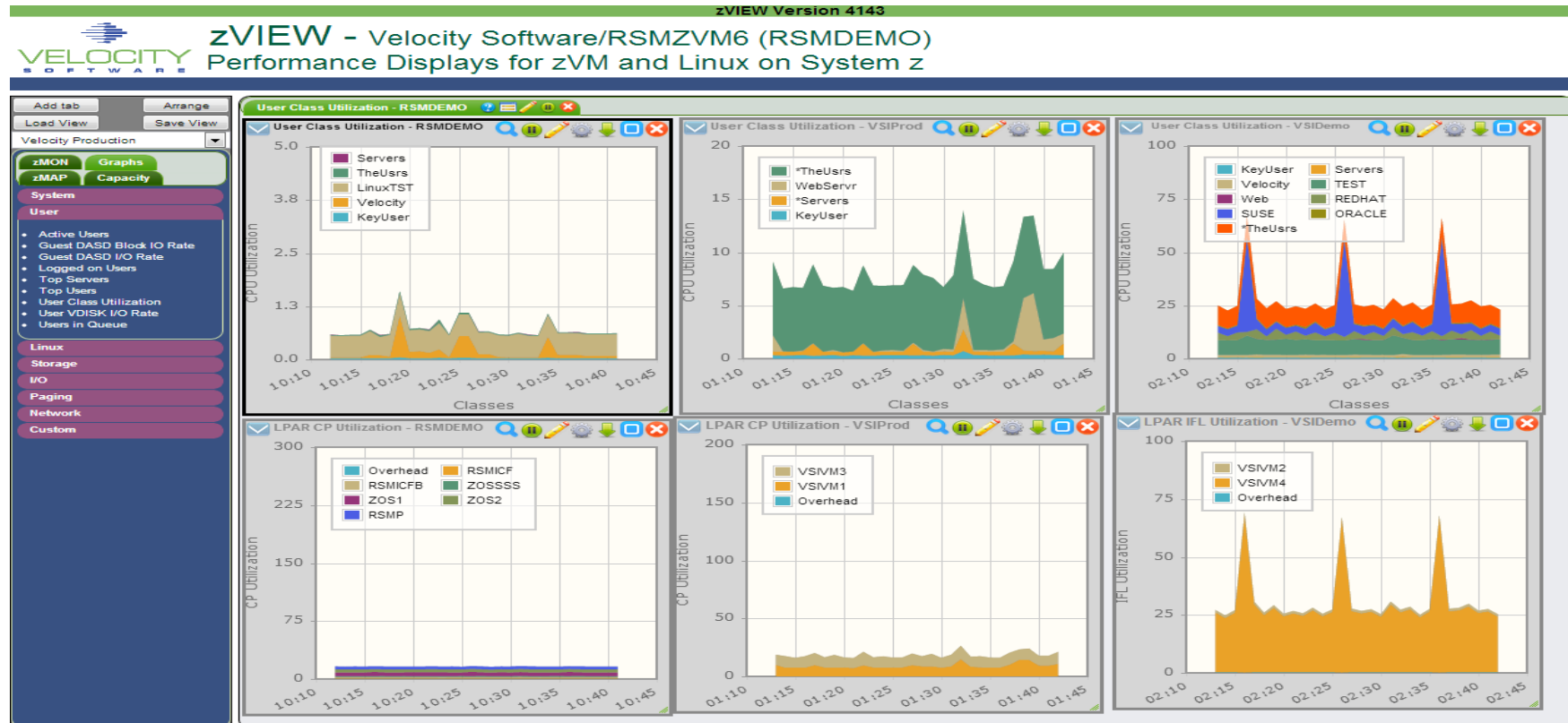
End users define their dashboard(s) – z/VSE at one click

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



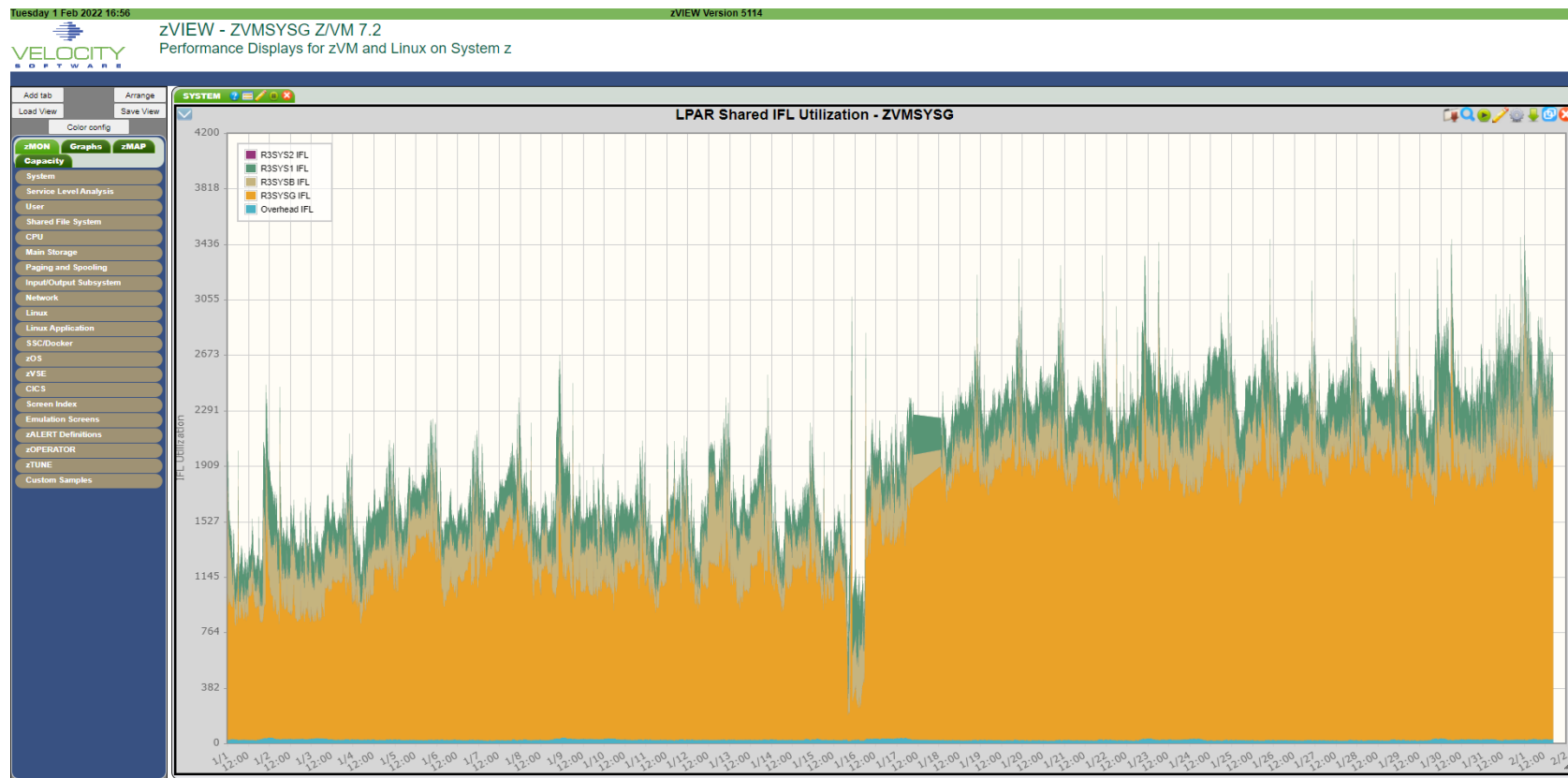
Single pane of glass

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



Dynamic Charts

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

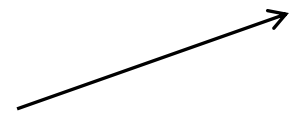


3270 Style Alerts (50+ sample alerts provided)

```

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 24.79% full
LNDX /opt area on S11R20RA is 95.24% full
LNDX /mnt/oracle area on S11R20RA is 53.23% full
LNSU Swap utilization for Linux node is 30.60% full
LNSU Swap utilization for Linux node is 30.60% full
  
```

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



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	/ 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 24.79% full
LNDX	/opt area on S11R20RA is 95.24% full
LNDX	/mnt/oracle area on S11R20RA is 53.23% full
LNSU	Swap utilization for Linux node is 30.60% full
LNSU	Swap utilization for Linux node is 30.60% full
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 redhat5 is 52.26% full
LNDX	/ area on redhat5x is 32.54% full
LNDX	/ area on redhat56 is 95.80% full
LNDX	/mnt area on redhat56 is 53.23% full
LNDX	/ area on redhat6 is 30.60% full
LNDX	/ area on redhat6x is 94.92% full
LNDX	/dev/shm area on redhat6x is 51.42% full
LNDX	/ area on redhat64 is 36.09% full
LNDX	/boot area on rhel7v is 23.79% full
LNDX	/ area on roblnx2 is 78.74% full

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. The windows are titled with the LPAR name and the console type, such as 'ZOPER - zOPERATOR Console - VSIVC4', 'ZOPER - zOPERATOR Console - CLOUD1', and 'ZOPER - zOPERATOR Console - CUST...'. Each terminal window shows a stream of system logs and operator actions, including auto logons, event manager executions, and sample recordings. The logs are color-coded for readability, with green for normal operations and red for errors or warnings. The interface also includes a menu bar at the top and a toolbar with various icons for navigation and control.

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)
- Simple and elegant
- 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/          <---Container-->  <--Container CPU----->
Time/ PodName    <---Process ID-->  <-----CPU Percents----->
Date  ContainerName  ProcID ProcName   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
prometheus-k8s-1
  prometheus          1817314 promethe 42.1 0.95 41.1    0    0
    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
    vsi-SNMPd          1762314 SNMPd    0.53 0.20 0.33    0    0

```

CPU numbers provided by IBM with SMT broken

- ZIIP / zCX has same issue
- See Velocity Software’s “capture ratio” presentation
- **VSI Prorated** based on HMC and MFC data

Report: **ESAU5P5** 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
  
```

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?

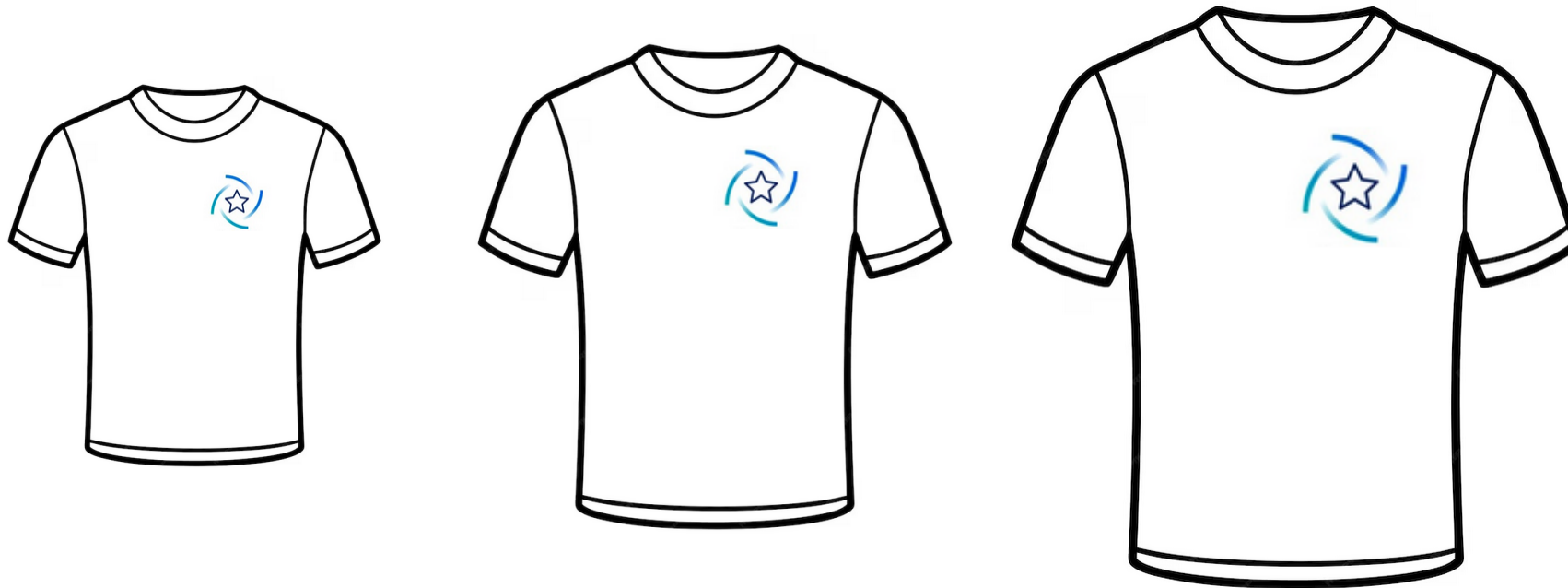
- That's the way they do it on Intel / VMWare
- Avoid future outage, hardware changes

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

Sizing Linux by T-shirt Size

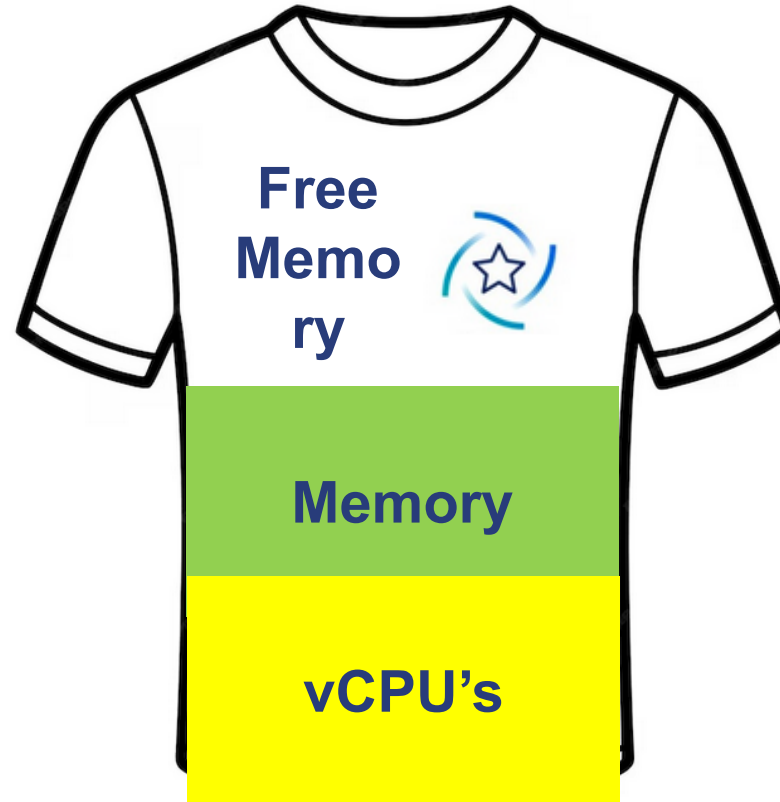


Sizing Linux by T-shirt Size

z/VM can give the system back “free memory”

z/VM provides great feedback mechanisms for memory and vCPU needs

z/VM manages all virtual to real processors assignments



Linux touches all memory assigned to it

Linux can grow and shrink memory and vCPU's

Linux spreads work out over all the vCPU's assigned to it



Often created a death spiral for Linux on IBM z Systems

Velocity Software's new Resource Manager (zVRM) dynamically optimizes Linux configurations for running on IBM z and LinuxONE systems with z/VM.

zVRM uses Velocity Software's Knowledge-based Intelligence (KI) to accomplish this.

Feedback loops make small incremental adjustments every minute.

Reduced resources for your workloads allows you to run more with less providing greater value and quantifiable savings.

Too many vCPUs hurts because:

- DIAG 9C overhead
- Linux balances across all vCPUs
- Pollutes Hardware cache
- vCPUs will wait for each other
- vCPUs will wait to be dispatched, but do little work

Customer Critsit:

- Customer has excess processor capacity
- Bad performance, “CPU WAIT” (ESAXACT)
- Totals by Processor type on box (25% utilization - ESALPARS)

```
Totals by Processor type:
<-----CPU-----> <-Shared Processor busy->
Type Count Ded shared Total Logical Ovhd Mgmt
-----
IFL      70   0    70 1706.9  1628.8 30.1 48.0
```

Linux balances small tasks across vCPUs

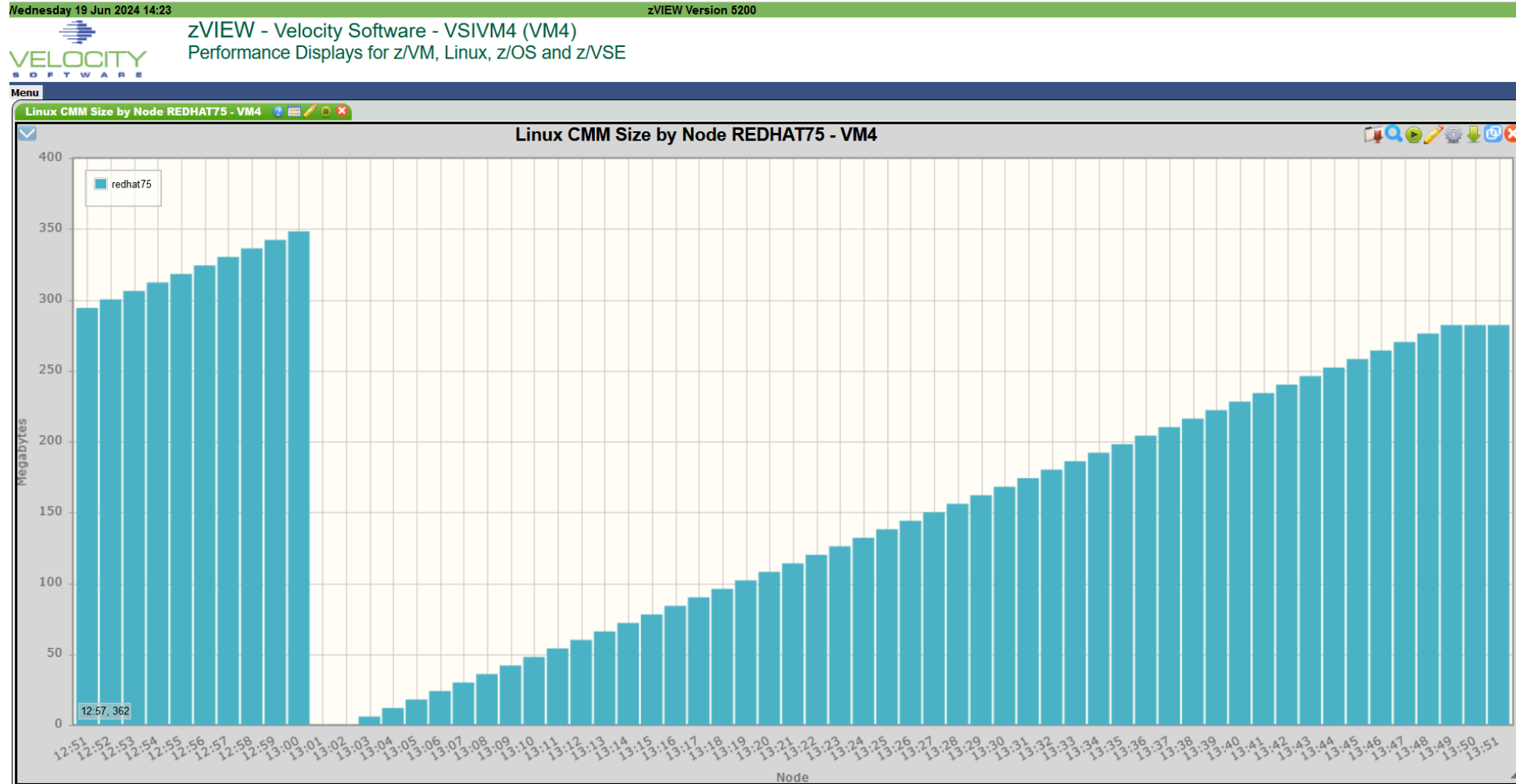
Each vCPU waits and then does a small task

Having more vCPUs just means the number of delays increases

Report: **ESAUSCP** Virtual Machine VCPU Analysis

```

-----
UserID  <---CPU time-->                                     <---Percent
CPUvadd  <-Percent-> <-SHARE--> CPU  <-Samples->
          Cnt  TOT    Virt  Type Value TYPE  Total  In Q  Run  Sim  CPU
-----
17:01:00  0 430.6 425.0      .      .      .    3480 1682  18  0.2  21
LINUXM1   4 61.53 59.64   REL    400 IFL    240   240  15  1.3  36
  CPU-00   15.89 15.26   REL    100 IFL     60    60  17  1.7  35
  CPU-01   13.77 13.41   REL    100 IFL     60    60  8.3  3.3  38
  CPU-02   17.69 17.19   REL    100 IFL     60    60  15    0  32
  CPU-03   14.18 13.78   REL    100 IFL     60    60  18    0  38
LIMEDI1   6 49.66 48.93   REL    600 IFL    360   360  5.3    0  8.9
  CPU-00    8.85  8.67   REL    100 IFL     60    60  10    0  10
  CPU-01    8.25  8.13   REL    100 IFL     60    60  6.7    0  6.7
  CPU-02    7.24  7.11   REL    100 IFL     60    60  1.7    0  10
  CPU-03    8.47  8.36   REL    100 IFL     60    60  1.7    0  8.3
  CPU-04   10.13 10.04   REL    100 IFL     60    60  8.3    0  10
  CPU-05    6.73  6.61   REL    100 IFL     60    60  3.3    0  8.3
  
```



zVRM Test System – vCPU Added/Removed

ESAUCD4

ESAUCD4 - LINUX UCD System Statistics Report - VM4

Time	Node/ Group	<Processor Pct Util>				Idle Pct	VCPU Cnt	<-Swaps->		<-Disk IO->		Switch Rate	Intrpt Rate	<-Load Averages->			<-CPU Overhead%->			%IO- wait	Pro- rate
		Total	Syst	User	Nice			In	Out	In	Out			1Min	5Min	15Min	Krnl	IRQ	Inrpt		
13:06:00	redhat75	0.1	0.1	0.0	0	100	1	0	0	0	0	20.9	12.5	0.02	0.42	0.29	0	0	0.02	0	0.90
13:05:00	redhat75	0.1	0.1	0.0	0	99.6	1	3.3	0	35.5	0	24.9	14.5	0.06	0.51	0.31	0	0	0	0	0.98
13:04:00	redhat75	0.1	0.1	0.0	0	99.9	1	0.5	0	4.0	0	20.0	12.3	0.16	0.63	0.34	0	0	0	0	0.84
13:03:00	redhat75	0.1	0.1	0.1	0	131	1	0.1	0	0.4	3.2	27.2	18.4	0.45	0.78	0.36	0	0.01	0	0	0.77
13:02:00	redhat75	0.1	0.1	0.0	0	196	2	17.6	0	693.1	13.9	55.8	46.5	1.24	0.95	0.39	0	0	0.02	0.02	1.18
13:01:00	redhat75	125.6	42.9	82.7	0	0.1	2	23K	22K	203K	179K	6059.0	3215.0	3.37	1.17	0.42	0	1.20	0.08	0.15	0.79
13:00:00	redhat75	67.8	21.7	46.1	0	52.0	1	35K	36K	310K	287K	9129.7	4606.2	2.09	0	0.17	0	3.35	0.15	0.17	1.50
12:59:00	redhat75	0.1	0.1	0.0	0	99.8	1	0	0	0	0	19.9	12.6	0	0	0	0	0	0.02	0	0.99
12:58:00	redhat75	0.1	0.1	0.0	0	99.8	1	0.1	0	1.9	0	19.6	12.3	0	0	0	0	0	0	0	0.67
12:57:00	redhat75	0.1	0.1	0.0	0	99.9	1	0.0	0	0.3	2.5	22.4	13.3	0	0	0	0	0	0	0	0.97
12:56:00	redhat75	0.1	0.1	0.0	0	99.8	1	0	0	0	0	21.0	12.5	0	0	0	0	0.02	0	0	1.11

zVPS PERFORMANCE SUITE

THE WORLD'S LEADING PERFORMANCE MANAGEMENT SOLUTION FOR Z/VM WITH LINUX AND/OR VSE. NEWLY ADDED SUPPORT FOR Z/OS PLUS NO-CHARGE MONITORING FOR X86 LINUX AND WINDOWS.



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SOLUTION FOR MODERNIZING THE Z/VM PLATFORM, ADDING ON-PREM CLOUD SUPPORT WITH WEB-BASED CONTROLS FOR Z/VM SYSTEM MANAGEMENT PLUS LPAR CLONING AND ANSIBLE PLAYBOOKS USING VELOCITY'S HIGHLY AVAILABLE SMAPI-FREE API'S.



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VELOCITY SOFTWARE'S ELITE PERFORMANCE SUPPORT SERVICE THAT CREATES AUTOMATED DAILY REPORTS WITH RECOMMENDED ACTIONS



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REAL-TIME MANAGEMENT FACILITY FOR Z/VM WITH LINUX THAT AUTOMATES SYSTEM SETTINGS USING KNOWLEDGE-BASED INTELLIGENCE TO TUNE WORKLOAD REQUIREMENTS AND OPTIMIZE OVERALL SYSTEM PERFORMANCE.





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