

# Managing Performance Of Linux on IBM Z

[www.VelocitySoftware.com](http://www.VelocitySoftware.com)

[www.LinuxVM.com](http://www.LinuxVM.com)

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

- **Who is Velocity Software**
- **Performance Management**
  - zVPS – Velocity Software Performance Suite
- **Simplify your environment with on prem cloud**
  - zPRO – On-prem Private Cloud

# Who is Velocity Software

Founded 1988,

Mission: **Provide software to assist customers in optimizing the VM platform:**

Continuous fully integrated enhancements over 30 years

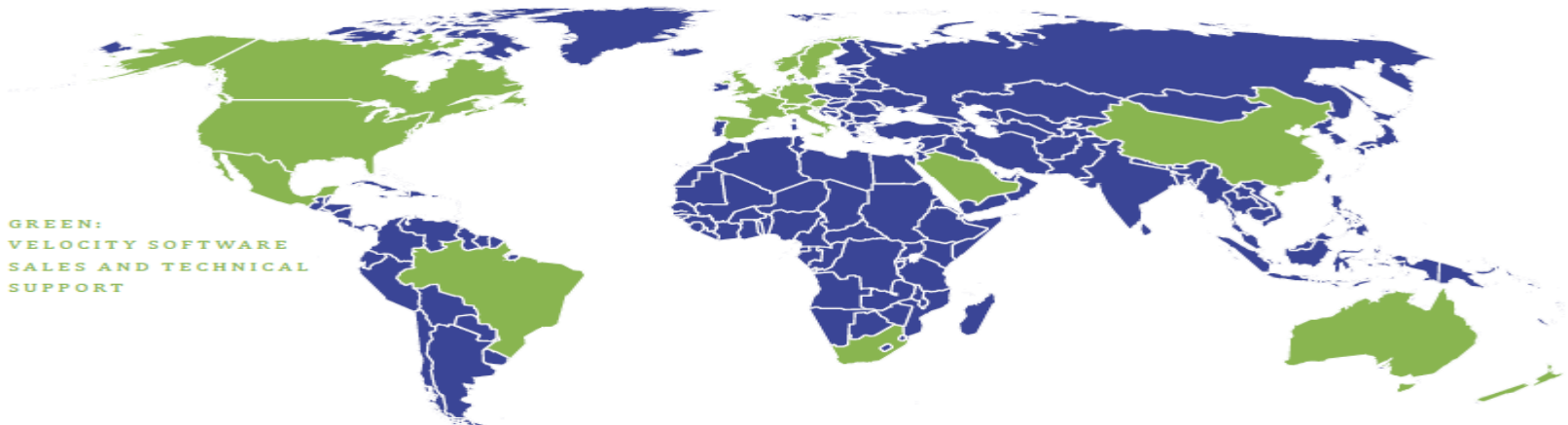
200+ Installations (zVPS) **(more than ½ IFLs world wide)**

22 countries, 6 continents

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## Velocity Software's Sales and Technical Support Map

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# Industries using Linux and Velocity Software

**Banking, Financial:**

**Government / Military:**

**Health Care, Insurance, Retail**

**Manufacturing: Automotive, computing, Oil  
Outsourcing**

# zVPS - Performance Management Requirements

## Performance Management

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

Correct data (Virtual Linux CPU data wrong - SMT)

Capture ratios (is the data valid?)

**Remember, 3 kinds of performance monitors**

1. Products Used for performance Management
2. Products Used for Diagnostics
3. Products Turned off when there's a cpu problem

**Management can not be the problem....**

# Infrastructure Requirements: Performance Analysis

## Why Performance Analysis: Service Level Mgmt

- Diagnose problems real time (ONE MINUTE GRANULARITY....)
- PLATFORM SPECIFIC....
- Analyze all z/VM Subsystems in detail, real time
  - (DASD, Cache, Storage, Paging, Processor, TCPIP)
- Analyze Linux
  - (applications, processes, processor, storage, swap)
- **Historical view of same data important**
  - Why are things worse today than yesterday?
  - Did adding new workload affect overall throughput?
  - Know who/what is using resource and how to re-allocate

# Infrastructure Requirements: Capacity Planning

## Why Capacity Planning: Future Service Levels

- How many more servers can you support with existing z14?
- What is capacity requirements for an application? (on x?)
- **Avoid crises *in advance***

## Why Chargeback?

- Distributed chargeback model is by server (does NOT port to Z!)
- Shared chargeback model is by resource consumption
- **Encourages efficient/effective resource use**
- **Align IT to your business model**

## Operational Requirements

- Operations will manage 100's (1000's) of servers
- Requires active performance management
- **Alerts** for processes in loops, disks 90% full, missing processes
- **zALERT always needed (One Minute Granularity)**
- **zOPERATOR, if no enterprise monitor, or do it anyway**

# zVPS does “End to End” Performance Management

- **Management wants**
  - “single pane of glass” - One tool that does all (and well)
- **Complete performance management includes:**
  - **z/VM System** Level: CEC, LPAR data, ALL SubSystems
  - **Linux** – Storage, CPU, file system, network
  - **Process level** – applications, performance data
  - **Network monitor**
  - VSE: partitions, CPU, I/O, CICS, TCPIP
  - z/OS: CICS(110), BATCH (30), SYSTEM (70)
- **Application subsystem analysis**
  - Java, WAS, Oracle, MongoDB, Docker (MQ, DB2)
- **Outside “Z” server platform analysis**
  - **Linux on “x”, VMWare, KVM**, Secure Software Container
  - Microsoft servers
  - VPN, gateways, utilities



# z/VM Performance monitor architecture

## Traditional model (1989)

ESAMON/zMON: Real time analysis

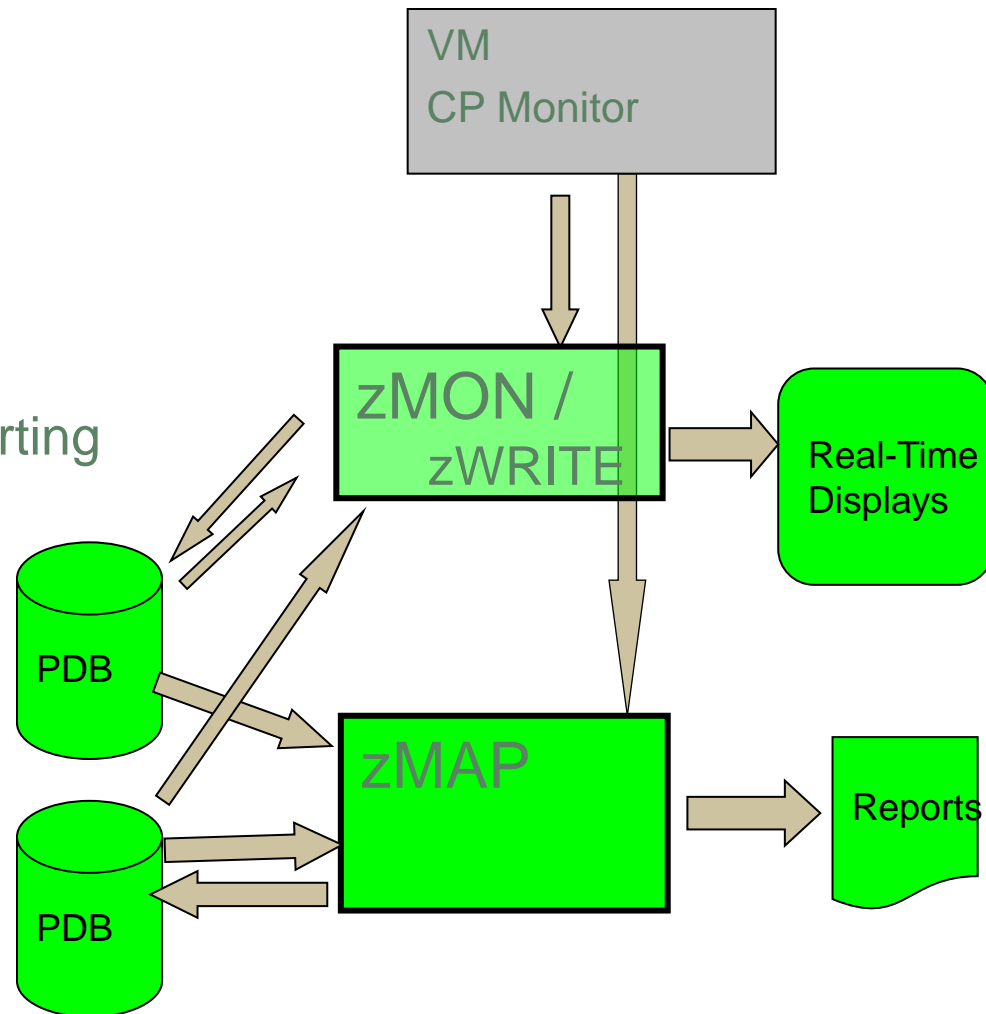
- Uses Standard CP Monitor
- Real Time Analysis

ESAMAP/zMAP: Performance Reporting

- Post (midnight) Processing
- Creates Long Term PDB
- PDB or monwrite data input

PDB (Performance DataBase)

- Complete data
- By Minute, hour, day
- Monthly/Yearly Archive



```
Screen: ESAUSP2 Velocity Software - VSIVM4 ESAMON 4.090 01/18 17:09-17:10
1 of 3 User Percent Utilization CLASS * 2096 44B42
```

Time	UserID /Class	<Processor>		<-----Main Storage----->		Lock -ed	<-WSSize-->	
		Total	Virt	Total	Actv		Total	Actv
17:10:00	System:	15.32	14.23	667K	665K	5448	675K	665K
	REDHAT	4.58	4.53	281K	281K	1997	284K	284K
	TEST	3.56	2.98	161K	161K	844	161K	160K
	*TheUsrs	3.12	3.02	57661	57645	290	59127	57322
	SUSE	1.63	1.57	109K	109K	839	109K	108K
	ORACLE	0.96	0.96	50503	50503	66	50437	50437
	Velocity	0.93	0.90	4552	3444	28	7385	3401
	KeyUser	0.36	0.15	2973	2973	1379	1898	1573
	Servers	0.17	0.13	943	520	5	1874	495

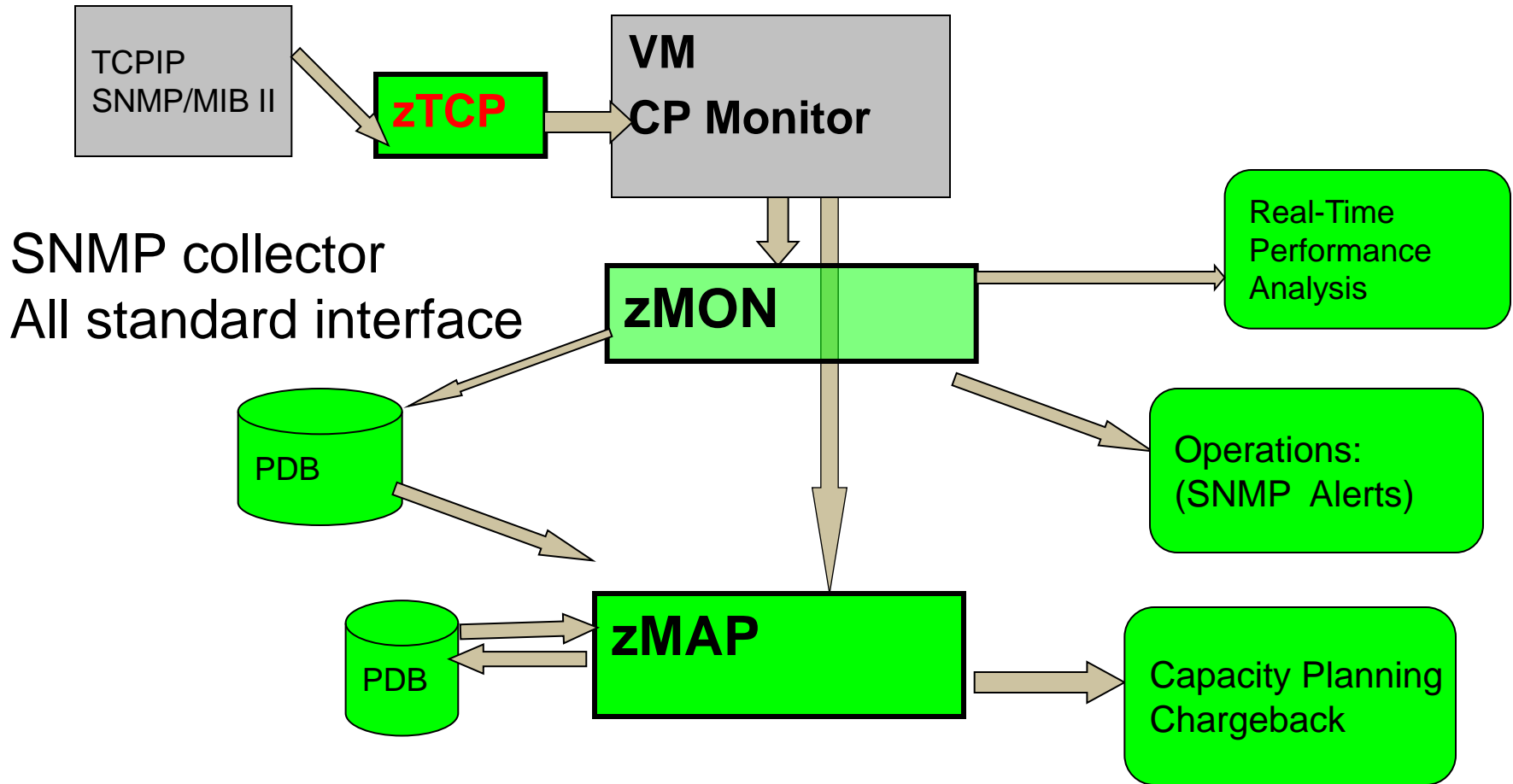


Hit PF2 to zoom on SUSE class, get:

```
Screen: ESAUSP2 Velocity Software - VSIVM4 ESAMON 4.090 01/18 17:11-17:12
1 of 3 User Percent Utilization CLASS SUSE USER * 2096 44B42
```

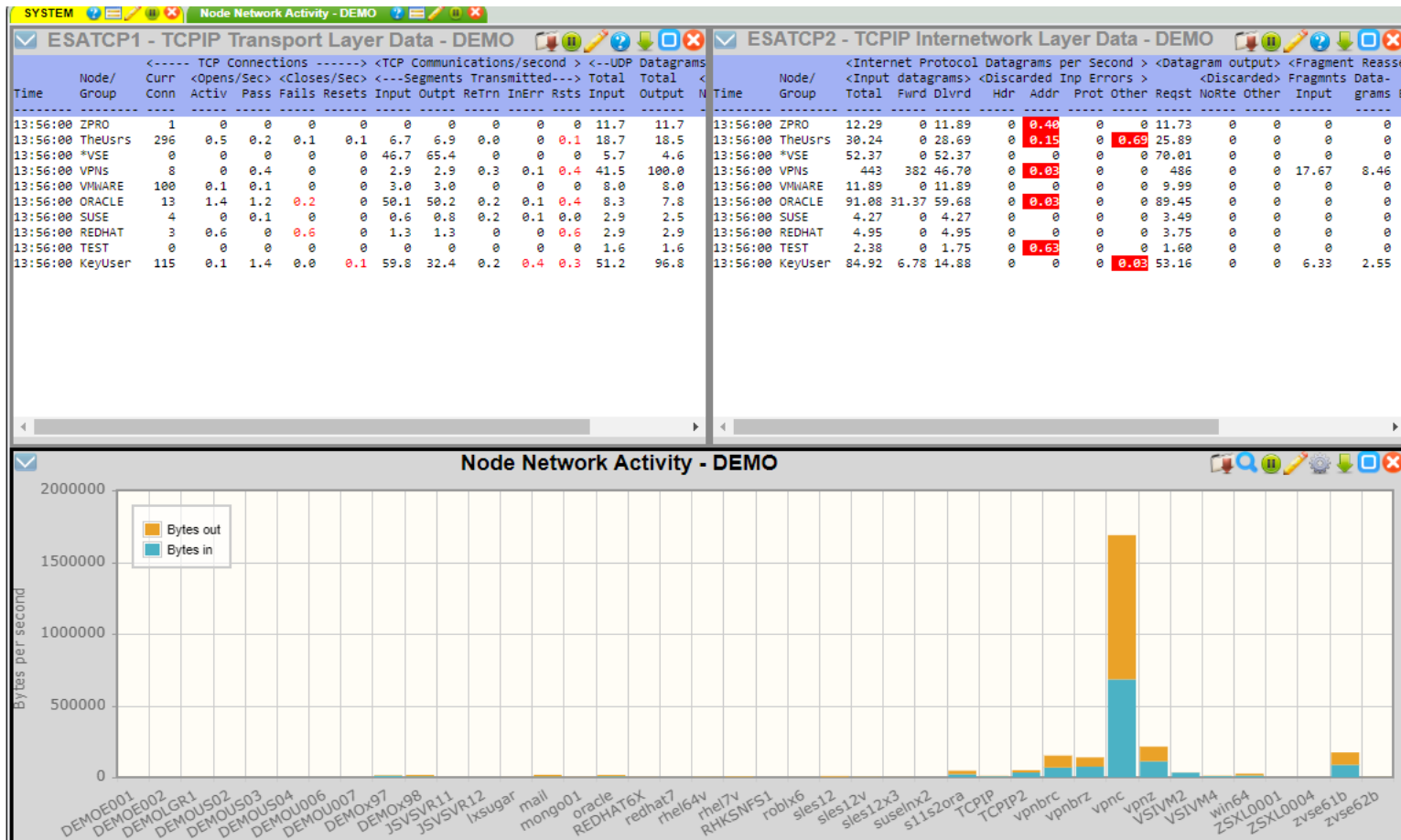
Time	UserID /Class	<Processor>		<-----Main Storage----->		Lock -ed	<-WSSize-->	
		Total	Virt	Total	Actv		Total	Actv
17:12:00	SLES11X	0.39	0.39	24223	24223	247	23976	23976
	SLES11	0.32	0.32	12404	12404	181	12199	12199
	SUSELNX2	0.25	0.23	3648	3648	0	3628	3628
	SLES9X	0.21	0.21	14632	14632	35	14597	14597
	SLES10	0.20	0.20	28935	28935	299	28636	28636
	SLES9	0.20	0.20	12722	12722	177	12545	12545
	SLES8	0.06	0.03	11251	11251	0	11201	11201
	SLES8X	0	0	0	0	0	890	0
	SUSELNX1	0	0	0	0	0	219	0

# “Network monitoring technology

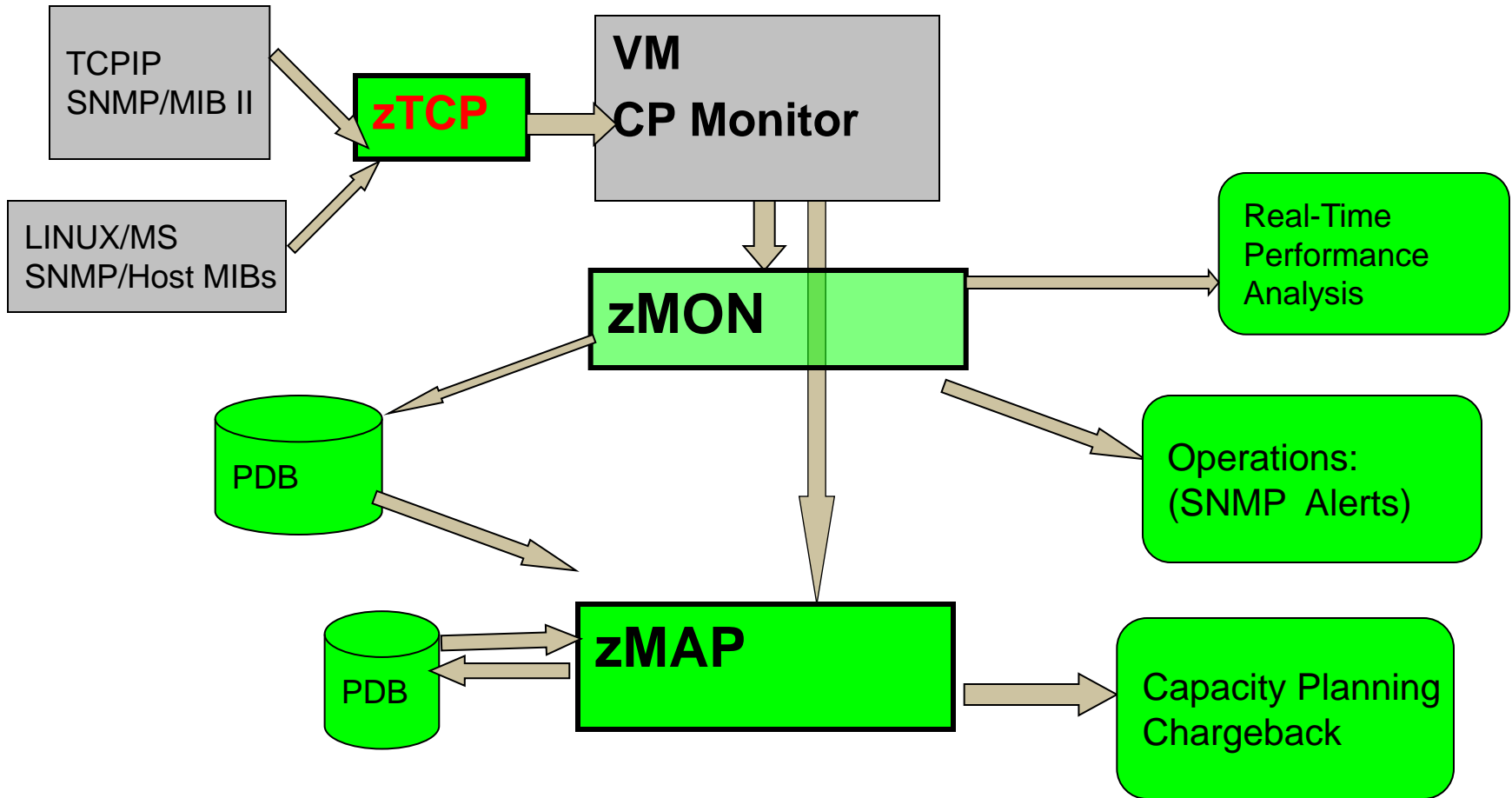


# Full Network Monitor

**MIB II:** Transport layer, IP layer, hardware layer, icmp  
 Transport layer data shows connections, TCP rates, UDP rates



# Linux monitoring technology



# Snmp “Host” support

- **Snmp “host” public mib**
  - Process data (expensive, limited)
  - File system data
  - (no system data)
- **ucd “linux” private mib**
  - System data
  - Memory data
  - Disk data (expensive)
- **Velocity private mib**
  - Designed for efficiency
  - Designed for performance management
  - Process data improvements
  - Disk data improvements
  - VERY Extensible

# Process Capture Ratio with Velocity mib

- High CPU capture ratio

Report: ESALNXV LINUX Virtual Processor Analysis Report

Node/Name	VM ServerID	<Linux Pct CPU>			<Process Data>			Capture Ratio	Prorate Factor
		Total	Syst	User	Total	Syst	User		
10:03:00									
NEALE1	LNEALE1	100.0	11.4	88.6	100.2	11.5	88.7	1.002	1.000

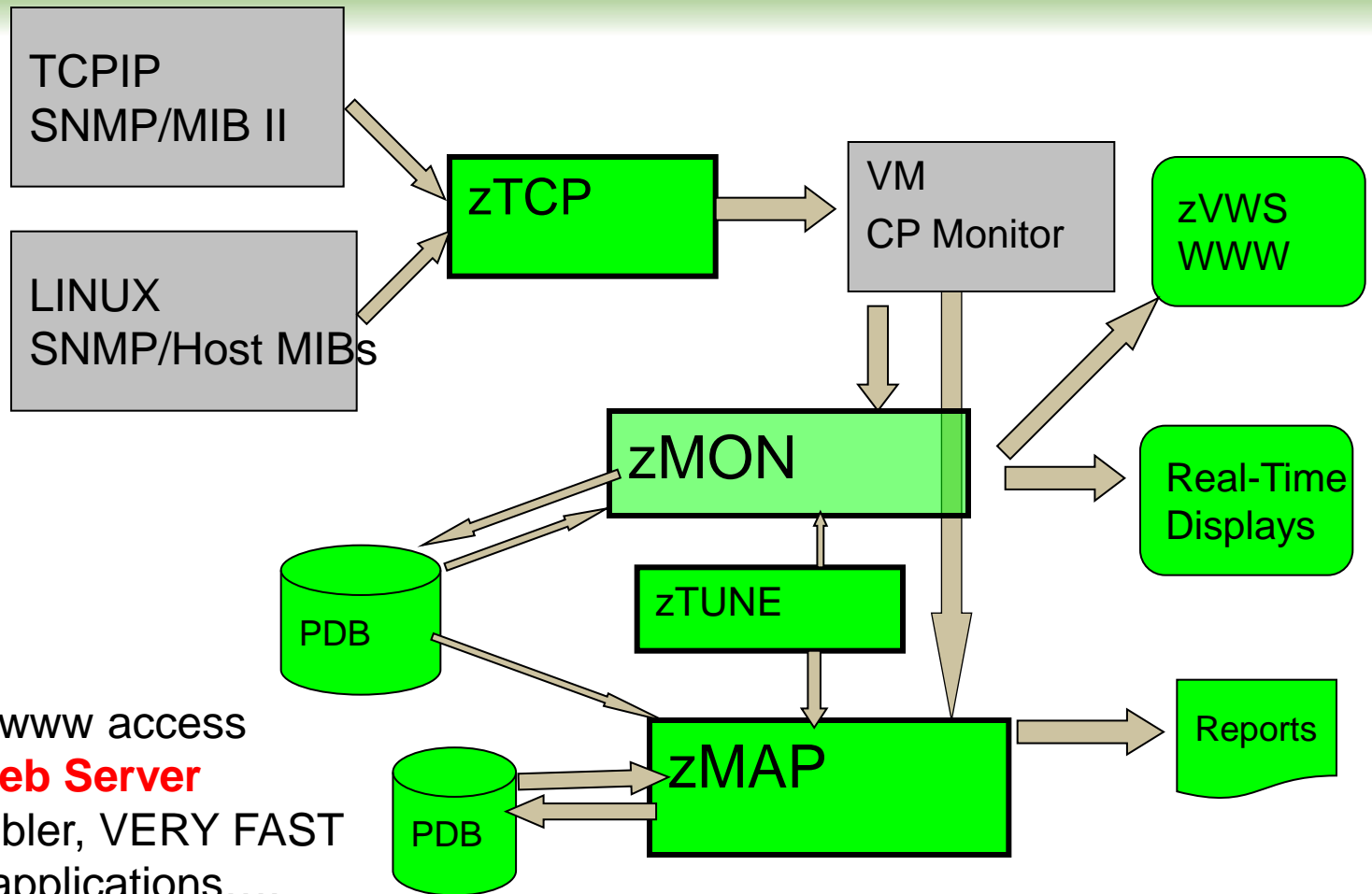
Report: ESALNXP LINUX HOST Process Statistics Report

node/Name	<-Process Ident-->			Nice	<-----CPU Percents----->					
	ID	PPID	GRP	Valu	Tot	sys	user	syst	usr	usr
10:03:00										
NEALE1	0	0	0	0	100	0.43	3.35	11.0	85.4	
kswapd0	100	1	1	0	0.12	0.12	0	0	0	
snmpd	1013	1	1012	-10	0.13	0.03	0.10	0	0	
sh	3653	3652	30124	0	52.7	0	0	9.37	43.3	
gmake	9751	9750	30124	0	43.4	0.02	0.02	1.37	42.0	
sh	10129	9751	30124	0	0.02	0.02	0	0	0	
sh	10130	10129	30124	0	0.63	0.03	0.23	0.28	0.08	
cc1	10307	10306	30124	0	3.12	0.18	2.93	0	0	
rpmbuild	30124	16382	30124	0	0.07	0.03	0.03	0	0	
sh	30125	30124	30124	0	0.02	0	0.02	0	0	
gmake	30126	30125	30124	0	0.02	0	0.02	0	0	

Report: ESALNXC LINUX Process Conf

Node/Name	<-Process ID	PPID	GRP	<-----Pr Path
NEALE1				
init	1	0	0	init [3]
migratio	2	1	0	migratio
ksoftirq	3	1	0	ksoftirq
events/0	4	1	0	events/0
khelper	5	4	0	khelper
kblockd/	6	4	0	kblockd/
cio	41	4	0	cio
cio_noti	42	4	0	cio_noti
kslowcrw	43	4	0	kslowcrw
apldata	96	4	0	apldata
aio/0	101	4	0	aio/0
pdflush	5266	4	0	pdflush
pdflush	26647	4	0	pdflush
kswapd0	100	1	1	kswapd0
kmcheck	158	1	1	kmcheck
syslogd	976	1	976	/sbin/sy
klogd	979	1	979	/sbin/kl
snmpd	1013	1	1012	snmpd
portmap	1030	1	1030	/sbin/po
rpciod	1034	1	1	rpciod
lockd	1035	1	1	lockd
sshd	1072	1	1072	/usr/sbi
sshd	16272	1072	16272	sshd: bu
sshd	16288	1072	16288	sshd: bu
sshd	16290	16288	16288	sshd: bu
bash	16291	16290	16291	bash
python	16312	16291	16291	python
do-bui	16313	16312	16291	/bin/sh
bb_do	16382	16313	16291	/usr/bin
rpmb	16415	16382	16415	rpmbuild
rpmb	30124	16382	30124	rpmbuild

# Modernize: Webserving, performance skills



**ZVWS** Provides www access  
**NATIVE z/VM Web Server**  
Written in assembler, VERY FAST  
Many customer applications....

**zTUNE**: Rules based analysis



# Health Checker for z/VM, Linux: zTUNE

- Focus more now on simplifying problem resolution
- User reports that applications complained about zLinux / WAS performance:

```
Report: ESATUNE      Tuning Recommendation Report
Monitor initialized:          on 2084 serial 9ABED
-----
```

```
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
```

zVIEW V2 flexible,

- Web based application
- Supports enterprise data
- Single pane of glass
- VERY fast, (no java)....
- Front end for everything

# zVPS Enterprise View – All LPARs in Enterprise

## 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%	Expand
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%	Expand
Linux Nodes (z/VM-Guests)					
RH5X161			0.43%		
RH5Z161			0.37%		

VM3	13/12/02	21:29	024B42-0	99.22%	Expand
Linux Nodes (z/VM-Guests)					
000000-64			99.22%		

VM4	13/12/02	18:29	IFL Total (1)	17.77%	Expand
Linux Nodes (z/VM-Guests)					
rob1x1			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%		

**Second level**

Tim1.2	13/11/27	13:09	IFL Total (1)	0.10%	Expand
Linux Nodes (z/VM-Guests)					
			1.85%		
			1.50%		
			0.85%		
			0.57%		

**Demo System V4**

Demo	13/12/02	18:29	IFL Total (1)	17.77%
Linux Nodes (z/VM-Guests)				
rob1x1			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

# zVIEW Linux performance

Nednesday 7 Nov 2018 00:46

zVIEW Version 4310



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

Menu

mylinux

ESALNXP - Linux Process Con...

Node	Process Name	ID	P
ZSXL0006	systemd	1	
ZSXL0006	kthreadd	2	
ZSXL0006	kworke/0:0	3	
ZSXL0006	kworke/0:0H	4	
ZSXL0006	mm_percpu_wq	6	
ZSXL0006	ksoftirq/0	7	
ZSXL0006	rcu_sched	8	
ZSXL0006	rcu_bh	9	
ZSXL0006	migration/0	10	
ZSXL0006	cpuhp/0	11	
ZSXL0006	kdevtmpfs	12	
ZSXL0006	netns	13	
ZSXL0006	khungtaskd	14	
ZSXL0006	oom_reaper	15	
ZSXL0006	writeback	16	
ZSXL0006	kcompactd0	17	
ZSXL0006	ksmd	18	
ZSXL0006	crypto	19	
ZSXL0006	kintegrityd	20	
ZSXL0006	kblockd	21	
ZSXL0006	md	22	
ZSXL0006	cio	23	
ZSXL0006	watchdogd	24	
ZSXL0006	kworke/0:1	26	
ZSXL0006	cmthread	27	
ZSXL0006	kauditd	28	
ZSXL0006	kswapd0	29	
ZSXL0006	ecryptfs-kthrea	30	
ZSXL0006	kthrotld	72	
ZSXL0006	khvcd	73	
ZSXL0006	kmcheck	74	
ZSXL0006	ipv6_addrconf	75	
ZSXL0006	kworke/0:1H	148	
ZSXL0006	kworke/u128:3	150	
ZSXL0006	jbd2/dasda1-8	172	
ZSXL0006	ext4-rsv-conver	173	
ZSXL0006	vfiio-ccw	301	
ZSXL0006	qeth_wq	322	
ZSXL0006	kworke/u128:0	7826	
ZSXL0006	systemd-journali	212	
ZSXL0006	systemd-udev	235	
ZSXL0006	systemd-timesyn	272	
ZSXL0006	cron	353	

ESALNXP - VSI Linux Percent Usage by Process - DEMO

Time	Node	Name	ID	PPID	GRP	Tot	sys	user	syst	usrt	valu	valu	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	14
00:46:00	lxdb2001	init	1	1	1	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	-10	10	29.7	13.4	37.1	0	17.3	0.1	0.0	1:	
00:46:00	lxdb2001	cron	2223	1	2223	0.1	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	db2fmc	2245	1	2245	0.4	0	0	0.1	0.3	0	20	50.9	13.9	51.0	0	3.5	0.2	0.1	4:
00:46:00	lxdb2001	db2sysc	2833	2831	2833	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	20	250	10.1	314	0.9	66.3	0.1	0.4	2:

ESAHST2 - LINUX HOST Storage Analysis Report - DEMO

Time	Node/Group	Index	Size	Used	Full	Err	Alloc	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

Time	Node/Group	Total	Avail	Used	Total	Avail	Used	MIN	Avail	CMM	Buffer	Cache	
00:46:00	ZPRO	4600	3	1423	3106	0	107E	107E	107E	0	0	107E	0
00:46:00	VPNS	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000

ESAUCD4 - LINUX UCD System Statistics Report - DEMO

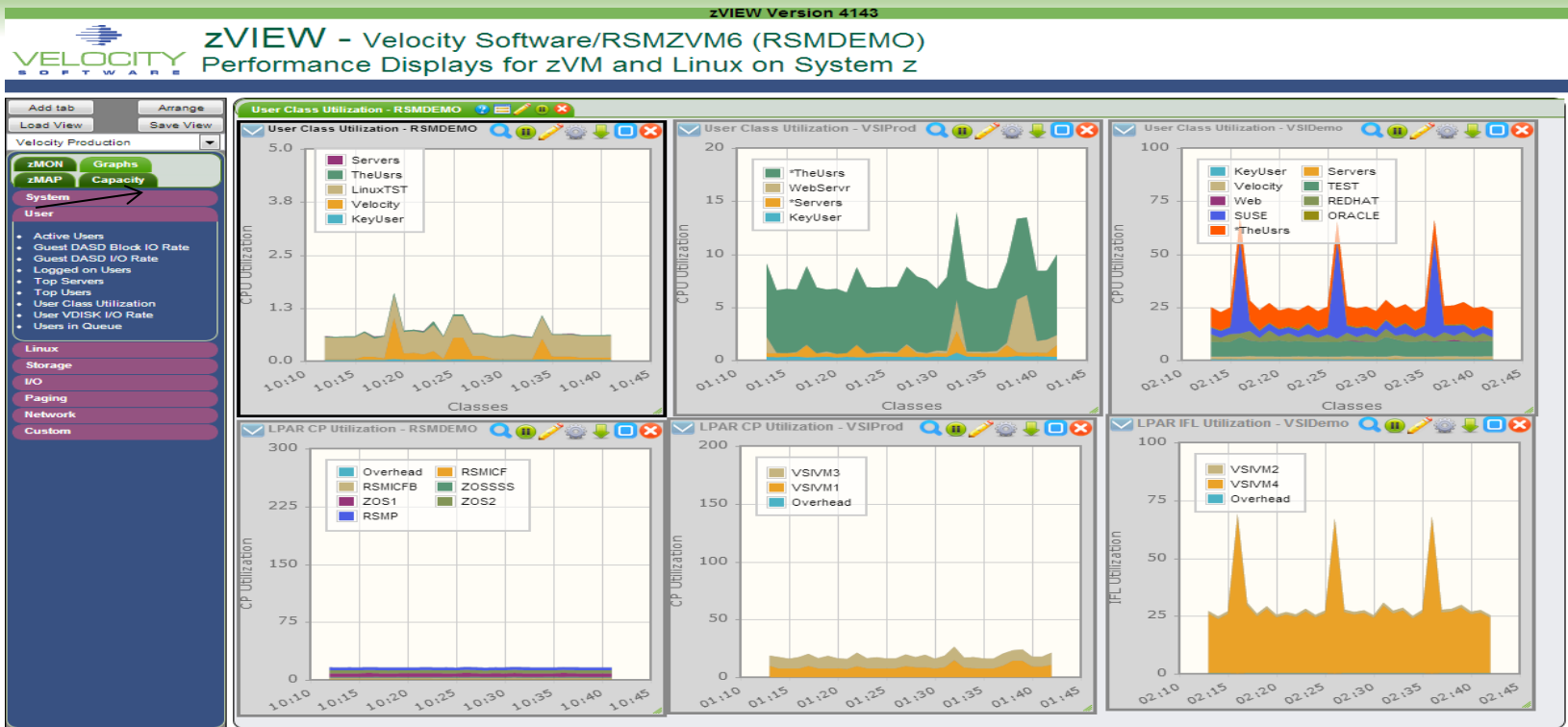
Time	Node/Group	Total	Syst	User	Nice	Pct	Idle	Swaps	Disk	IO	Switch	Intrpt	Load	
00:46:00	ZPRO	2.7	1.2	1.4	0	1188	0	0	0	56.7	2080.5	1023.7	0.49	0
00:46:00	VPNS	10.1	4.2	5.9	0	389	0	0	0	180.5	733.9	0.33	0	0

ESAHST4 - LINUX HOST System Statistics Report - DEMO

Time	Server	Num	Users	Current	Max	StgSz	Local	Date	Time	System	Uptime	Dev	System Initiali
00:46:00	ZPRO	1	1	1	1	1	1	1	1	1	1	1	1
00:46:00	VPNS	1	1	1	1	1	1	1	1	1	1	1	1

LPAR...

# Multiple System View (3 LPARs)



Data from multiple lpar's visible on "Single pane of glass"

# zALERT - Operational Support

## zAlert

- User tailorable
- 3270 based, web based, and / or SNMP
- **Linux alert examples:**
  - Disk full
  - Missing processes (requires complete data)
  - **Looping processes (requires correct data)**
- **z/VM alert examples**
  - Page/spool space full (avoid abends), page rates
  - Looping servers
  - DASD service times
- **Network alert examples**
  - Transport errors, ICMP rates, Bandwidth thresholds
- **z/OS / zVSE**
  - CPU, job utilization, cec (cpu type) utilization,
  - CICS max task, response times, etc

# zALERT – Automate problem detection

## 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

Code	Alert Description
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 redhat6 is 95.80% full
LNDX	/mnt area on redhat6 is 53.23% full
LNDX	/ area on redhat6 is 30.00% 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

Or zVIEW based:  
Click Thru  
or SMS, email...  
Sent to enterprise  
Console....

# Diagnostic vs Management Tools

- **Diagnostic Tools**
  - Turn on when there's a problem (but not if too heavy....)
  - Significant overhead
  - Oracle and Java have many diagnostic tools
- **z/VPS Objective is to provide “management tools”**
  - Java metrics captured at low cost
  - Oracle metrics captured at low cost
  - Objective is still a .1% linux agent with one minute granularity



## Operations Tool (many installations!)

- Log analyzer
- Diagnostics tool

## The Problem

- Agent is very high overhead
- Each Linux runs splunk agent, feeds central database
- One installation reports 2-4% of ONE IFL per server for splunk agent
  - (Using 20 IFLs just for splunk agent)

## The (VERY efficient) solution

- All (almost all?) data captured by zVPS
- zVPS feeds splunk (no additional charge, big savings in cpu)
- Installation details on Velocity Software website

# MongoDB (zVPS V5)

## Fast DataBase

- Used for real time performance
- “read only”
- Benchmarked at 8,000 hits per second on ONE LPAR
- MongoDB engineers very impressed with “z” !!!

## The Problem

- Black box?

## The requirements: Management

- Marriott corporation offloading 5,000 transactions per second plus
- MongoDB on Linux on z architecture

## The (VERY efficient) management solution

- MongoDB has snmp mib, fully supported by zVPS (real time, alerts...)

# Docker and more (zVPS V5)

## Docker container technology used for many implementations

- Docker/kubernetes
- collectd
- z/os container extensions

## Docker

- Used extensively by a few large customers
- Snmp mib developed by Velocity Software

## IBM Secure Container

- Black box as presented (no management capability if problems)
- Collectd implementation – one way mechanism, open source
- Supported by zvps

## Z/OS container extensions

- Collectd implementation?

## If you don't have z/VM

- Linux on hardware
- KVM
- Distributed servers

## One shared IFL partition for z/VM will support enterprise

- Velocity Software will install z/VM and support it for you
- Full cloud configuration – you never see z/VM (if you don't want)

# Demonstration Links

Links to Velocity Software live demonstration page

<http://demo.velocitysoftware.com/ZVIEW/zview.cgi>

## Challenges with z/VM

- Lack of z/VM skills
- Old style interface (3270)
- Linux on hardware seems easier
- KVM seems easier

## zPRO Objectives

- Modernize the z/VM Platform
- Simplify z/VM
- Provide Systems programmers with simple to use management
- Provide end users simple access

# z/VM Challenges (for all sites)

## Directory Management – using zPRO

- Often bottleneck in creating/modifying servers
- Who is allowed? Now automatic

## Operations – using zPRO

- Starting / Stopping servers
- Who can do it? Server owners

## Systems Management – using zPRO

- See available resources
- See servers / server ownership

# zPRO for end users

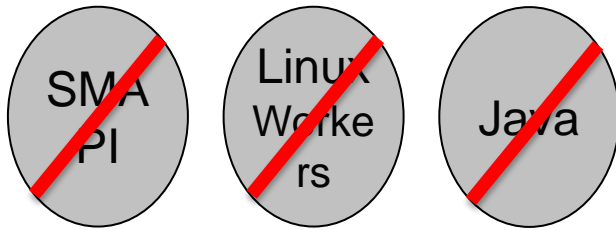
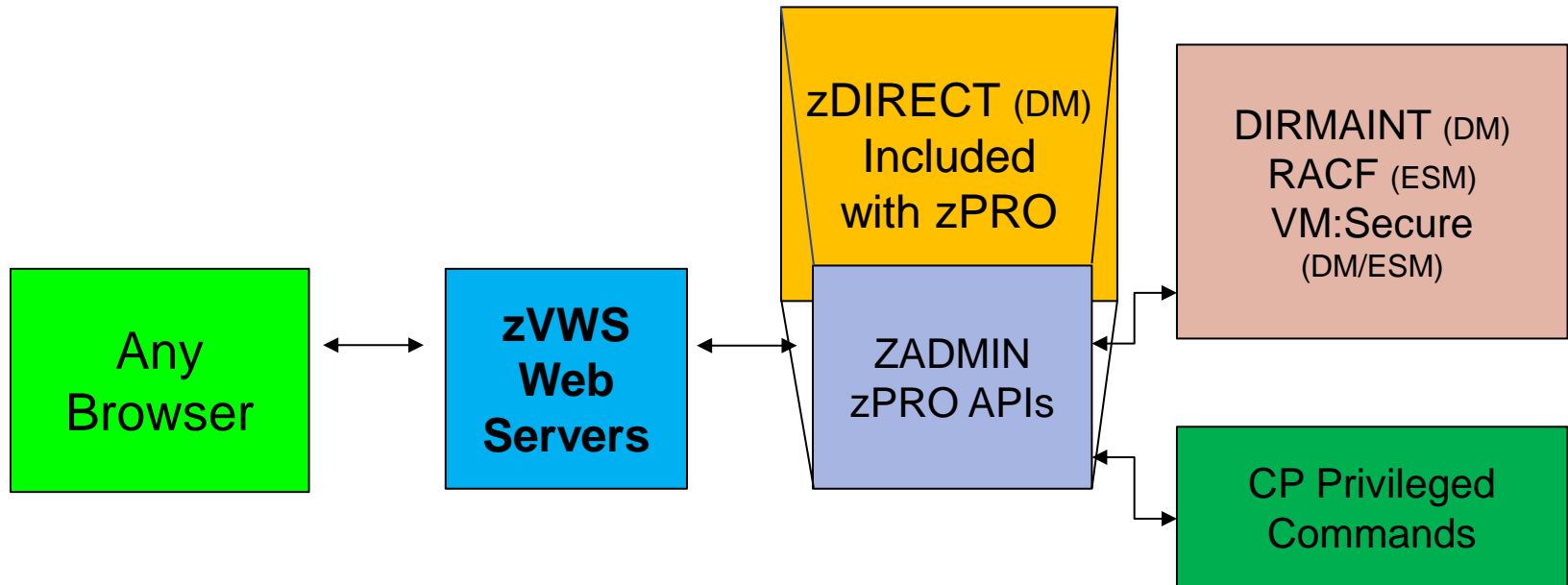
- **z/VM Cloud Server Management**
  - Clone (provision), modify, start, stop, move, delete servers
    - Linux w/Oracle, Websphere, etc – any z/VM guest
  - Define server expirations
    - Useful for LAB, test or proof-of-concept servers
  - Selective resource controls and quota management
    - Hierarchical control from global, to group, to user to server
  - SSI / LGR (live guest relocation) support



# zPRO support for platform

- **Utilizes the zVWS *native* z/VM web server**
  - UI is completely browser-based (remember, no Java Elephant!)
  - **Installs in about 10 minutes onto zVPS managed LPAR**
- **Authentication support via zVWS**
  - VM / LDAP / AD / your own
- **Extensible**
  - Can define and “plug in” site-defined services
- **Provides directory management**
  - zDIRECT provides Directory Management - with or without RACF

# zPRO's Structure – Simple!



# Skills and Time

- **Little or no z/VM system knowledge needed**
  - Fills in for any lack of z/VM skills
    - **Full server control without z/VM Skills**
  - Helps to ramp-up support while learning about the platform

# zPRO Server Management web page

The screenshot displays the zPRO Server Management web interface. On the left is a navigation sidebar with options like 'Administration', 'Create Servers', and 'Server Management'. The main area shows a table of virtual machines under the 'CUSTOMER' tab. Three modal windows are open: 'Set Virtual Machine Owner', 'Add a Minidisk', and 'Change a Server's Password'.

Sel	Virtual Machine	SysID	Owner
<input type="checkbox"/>	\$DASD\$	VSIVM4	unassigned
<input type="checkbox"/>	\$EMPTY	VSIVM4	unassigned
<input type="checkbox"/>	BCLOUD	VSIVM4	unassigned
<input type="checkbox"/>	BLAKEMC	VSIVM4	unassigned
<input type="checkbox"/>	BLAKES11	VSIVM4	unassigned
<input type="checkbox"/>	BLURCV	VSIVM4	unassigned
<input type="checkbox"/>	CAVMM01	VSIVM4	unassigned
<input type="checkbox"/>	CAVMM02	VSIVM4	unassigned
<input type="checkbox"/>	CENTFBA	VSIVM4	unassigned
<input type="checkbox"/>	CENTOS66	VSIVM4	unassigned
<input type="checkbox"/>	CONSERVE	VSIVM4	unassigned
<input type="checkbox"/>	CONSPORT	VSIVM4	unassigned
<input type="checkbox"/>	DANIEL	VSIVM4	unassigned
<input type="checkbox"/>	DAVEL2	VSIVM4	ADMIN
<input type="checkbox"/>	DEMOBLK	VSIVM4	BARTON

**Set Virtual Machine Owner** modal window:

- Search Criteria: [X] Search Criteria ...
- Buttons: Assign to RKSDEV, Choose Owner, Unassign

**Add a Minidisk** modal window:

- Add to Server: DEMOBLK
- Virtual Address: [ ]
- DASD Pool: DEMOECKD
- Device Type: 3390
- Cylinders / Blocks: [ ]
- Access Mode: MR
- Button: Process Request

**Change a Server's Password** modal window:




- User Id: DEMOBLK
- New Password: [ ]
- Verify password: [ ]
- Button: Process Request











# Auditing

Y zPRO Enterprise Cloud Management VSIVM4

DEMO SYS CUSTOMER DEVELOPMENT

**Audit Log**

   X Search Criteria

	01/07/2020 - 06:15:31.335888	DEMOSYS	-System-	ZPRUNQUO: Processing 43 server entries from EXPIRING ZPFILE
	01/07/2020 - 06:00:38.695411	DEMOSYS	RKSDEV	ZPFINCLN: User RKSSVR10 located: IP - 1 THIS 10.0.0.13
	01/07/2020 - 06:00:38.692489	DEMOSYS	RKSDEV	ZPFINCLN: User RKSSVR10 located: OSA - DECREASE 0
	01/07/2020 - 06:00:38.689946	DEMOSYS	RKSDEV	ZPFINCLN: User RKSSVR10 located: MDISK - 1
	01/07/2020 - 06:00:38.687198	DEMOSYS	RKSDEV	ZPFINCLN: User RKSSVR10 located: VCPUS - 1
	01/07/2020 - 06:00:38.684618	DEMOSYS	RKSDEV	ZPFINCLN: User RKSSVR10 located: VSTOR - 256 MB
	01/07/2020 - 06:00:38.681980	DEMOSYS	RKSDEV	ZPFINCLN: User RKSSVR10 successfully cloned by Rich Smrcina from golden image GOLDRL74
	01/07/2020 - 06:00:38.538976	DEMOSYS	RKSDEV	ZPFINCLN: RKSSVR10 has been autostarted
	01/07/2020 - 06:00:38.523102	DEMOSYS	RKSDEV	SENDACK: Results of sending email for RKSSVR10 to rich@velocitysoftware.com - ZPEmail 0
	01/07/2020 - 06:00:38.286316	DEMOSYS	RKSDEV	ZPFINCLN: Invoking DEMOACK for RKSSVR10 with NEWLN XU RKSSVR10 QUIET Rich Smrcina EMAIL=rich@velocitysoftware.com

RKSDEV Settings

- Change Password
- Job Queue
- Audit Log
- Show Notifications
- Report Bug
- Diag Console
- About zPRO
- Logout

- **zPRO Focus:**
  - **Simplifying access** and acceptance of the mainframe for new, younger and possibly less skilled team members through a browser-based interface
  - Providing a cloud-based facility for mainframe **training**, especially around cloud and guest management
  - Simplifying daily tasks by **empowering** end-users to manage their own guests while *you* still control authorities and resources (Functional Decentralization)

# Velocity's zPRO Cloud Demo Site

- To register:

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

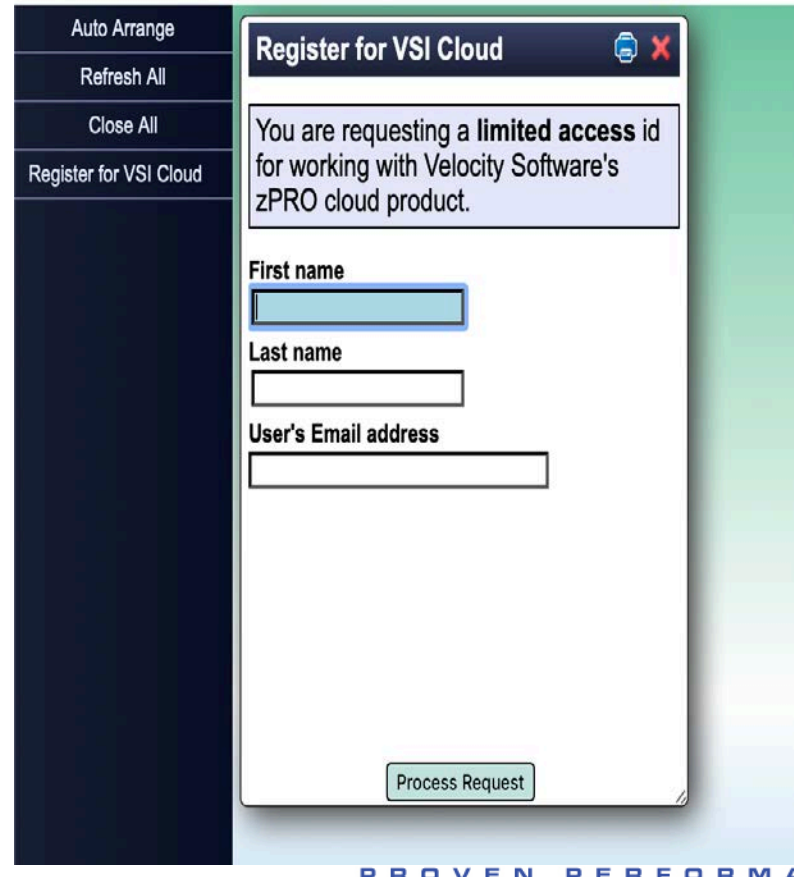
- Userid: **demozpro**
- Password: **demodemo**

- Check your email for your login info

Our Cloud Demo site will allow you to register for your own userid. You can then use that userid to create, manipulate and use a selection of servers through zPRO.

It is a full zPRO system that is running the same code we ship to our customers. **Note** that Demo userids only have access to a subset of zPRO functions and are limited in authorizations.

VELOCITY SOFTWARE zPRO Cloud Management



Auto Arrange

Refresh All

Close All

Register for VSI Cloud

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

Process Request

PROVEN PERFORMANCE

# Sign-in

Login to zPRO is simple – you are presented with a userid/password prompt to enter your zPRO defined information.

Your credentials can be validated on z/VM directly, through LDAP/AD, or any credential verification process that can be implemented via the available security exit.

## zPRO Cloud Management - VSIVM4



Userid

Password

## 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)





# Enterprise Functions

zPRO dialogs present a list box to select on which system to perform the function.

DEMOSYS CUSTOMER DEVELOPMENT

## Clone a Virtual Machine

**Target System**

- ✓ Select target...
- DEMOSYS
- CUSTOMER
- DEVELOPMENT

**New ID**

**Password**

**Verify Password**

**Account No.**

**No. Cpus**

**Memory Size**

 G 

**Days to expiration**

Auto Start Server

**Optional (blank field for no email):  
Email address to send notification to**

**Your Return Email address**

Process Request

## Performance management is a business model

- Performance analysis and tuning
- Capacity planning
- Operational support
- Chargeback

## Single pane of glass

Efficiency critical, not just a diagnostic tool

Flexibility important – architecture works....

# Velocity Software zVPS Provides:

- **z/VM Performance Monitor (for 31 years)**
- **NETWORK Monitoring (for 20 years)**
- **Linux on “Z” Monitoring (for 18 years)**
- **Oracle, Websphere Monitoring (for 10 years)**
- **VSE Monitoring (for 5 years)**
- **No charge features**
  - zOPERATOR for fully INTEGRATED operations management console
  - zALERT for supporting fully INTEGRATED operations
  - Distributed server monitoring (Linux, Microsoft)
- **And now zOSMON....**

## New Technologies

- **Docker (thousands of containers)**
- **MongoDB (see Marriott presentations)**  
<http://VelocitySoftware.com/MongoDB.html>
- **z/VM 7.1 (done, fcp, edev, diagnose, 80 threads)**
- **SPLUNK (done) “<http://VelocitySoftware.com/splunk.html>”**
- **z/OS.... (common request)**
- **VSE CICS too**
- **z/OS: Send link to your z/OS people....**  
<http://demo.velocitysoftware.com/zview/zview.cgi?view=myzos&heading=no&menu=no>
- **See [HTTP://VelocitySoftware.com/zOSMON.HTML](http://VelocitySoftware.com/zOSMON.HTML)”**  
Make it easy, low overhead, amazingly fast...
- **Z15: MFC data supported! (zVPS only consumer)**