Monitoring z/OS efficiently and effectively with Velocity Software's new zOSMON Performance Management for z/OS Offering

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"If you can't Measure it,
I am Just Not Interested ™"

Topics

- **2020 at Velocity Software**
  - Metal to cloud in 2 days…
- **zVPS Version 5 supports Z**
- **Performance Management**
  - zVPS – Velocity Software Performance Suite
- **zOSMON**

2020 At Velocity Software

- **zVPS Version 5 released in January**
- **Went to SHARE, CMG/Germany**
- **March flew on Friday the 13th, then Lockdown???**
- **Datacenter Move (California to Ohio)**
  - Vicom Infinity worked to get Velocity Software into ESP
  - Z15 T02 ESP, New DS8910F disk subsystem
  - Metal to cloud in 2 days after code 20 (includes formatting disks)
    - "http://VelocitySoftware.com/metal.html"
- **Moved websites during interesting times**
  - VelocitySoftware.com, VMWORKSHOP.ORG, others
- **Moved VSI Development seamlessly**
  - Moved Linux, zVSE, z/OS servers

zVPS Version 5

zVPS Version 5 is a MAJOR release

- z/VM support of latest and greatest

- **Linux subsystem support enhanced**
  - Docker, MongoDB, GPFS

- **zOSMON: new feature of zVPS**
  - Very efficient SMF processing for z/OS Performance MGMT
  - (SMF 70, 30, 110), more to come
  - 20 Reports/displays, 50 graphs, more to come

- **VSEMON no Charge Feature of zVPS**
  - z/VSE Support
  - TCPIP Support: BSI Stack, CSI Stack
  - CICS

- **IBM Secure Service Container Support**

Performance Management Requirements

Single pane of glass

- No enterprise has only one platform
- One user interface minimizes learning curves
- Evaluate multiple systems, platforms, networks in one view

Minimize Overhead of performance management

- Processor Costs of performance management can be large
- Many installations run 15-minute granularity to reduce overhead
- “Only run this when there is a problem” is not management

A target of less than 1% of CPU resource for performance management is a reasonable target

Performance Management: 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)
- Analyze z/OS
  - Subsystems (disk, CPU), jobs, CICS

- **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

Performance Management Requirements

Why Capacity Planning: Future Service Levels

- How many more servers / workload can you support with existing z15?
- What is capacity requirements for an application? (on
- Avoid crisis ***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
  - z/VSE: partitions, CPU, I/O, CICS, TCPIP (BSI,CSI)
  - z/OS: CICS(110), BATCH (30), SYSTEM (70)
- **Application subsystem analysis**
  - Java, WAS, Oracle, MongoDB, Docker
- **Outside “Z” server platform analysis**
  - Linux on “x”, VMWare, KVM, Secure Service Container
  - Microsoft servers
  - VPN, gateways, utilities

Why zOSMON™?

- **Velocity Software over 30+ years, in 25 countries:**
  - VM/XA, VM/ESA, z/VM
  - Network management
  - Linux management
  - Distributed servers
  - z/VSE
  - Now z/OS
- **Why z/OS now?**
  - Many customer requests for zVIEW presentation of z/OS data
  - z/OS performance management overhead is the target
  - One minute granularity at extremely low overhead
  - zVPS performance data storage and presentation easily extended

zVPS Architecture Overview

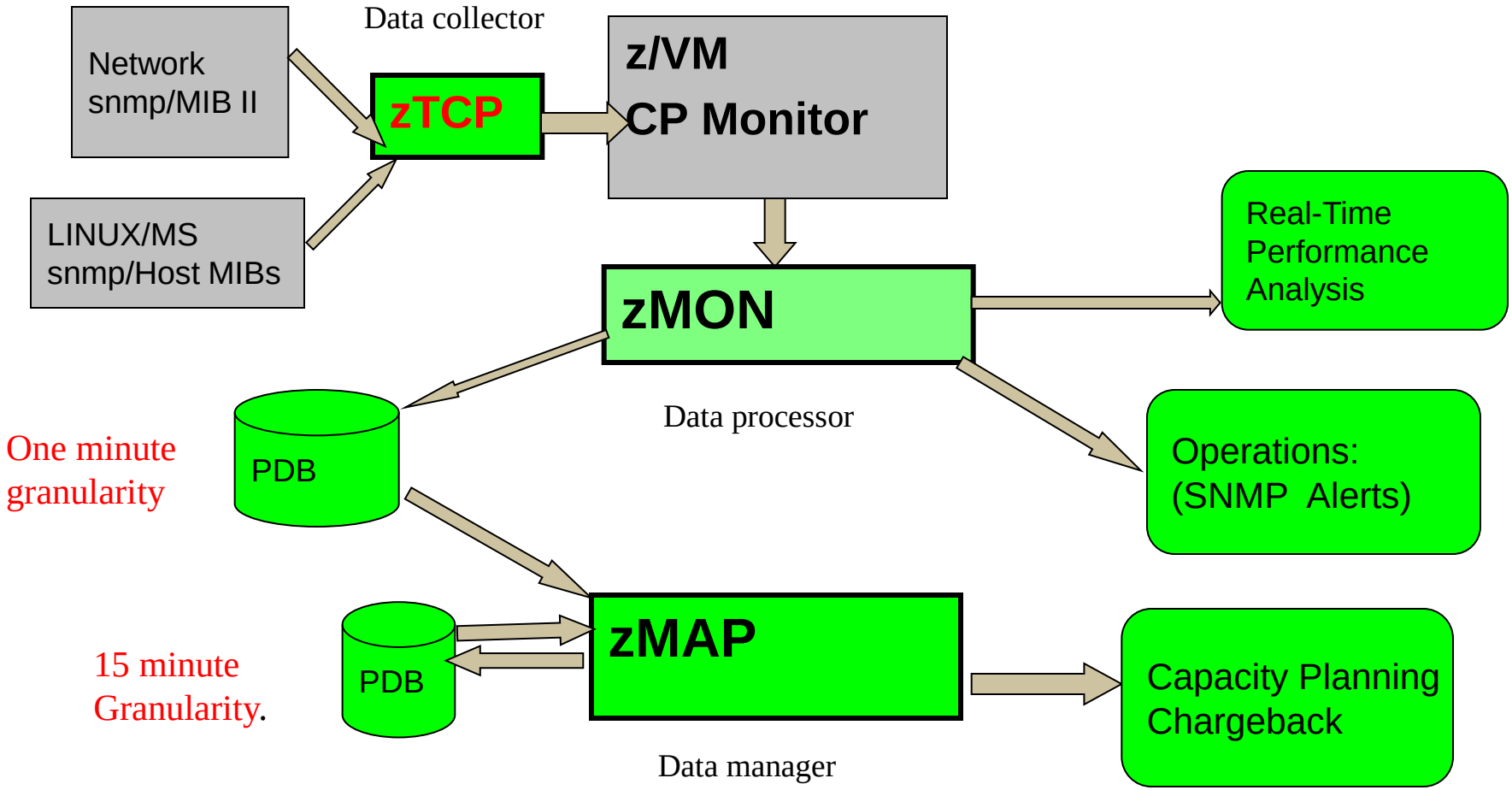
zVPS Basic Architecture

- z/VM, CMS based architecture
- Requires one small z/VM based LPAR
- (z/VM is a VERY simple and elegant platform)
- z/VM Designed for efficiency
- zVPS has VERY Low resource consumption
- Native Web Server provided
- EVERYTHING (z/VM, zVPS) INSTALLS IN LESS THAN 2 DAYS

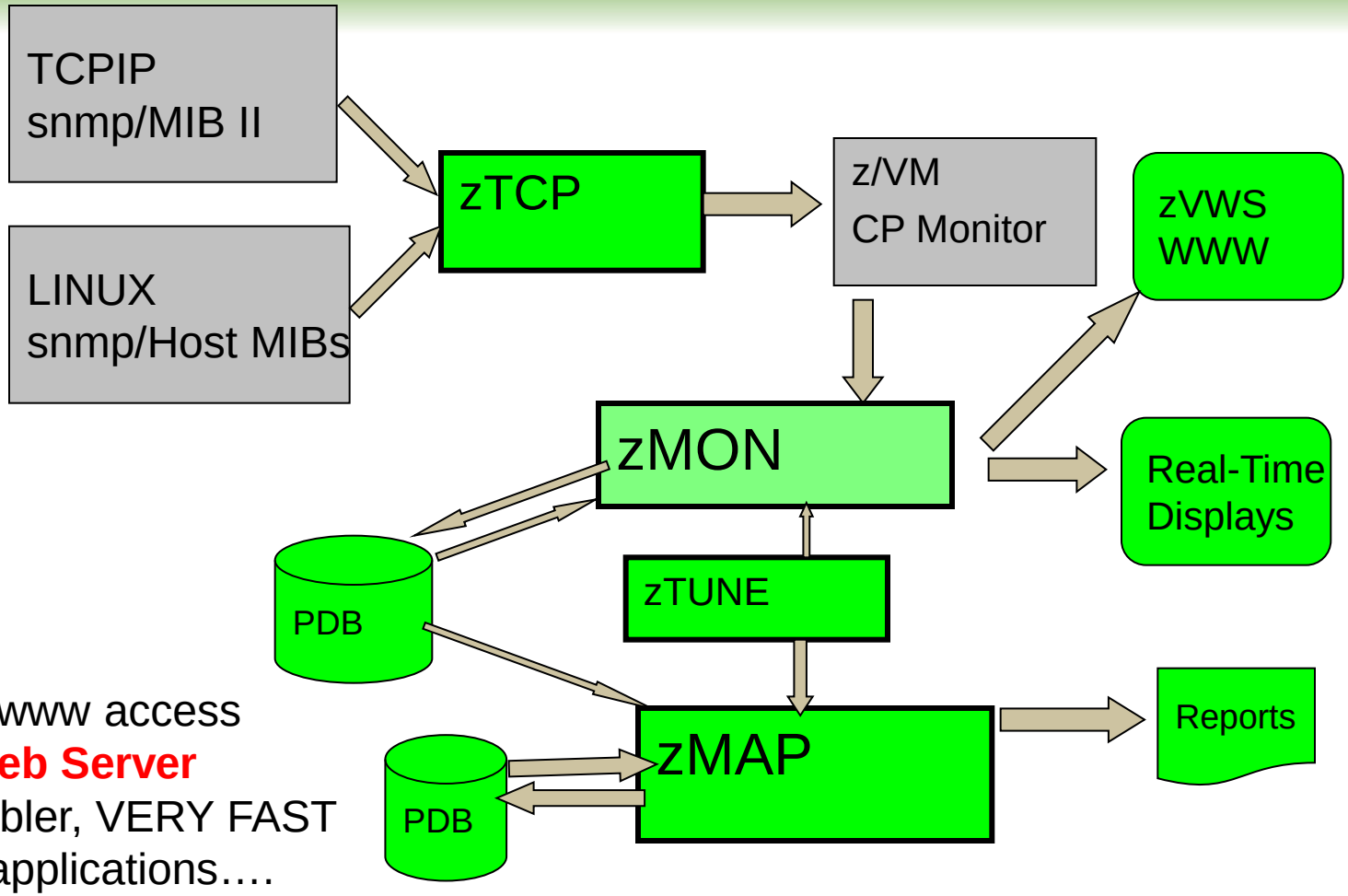
Data Sources – All are architected interfaces

- z/VM: CP Monitor
- Linux, MS, Distributed: snmp – VERY EFFICIENT
- z/OS: SMF – low cost, architected
- z/VSE: snmp, DMF
- IBM Secure Software Container: collectd

Linux Monitoring Technology



Modernize: Webserving, performance skills

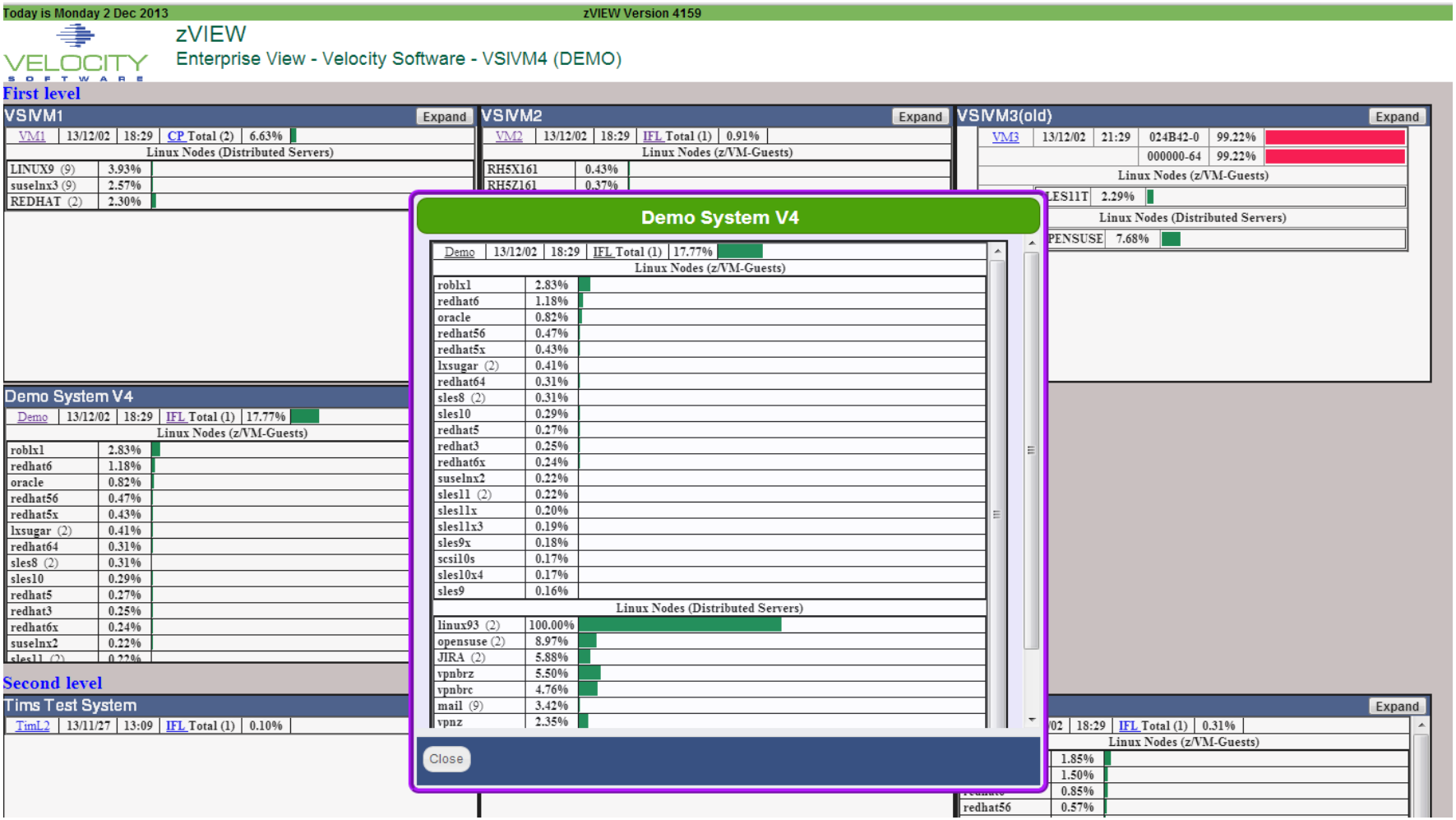


ZVWS Provides www access
NATIVE z/VM Web Server
Written in assembler, VERY FAST
Many customer applications….

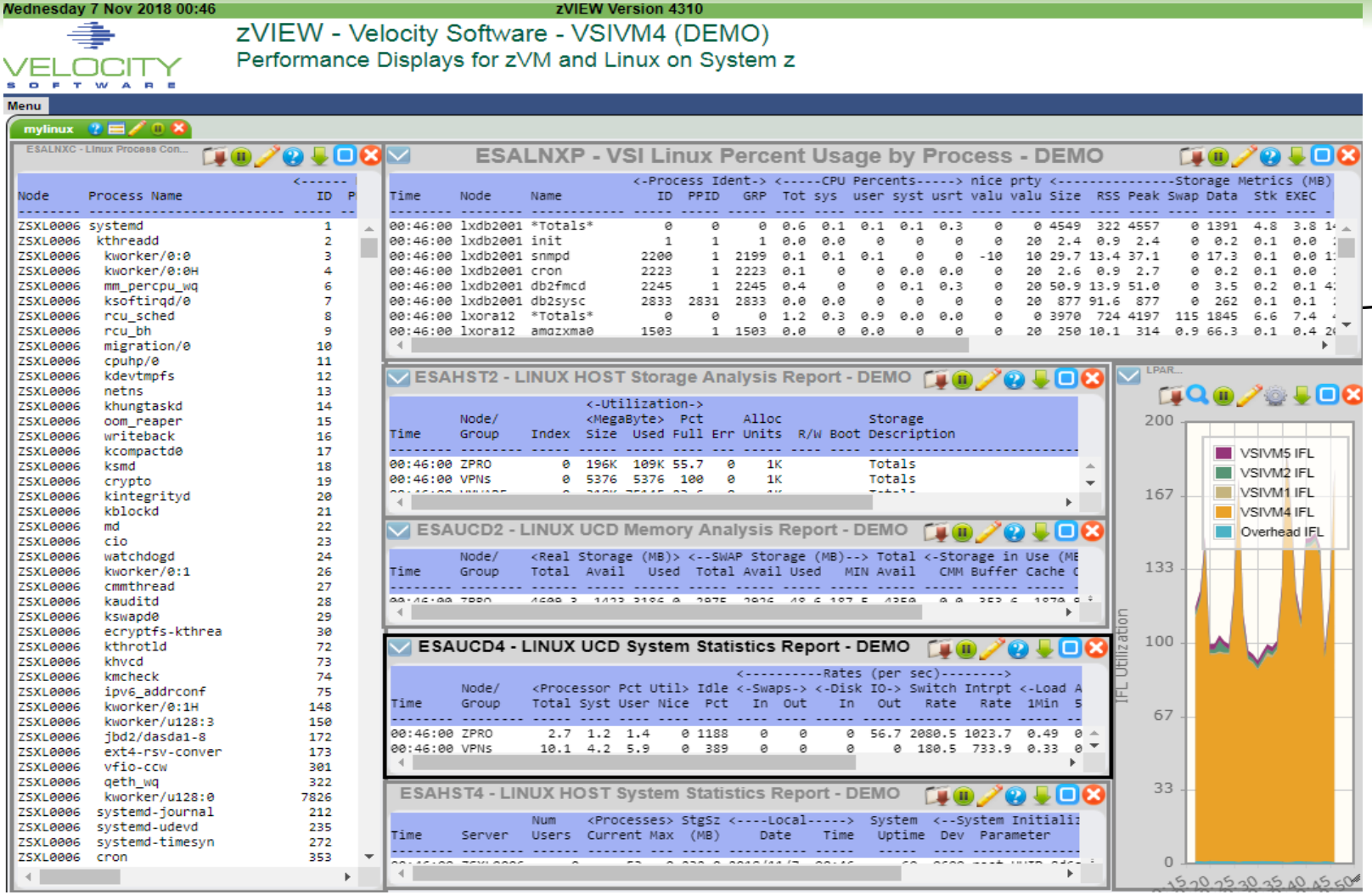
zTUNE: Rules based analysis

zVPS Enterprise View – All LPARs in Enterprise

Tailorable, expandable, zoomable

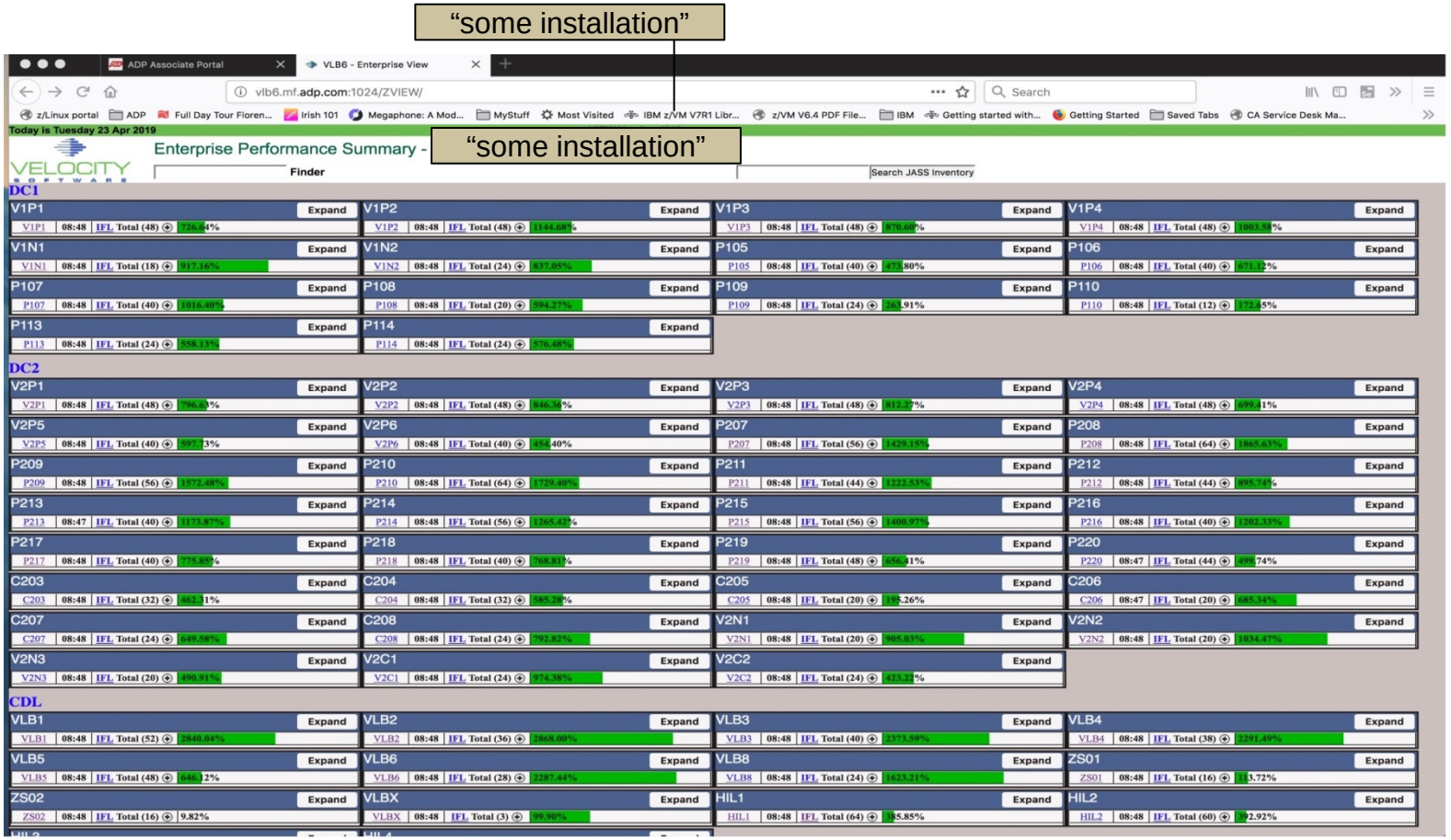


zVIEW Linux performance in one click



zVPS Enterprise View

Did I say scalable? A lot of LPARS….



Why zOSMON ™

Customers ask for it:

- Efficient (Performance MGMT takes too many MSU)
- Fast: Real time monitoring is not a two minute response
- Centralized Data: How many LPARs can we do?
- Don’t want to learn SMF
- Inexpensive:
- Performance monitoring is not 15 minute granularity

My objective: Low cost performance management

- Real time Performance Analysis
- Easy Capacity Planning
- Chargeback capabilities
- Operational Alerts

zOSMON ™ Requirements

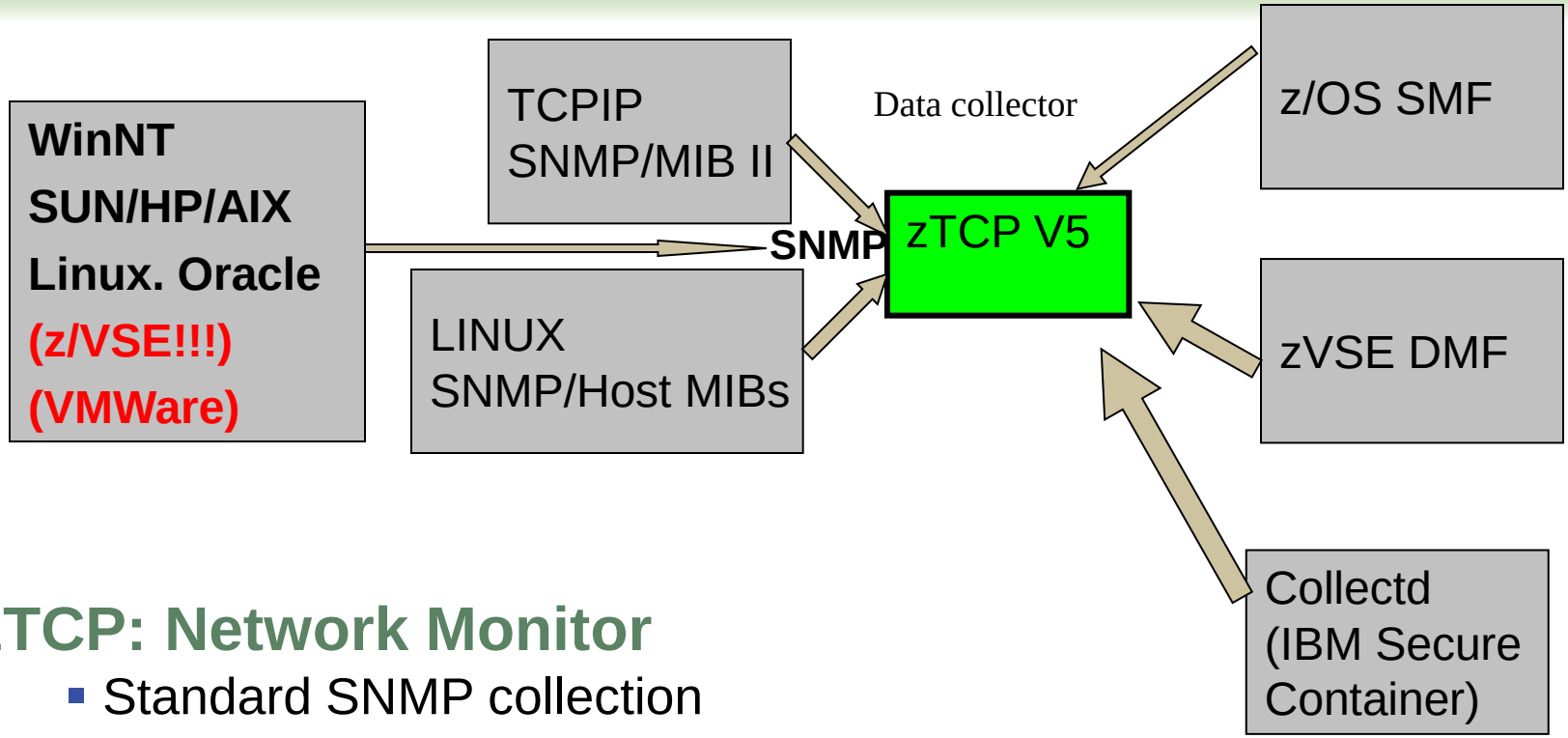
z/VM Required

- A “one off lpar” easily implemented (easily maintained too)
- If supporting Linux on IFLs, z/VM runs on IFL

z/OS requirements

- SYSPLEX mode, even if only one member
- Logstream mode
- Agent easily installed

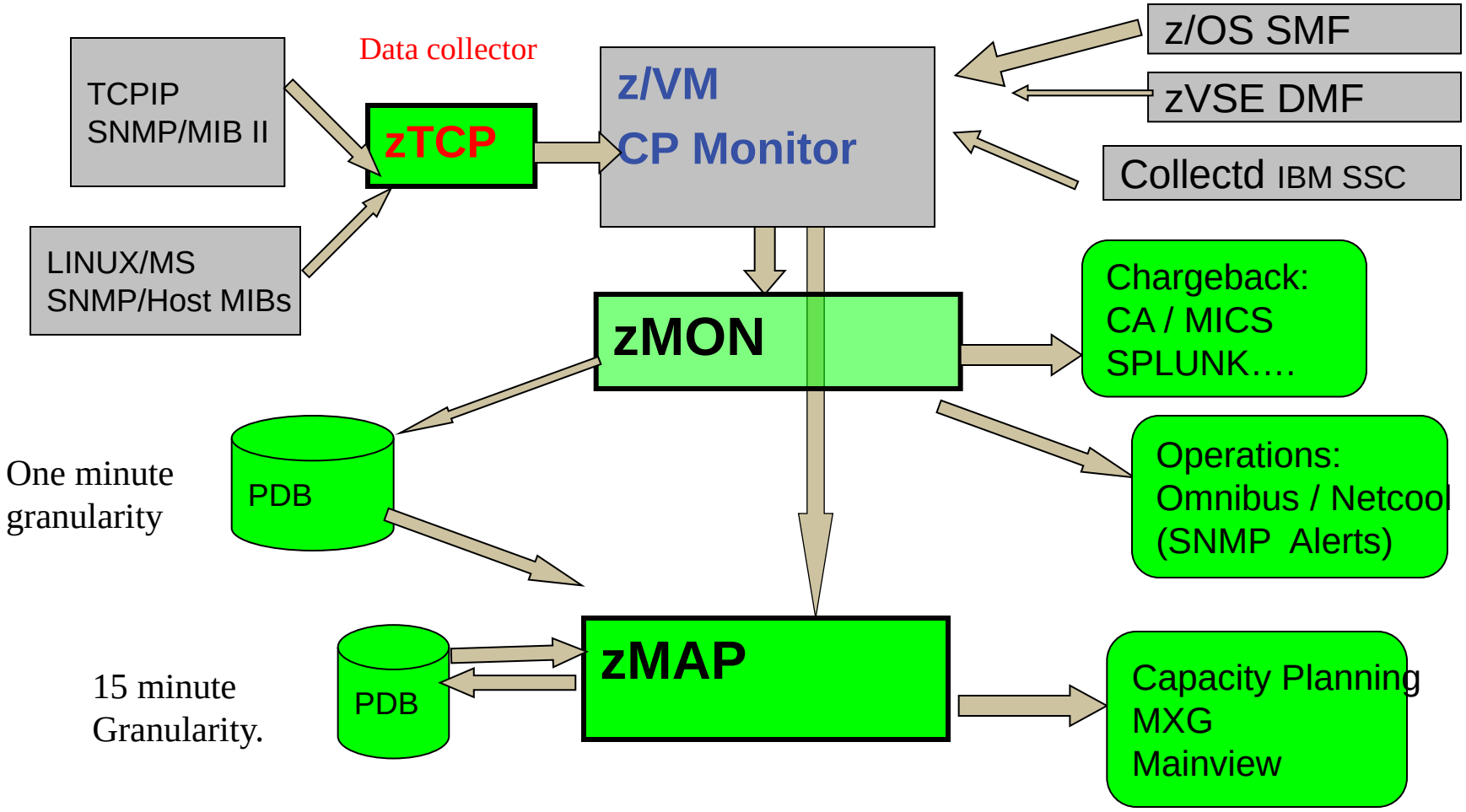
“snmp” Collector zTCP Enhanced



zTCP: Network Monitor

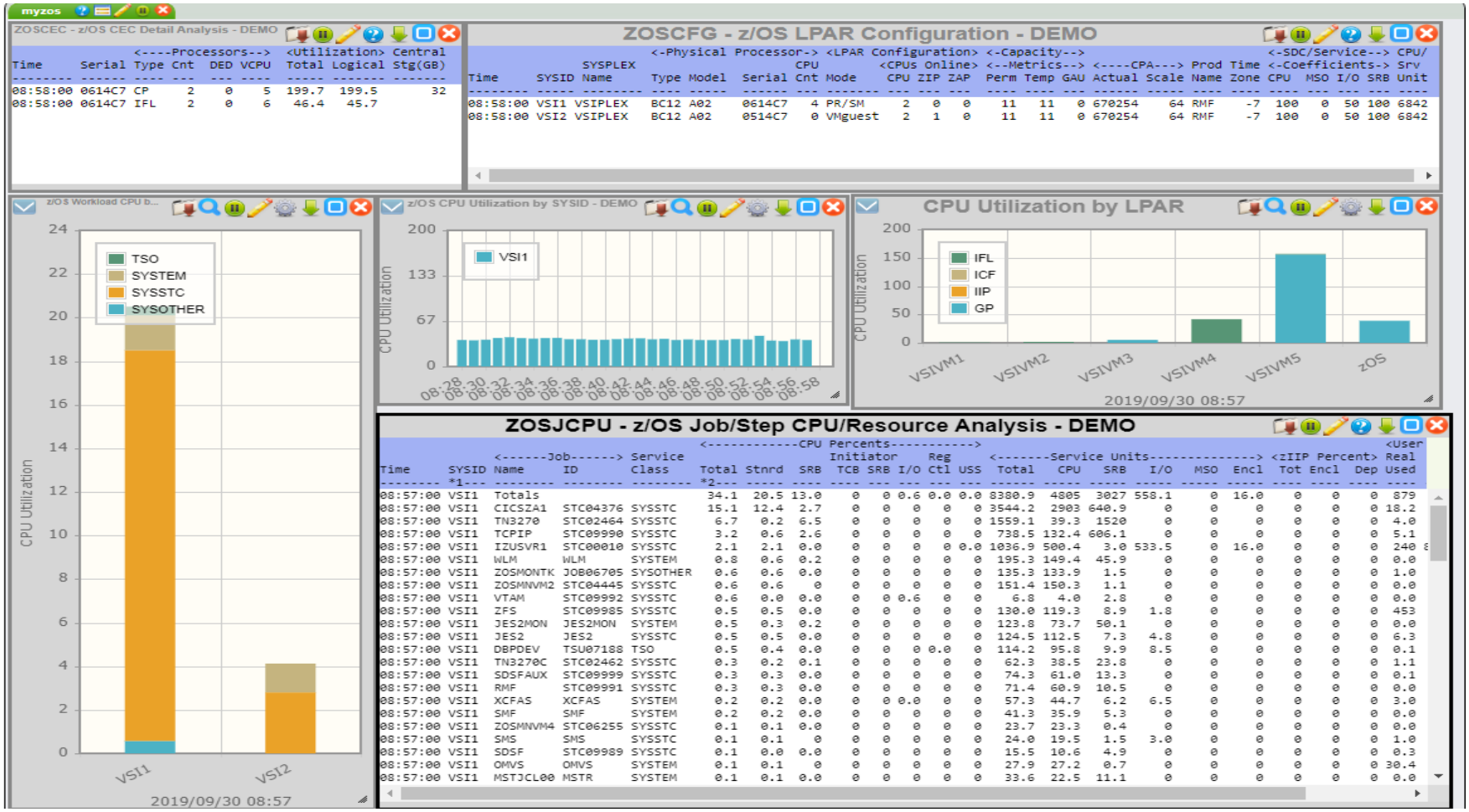
- Standard SNMP collection
- Data added to PDB
- Now accepts SMF Records
- Now accepts DMF records
- Now accepts Collectd

SOP: Standard Operating Procedure



zOSMON fully integrated – one click

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



zOSMON fully integrated

Instant z/OS Graphs. (Tailorable)

http://demo.velocitysoftware.com/zview/zview.cgi?view=zosgraph&heading=no&menu=no

What can we do, and at what cost?

SMF 70 supported

- ZOSCFG - configuration
- ZOSCPU – CPU utilizations
- ZOSLPRS – LPAR summary
- ZOSLPAR – LPAR by CPU
- ZOSCEC – CEC analysis
- ZOSSTR – system storage

SMF 30

- ZOSJCFG – job configuration
- ZOSJCPU – job/step CPU
- ZOSJDSD – job/step DASD I/O
- ZOSJUSS – job/step Unix System Services Analysis
- ZOSJSTR – job/step storage analysis
- ZOSJWKLD – service class analysis

What can we do, and at what cost?

SMF 110 supported

- ZOSCIX1 – CICS High Level Analysis
- ZOSCIX2 – CICS Region Analysis
- ZOSCIX3 – CICS Transaction Response time Analysis
- ZOSCIX4 - CICS Transaction ID Analysis

But at what cost?

Our Configuration

Two z/OS systems, one in LPAR, one guest…

BC12 A02 rated 11 MSU

Configuration report

```
Report: ZOSCFG        z/OS LPAR Configuration Report
Monitor initialized: 11/04/19 at 01:00:00 on BC12 serial 06
-------------------------------------------------------------
SYSID SYSPLEX  <-Physical Processor->  <LPAR Configuration>
      Name     Type Model  Serial CPU  Mode   <CPUs Online>
                                Cnt           CPU ZIP ZAP
----  -------- ---- -----  ------ ---  -----    --- --- ---
01:15:00
VSI1  VSIPLEX   BC12  A02  0614C7   4  PR/SM     2   0   0
VSI2  VSIPLEX   BC12  A02  0514C7   0  VMGuest   2   1   0
```

*** MSUs are used for software pricing only; they are not a capacity metric.

Our Utilization

Two z/OS systems, one in LPAR, one guest…

Guests do not provide CPU in SMF 70

No limit to collector on number of LPARs (that we know of)

```
Report: ZOSCPU        Z/OS CPU Report
Monitor initialized: 11/05/19 at 00:00:00 on BC12 serial 051
-------------------------------------------------------------
TIME/   <--CPU--> Sample <-CPU Utilization> <----------Rates
                                            <---Dispatch--->
SYSID   ID   Type Count  Total  Wait Parked   SRB   TCB Wait
------  ---- ---- -----  ----- ----- ------ ----- ----- ----
00:15:00
VSI1     Tot   GP    15   98.9  19.7      0 858.5 827.4 29.8
           0   GP    15   50.1   9.4      0 562.1 521.3 20.1
           1   GP    15   48.8  10.4      0 296.4 306.1  9.7

VSI2     Tot   GP    15      0 108.9      0  86.1 126.2  105
           0   GP    15      0  54.6      0  43.0  63.1 52.8
           1   GP    15      0  54.2      0  43.1  63.1 51.8
           2 zIIP    15      0  92.5      0     0  33.6  6.9
-------------------------------------------------------------
```

Our Jobs

Feeding three different data collectors (vm2, vm4, vmtk)… Capture ratio?

Report: **ZOSJCPU** z/OS Job/Step CPU/Resource Report
Monitor initialized: 11/04/19 at 01:00:00 on BC12 serial 0614C

SYSID	<---Job--->		<-------CPU Percents---------->							
	Name	JobID	Total	STD	SRB	Initiate TCB	Initiate SRB	Initiate I/O	Regn Cntrl	USS
01:15:00										
VSI1										
	Totals		90.9	80.0	10.3	0.0	0	0.6	0.0	0.1
	ANTAS000	ANTAS000	0.0	0.0	0.0	0	0	0	0	0
	CICSJZ1	**STC09632**	**21.5**	**19.6**	**2.0**	0	0	0	0	0
	EXMATGRP	JOB01605	27.0	27.0	0.0	0	0	0	0	0
	RACF	RACF	0.0	0.0	0.0	0	0	0	0	0
	RMF	STC09991	0.3	0.3	0.0	0	0	0	0	0
	SMF	SMF	0.2	0.1	0.0	0	0	0	0	0
	SMFDMPLS	JOB08464	41.1	40.9	0.2	0	0	0.1	0	0
	SMS	SMS	0.1	0.1	0.0	0	0	0.0	0	0
	SMSPDSE	System	0.0	0.0	0.0	0	0	0	0	0
	SYSLOGD	STC09988	0.0	0.0	0.0	0	0	0	0	0
	TCPIP	STC09990	2.7	0.5	2.2	0	0	0	0	0.0
	TN3270	STC02464	5.0	0.1	4.8	0	0	0	0	0
	TN3270C	STC02462	0.2	0.1	0.1	0	0	0	0	0
	VLF	VLF	0.0	0.0	0.0	0	0	0	0	0
	VMCF	VMCF	0.0	0.0	0	0	0	0	0	0
	VTAM	STC09992	0.5	0.0	0.0	0	0	0.5	0	0
	WLM	WLM	1.3	1.0	0.2	0	0	0	0	0
	XCFAS	XCFAS	0.3	0.2	0.0	0	0	0.0	0	0
	ZFS	STC09985	0.6	0.5	0.0	0	0	0.0	0	0
	ZOSMNVM2	**STC00912**	**0.6**	**0.6**	**0.0**	**0**	**0**	**0**	**0.0**	**0**
	ZOSMNVM4	**STC08192**	**0.1**	**0.1**	**0.0**	**0**	**0**	**0**	**0.0**	**0**
	ZOSMONTK	**JOB09418**	**0.5**	**0.5**	**0.0**	**0**	**0**	**0**	**0**	**0**

Our Jobs

Feeding three different data collectors (vm2, vm4, vmtk)…

Report: **ZOSJCPU** z/OS Velocity Software Corporat
Monitor initialized: 11/7

SYSID	<---Job-------->		<-------Service Units-------->					
	Name	JobID	<--------Per Second---------->					
			Tot	CPU	SRB	IO	MSO	Enclv
01:15:00								
VSI1								
	Totals		22K	19K	2414	704	0	16.6
	ANTAS000	ANTAS000	0.9	0.4	0.5	0	0	0
	CICSJZ1	**STC09632**	**5038**	**4576**	**463**	**0**	**0**	**0**
	EXMATGRP	JOB01605	6312	6310	0.8	0.9	0	0
	RACF	RACF	2.0	0.9	1.1	0	0	0
	RMF	STC09991	70.0	59.3	10.7	0	0	0
	SMF	SMF	39.4	34.0	5.3	0	0	0
	SMFDMPLS	JOB08464	9739	9553	42.5	143	0	0
	SMS	SMS	24.3	19.7	1.7	2.9	0	0
	SMSPDSE	System	7.1	5.3	7.1	0	0	0
	SYSLOGD	STC09988	4.4	2.4	2.0	0	0	0
	TCPIP	STC09990	631	117	514	0	0	0
	TN3270	STC02464	1160	31.8	1128	0	0	0
	TN3270C	STC02462	53.6	31.1	22.5	0	0	0
	VLF	VLF	1.3	0.8	0.6	0	0	0
	VTAM	STC09992	6.9	4.0	2.8	0	0	0
	WLM	WLM	293	246	47.7	0	0	0
	XCFAS	XCFAS	63.7	49.5	7.8	6.4	0	0
	ZFS	STC09985	140	126	11.6	2.0	0	0
	ZOSMNVM2	**STC00912**	**139**	**137**	**1.2**	**0**	**0**	**0**
	ZOSMNVM4	**STC08192**	**23.3**	**22.7**	**0.7**	**0**	**0**	**0**
	ZOSMONTK	**JOB09418**	**122**	**121**	**1.5**	**0**	**0**	**0**

zVPS Overhead? What overhead?

Two CICS regions, 5,000 transactions / minute, 80 / second

"Velocity" is zVPS, all of it. Monitoring z/VM, Linux, VSE, z/OS

```
Screen: ZOSCIX1  Velocity Software                ESAMON 5.112 07/23 11:18-11:23
2 of 2  CICS Analysis                             SYSID * JOB * APPLID *

Time     SYSID <--CICS Program-> <--Transactions-> <----Task Statistics----->
               APPLID   JobName  Total Resp   CPU  Total MXT  Actv PctM  MXTQ
-------- ---- -------- -------- ----- ----- ----- ----- ---- ---- ---- -----
11:24:00 VSI1 CICSZA1  CICSJZ1   2414 1.138 0.007  2397  150   84 56.0     0
              CICSZA2  CICSJZ2   3134 1.003 0.008  3158  120   96 80.0     0
11:23:00 VSI1 CICSZA1  CICSJZ1   2408 1.194 0.007  2448  150   55 36.7     0
              CICSZA2  CICSJZ2   3200 0.943 0.008  3210  120   88 73.3     0
11:22:00 VSI1 CICSZA1  CICSJZ1   2406 1.225 0.007  2373  150   62 41.3     0
              CICSZA2  CICSJZ2   3198 0.989 0.008  3177  120   93 77.5     0
.
====>                                                                  VSIVM2
Screen: ESAUSP2  Velocity Software                ESAMON 5.112 07/23 11:10-11:23
1 of 3  User Percent Utilization                  CLASS VELOCITY      8562 020F78

                 <--Processor--> <--------Main Storage-(MB)-------->
          UserID <-use CPU%> T:V <Resident->  Lock <----WSSize----->
Time      /Class  Total  Virt Rat Total  Actv   -ed Total  Actv   Avg
-------- -------- ----- ----- --- ----- ----- ----- ----- ----- -----
11:24:00 Velocity  0.31  0.29 1.1  77.3  73.7  0.01  77.0  73.5   3.9
11:23:00 Velocity  0.30  0.28 1.1  77.3  76.1  0.01  77.0  75.7   4.0
11:22:00 Velocity  0.30  0.28 1.1  77.3  73.7  0.01  77.0  73.5   3.9
11:21:00 Velocity  0.31  0.29 1.1  77.3  73.7  0.01  77.0  73.4   3.9
11:20:00 Velocity  0.30  0.28 1.1  77.3  73.7  0.01  77.0  73.4   3.9
11:19:00 Velocity  0.32  0.30 1.1  77.3  73.7  0.01  77.0  73.4   3.9
.
```

CICS Configuration

z/OS, z/VSE, no limit (that we know of)…

4 Regions/Partitions, 3M transactions per day

```
Report: ZOSCICS1     z/OS CICS Analysis                                  Vel
Monitor initialized: 11/04/19 at 01:00:00 on BC12 serial 0614C7
-------------------------------------------------------------------------
SYSID <--CICS Program-> <-----Start-----> Platform  <----Location--->
      APPLID   JobName      Date     Time  O/S  VRM  LPARName VMID
----  -------- -------- -------- --------  ---- ---- -------- --------
01:15:00
VSI1  CICSZA1  CICSJZ1  10/20/19 02:03:56  z/OS 0720 VSIVM6
V61C  CICSP1   CICSJA68 11/02/19 14:34:28  VSE  0420 VSIVM5   ZVSE61C
      DBDCCICS CICSICCF 10/09/19 12:50:14  VSE  0420 VSIVM5   ZVSE61C
V62B  CICSP1   CICSJA95 10/20/19 06:25:23  VSE  0430 VSIVM5   ZVSE62B
      DBDCCICS CICSICCF 09/14/19 06:07:49  VSE  0430 VSIVM5   ZVSE62B
V62C  CICSP1   CICSJA69 10/21/19 03:15:02  VSE  0430 VSIVM5   ZVSE62C
      DBDCCICS CICSICCF 10/14/19 07:01:09  VSE  0430 VSIVM5   ZVSE62C
```

CICS configuration by Region

Configuration, VSE, z/OS

```
Report: ZOSCICS1     z/OS CICS Analysis                                Velo
Monitor initialized: 07/19/20 at 00:00:00 on Z15S serial 0E0F78
-------------------------------------------------------------------------
SYSID <--CICS Program-> <-----Start-----> Platform  <----Location--->
      APPLID   JobName      Date     Time  O/S  VRM  LPARName VMID
----  -------- -------- -------- --------  ---- ---- -------- --------
07/19/20
00:00:00 - 00:15:00
VSI1  CICSZA2  CICSJZ2  07/15/20 17:40:03  z/OS 0720 ZOSLP1
      CICSZA1  CICSJZ1  07/15/20 17:35:18  z/OS 0720 ZOSLP1
V61B  CICSJA60 CICSJA60 05/26/20 20:14:33  VSE  0420 VSIVM5   ZVSE61B
      CICSJB60 CICSJB60 05/26/20 20:14:43  VSE  0420 VSIVM5   ZVSE61B
V62C  CICSJA69 CICSJA69 06/24/20 08:10:01  VSE  0430 VSIVM5   ZVSE62C
-------------------------------------------------------------------------
00:15:00 - 00:30:00
VSI1  CICSZA2  CICSJZ2  07/15/20 17:40:03  z/OS 0720 ZOSLP1
      CICSZA1  CICSJZ1  07/15/20 17:35:18  z/OS 0720 ZOSLP1
V61B  CICSJA60 CICSJA60 05/26/20 20:14:33  VSE  0420 VSIVM5   ZVSE61B
      CICSJB60 CICSJB60 05/26/20 20:14:43  VSE  0420 VSIVM5   ZVSE61B
V62C  CICSJA69 CICSJA69 06/24/20 08:10:01  VSE  0430 VSIVM5   ZVSE62C
```

CICS by Region

By minute, real time, wrapped up at night to 15 minute

```
Report: ZOSCIX2      z/OS Region Transaction Analysis                Vel
Monitor initialized: 07/19/20 at 00:00:00 on Z15S serial 0E0F78
-------------------------------------------------------------------------
Time/          <Transactions> <-Response Time-> <Dispatch Time> total
SYSID/ APPLID  Group    Count Total  Susp  Disp   CPU  DISP ZIP  CPU
Time                          Resp  Time  Time  Time  Wait CPU Secs
----  -------  -------- ----- ----- ----- ----- ----- ----- --- ----
07/19/20
00:00:00 - 00:15:00
VSI1  CICSZA2  Totals       1 0.261 0.260 0.002 0.001 0.000   0  0.0
               InFlight   135 68.89 68.88 0.001 0.000 0.000   0  0.0
      CICSZA1  Totals       1 0.019 0.005 0.028 0.007 0.003   0  0.0
               InFlight   130 83.28 83.28 0.001 0.000 0.000   0  0.0
V61B  CICSJA60 Totals
               InFlight    14  1782  1782 0.006 0.004 0.004   0  0.1
      CICSJB60 Totals       1 0.001 0.000 0.001 0.001     0   0  0.0
               InFlight    16  1503  1503 0.005 0.004 0.003   0  0.1
V62C  CICSJA69 Totals
               InFlight     4  1800  1800     0     0     0   0    0
-------------------------------------------------------------------------
```

CICS by Transaction ID

Transaction data, waits by Transaction ID

```
Report: ZOSCIX4      z/OS CICS Tranaction IO Wait Analysis         Velocity So
Monitor initialized: 07/19/20 at 00:00:00 on Z15S serial 0E0F78
-------------------------------------------------------------------------------
Time/     Transaction <-Response Time-> <DispTime(Secs)><------Suspend Time -
SYSID                  Total  Susp  Disp   CPU   PC  ZIP Disp MXT TC
 APPLID      ID  Count  Resp  Time  Time  Time  Load CPU Wait Dly Dly Trm Jrn
--------  ----  ----- ----- ----- ----- ----- ----- --- ---- --- --- --- --- -
07/19/20
00:00:00 - 00:15:00
VSI1
 CICSZA2  Total      1 0.261 0.260 0.002 0.001     0   0 0.01   0   0   0   0
          CSSY       1 0.261 0.260 0.002 0.001     0   0 0.01   0   0   0   0
 CICSZA1  Total      1 0.019 0.005 0.028 0.007     0   0 2.50   0   0   0   0
          VSI1       1 0.019 0.005 0.028 0.007     0   0 2.50   0   0   0   0
V61B
 CICSJA60 Total
 CICSJB60 Total      1 0.001 0.000 0.001 0.001     0   0    0   0   0   0   0
          CSPQ       1 0.001 0.000 0.001 0.001     0   0    0   0   0   0   0
```

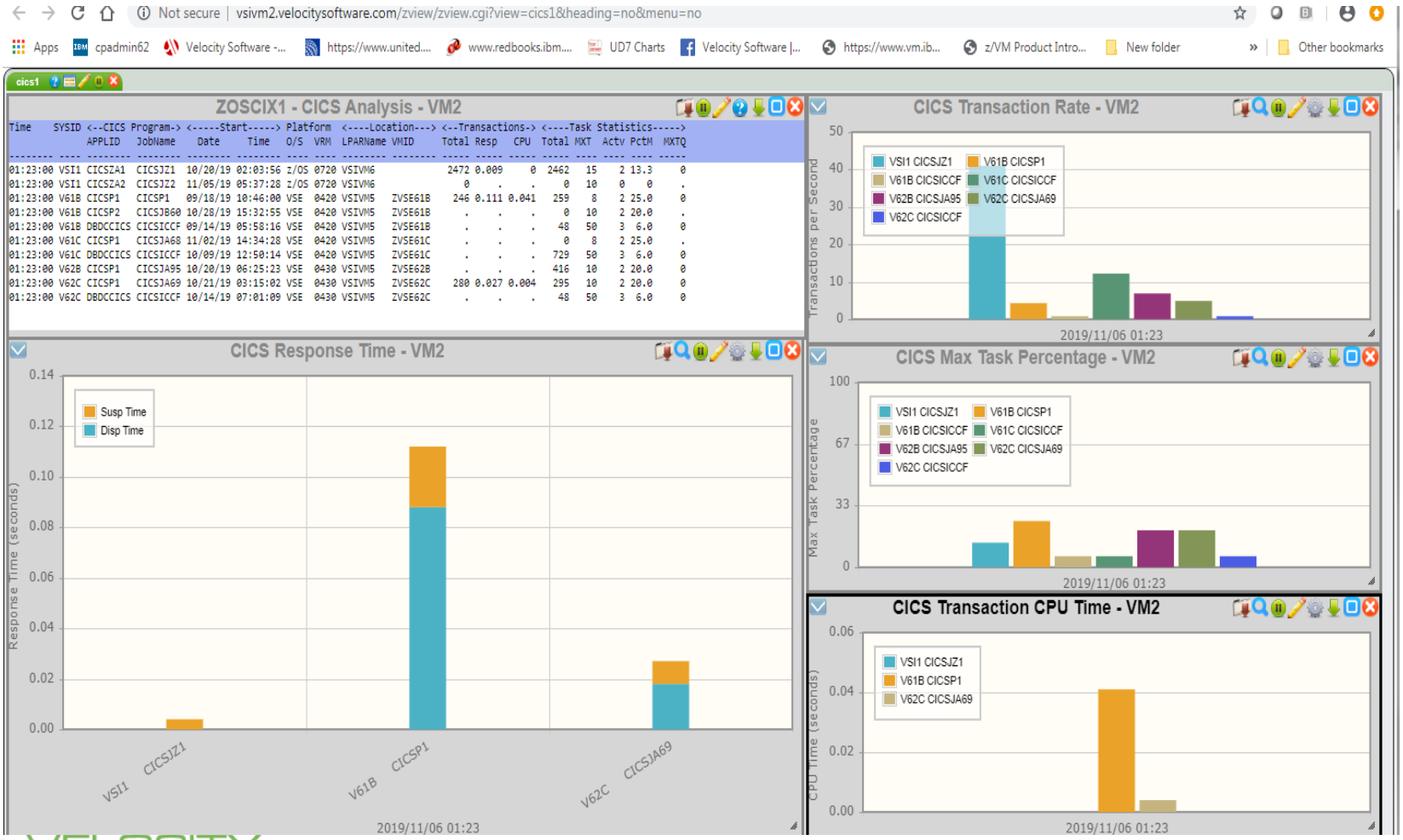
CICS by Transaction ID

Transaction data, waits by Transaction ID

```
Report: ZOSCIX3      z/OS CICS User Transaction Wait Analysis      Velocit
Monitor initialized: 07/19/20 at 00:00:00 on Z15S serial 0E0F78
-------------------------------------------------------------------------
Time/     <--Transaction-> <-Response Time-> <---------------Delays (ms)--
SYSID           Type  Rate Total  Susp  Disp Lock    EXEC   Interval Disp.
 APPLID     ID  Count /Sec  Resp  Time  Time Manager Extern Control  -atch
-------- ----  ----- ---- ----- ----- ----- ------- ------ ------- ------
07/19/20
00:00:00 - 00:15:00
VSI1
 CICSZA2  Total     1 0.00 0.261 0.260 0.002       0      0       0      0
          CHCK     13 0.01 69.23 69.23 0.000       0      0 69225.8      0
          CISE     14 0.02 68.57 68.57     0       0      0       0      0
          CISM     14 0.02 68.57 68.57     0       0      0       0      0
          CISP     14 0.02 68.57 68.57 0.000       0      0       0      0
          CISR     14 0.02 68.57 68.57     0       0      0       0      0
          CSHQ     13 0.01 69.23 69.23 0.000       0      0       0      0
          CSNE     14 0.02 68.57 68.57     0       0      0       0      0
          CSSY      1 0.00 0.261 0.260 0.002       0      0       0      0
          CSTP     13 0.01 69.23 69.22 0.007       0      0       0      0
 CICSZA1  Total     1 0.00 0.019 0.005 0.028       0      0       0      0
          CHCK     13 0.01 69.23 69.23 0.000       0      0 69225.8      0
          CISE     13 0.01 69.23 69.23     0       0      0       0      0
          CISM     13 0.01 69.23 69.23     0       0      0       0      0
          CISP     13 0.01 69.23 69.23 0.000       0      0       0      0
          CISR     13 0.01 69.23 69.23     0       0      0       0      0
          CSHQ     13 0.01 69.23 69.23 0.000       0      0       0      0
          CSNE     12 0.01 69.99 69.99     0       0      0       0      0
          CSOL      1 0.00  1887  1887 0.001       0      0       0      0
          CSSY     26 0.03 69.23 69.22 0.002       0      0       0      0
          CSTP     13 0.01 69.23 69.22 0.007       0      0       0      0
          VSI1      1 0.00 0.019 0.005 0.028       0      0       0      0
```

CICS analysis real time – 1 click

http://vsivm2.velocitysoftware.com/zview/zview.cgi?view=cics1&heading=no&menu=no



Cost of supporting everything on one IFL?

Percents always percent of ONE CPU, one minute granularity

```
Screen: ESAUSP2  Velocity Software                ESAMON 5.103 11/06 01:
1 of 3  User Percent Utilization                  CLASS *              28

                    <--Processor--> <--------Main Storage-(MB)-------->
          UserID    <-use CPU%> T:V <Resident->  Lock <----WSSize----->
Time      /Class    Total  Virt Rat Total  Actv   -ed Total  Actv   Avg
-------- -------- ----- ----- --- ----- ----- ----- ----- ----- -----
01:02:00 System:    1.89  1.62 1.2 421.2 243.6  5.01 415.7 238.3   3.4
         TheUsrs    0.75  0.73 1.0 100.0  67.8  0.11  99.9  67.7   2.7
         Velocity   0.53  0.48 1.1  76.6  72.2  0.01  76.3  71.9   3.8
         KeyUser    0.46  0.28 1.6  50.8  50.8  4.83  45.9  45.9  23.0
         Servers    0.09  0.09 1.1  79.3  28.2  0.03  79.2  28.2   2.6
         suse       0.06  0.04 1.6 114.4  24.6  0.04 114.3  24.6   1.9
```

zOSMON Room for Thought….

- **Processing requirements for 40 CICS transactions/sec**
  - 140,000 transactions per hour
  - z/OS: .6-.7% GP (BC12 A02) for collector, ONE MINUTE SAMPLE TIME
  - zVPS: <1% of one IFL for everything, including web servers.
- **z/OS smf record processing time**
  - 24 hours records 30/70 1 minute granularity: 24 cpu seconds on one IFL
- **zOSMON Futures**
  - DB2 (101,102)
  - MQ
  - MFC (113)
  - What customers want
  - Please send SMF data

No z/VM?

If you don't have z/VM

- Vicom will install and support it for you
- Velocity Software will install and support zVPS
- KVM? One shared IFL partition for z/VM (and less expensive)
- z/OS only? One shared GP partition sufficient
- Full cloud configuration – you never see z/VM (if you don't want)

z/VM ordered through Vicom Infinity….

zALERT - Operational Support

zALERT

- User tailorable
- Alerts are 3270 based, web based, and / or SNMP traps

- **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**

Splunk

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

Z15 Compression Fun and Games

Experiments with on z15 board compression

- Easy to use in both CMS and z/OS
- Compression for SMF records about 90%

Compression / Decompression Pipe stage created

zVPS will likely start compressing history data

Could do it for VSE when z15 is used

Z15 Compression Fun and Games

ZOSMON agent sends data to zVPS (VM2,VM4,NTK)

- Uses .3% of one GP (A02…)

```
Screen: ZOSJCPU  Velocity Software              ESAMON 5.112 06/12
2 of 4  z/OS Job/Step CPU/Resource Analysis     SYSID VSI1 SRVCLS *
<----------Job-----------> <----------Service Units-
Time     SYSID Name     ID       Step      Total   CPU   SRB   I/O
-------- ----- -------- -------- -------- ------ ----- ----- -----
15:37:00 VSI1  ZOSMNVM2 STC08971 ZMON      146.6 146.3   0.3     0
               ZOSMNVM4 STC07095 ZMON      145.7 145.3   0.4     0
               ZOSMONTK JOB09346           137.6 137.3   0.4     0 <----- Compressed
15:36:00 VSI1  ZOSMNVM2 STC08971 ZMON      147.4 147.2   0.3     0
               ZOSMNVM4 STC07095 ZMON      146.4 146.0   0.4     0
               ZOSMONTK JOB09346           127.1 126.7   0.4     0
15:35:00 VSI1  ZOSMNVM2 STC08971 ZMON      142.7 142.4   0.3     0
               ZOSMNVM4 STC07095 ZMON      144.4 144.1   0.3     0
               ZOSMONTK JOB09346           127.8 127.4   0.3     0

Screen: ZOSJCPU  Velocity Software              ESAMON 5.112 06/12 14:16-16:17
1 of 4  z/OS Job/Step CPU/Resource Analysis     SYSID VSI1 SRVCLS * JOB ZOS*
                                        <------------CPU Percents----------->
               <----------Job----------->                  Initiator    Reg
Time     SYSID Name     ID       Step     Total Stnrd  SRB  TCB SRB I/O Ctl USS
-------- ----- -------- -------- -------- ----- ----- ---- ---- --- --- --- ---
15:37:00 VSI1  ZOSMNVM2 STC08971 ZMON       0.3   0.3    0    0   0   0   0   0
               ZOSMNVM4 STC07095 ZMON       0.3   0.3    0    0   0   0   0   0
               ZOSMONTK JOB09346            0.3   0.3    0    0   0   0   0   0
```

Summary

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)**
- **z/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….**

zVPS 5.1

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"**

Make it easy, low overhead, amazingly fast…

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Recipient of *The North America IBM Z Business Partner Sales Excellence Award*

Thank you from Velocity Software

- **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”**

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