



*Automated Operations and Monitoring for  
z/VM and Linux on System z with the  
Velocity Performance Suite (zVPS)*

Tim Kessler

Rich Smrcina

## Automated operations using:

- **Installer 4.2**
- **zOPERATOR**
- **zALERT**

## Automatic installation

- SSI, single image or existing environments
- Complete installation in a couple hours

## Check for Updates facility

- Supports HTTP or FTP
- Proxy servers
- FTP firewall
- Can be used for upload and downloads
- Automatic invocation option
- FTP option to delete members in user area

## Disk configuration changes

- SSI support – All DASD defined on initial member
- SCSI blocks
- DIRMAINT AUTOG and AUTOV
- VMSECURE subpools
- DIRECT files created for zVPS userids
- EXECs created for DIRMAINT & VMSECURE commands
- SFS authorizations automatically run
- RACF definitions created

Restart server option

Server version checking

Additional information on product status errors

PF14 – Select Disk Config for base components

Automatic installation of 0 level release

Initial configuration changes copied to other members

GETCONS option on logon for YES, NO, ASK

PROFILE EXEC updated

- Use USERPROF SAMPLE

Documentation update

## Installer 4201

- Fast path commands
  - VSIMAINT CONFIG product {filename {filetype}}
  - VSIMAINT RESTART product

## Installation steps

- Create ZVPS userid
- Create VMSYSVPS SFS filepool
- Download and unpack INSTALL PROD4200
- EXEC VSIMAIN
- Use 'Check for Updates' facility to download products
- Exit VSIMAIN and restart
- Select Automatic install
- Configure DASD for zVPS components
- Run EXEC to define zVPS VM directory entries

## Installation steps

- Update RACF or VMSECURE definitions (all SSI members)
- VSIMAIN – Install All
- Configure zVPS components and ensure proper operation
- Log onto ZVPS on next SSI member
- VSIMAIN & select automatic installation
- Set system name
- Installation automatically run

## Demo install



## zOPERATOR

- Console and automations manager
- No charge component of zVPS
- Scrollable, searchable console display
- Messages can be:
  - Colored, highlighted, held, suppressed, message to a user, written to file, execute command, emailed or SNMP trap sent
- Log files kept for user specified days
- Can be used on OPERATOR or any other user



```

ICH408I USER(ANONYMOU) GROUP(          ) NAME(???)
LOGON/JOB INITIATION - USER AT TERMINAL          NOT RACF-DEFINED
ICH408I USER(ANONYMOU) GROUP(          ) NAME(???)
LOGON/JOB INITIATION - USER AT TERMINAL          NOT RACF-DEFINED
HCPMXE6224I Event recording is pending because there are no users connected to *
MONITOR for this type of data.
HCPMXE6224I Sample recording is pending because there are no users connected to
*MONITOR for this type of data.
DVHRLY3886I Hourly processing started; with 0 log
DVHRLY3886I files.
DVHRLY3886I Hourly processing started; with 0 log
DVHRLY3886I files.
DVHRLY3886I Hourly processing started; with 0 log
DVHRLY3886I files.
DVHRLY3886I Hourly processing started; with 0 log
DVHRLY3886I files.
DVHRLY3886I Hourly processing started; with 0 log
DVHRLY3886I files.
ICH408I USER(TIMK          ) GROUP(DEMO          ) NAME(#####)
LOGON/JOB INITIATION - INVALID PASSWORD ENTERED AT TERMINAL 98086472
GRAF L0005 DISCONNECT TIMVPS  USERS = 136
GRAF L0003 RECONNECT  TIMVPS  USERS = 136  BY TIMK          FROM 152.8.100.114
GRAF L0005 DIALED TO OPERATOR 0100 DIALED= 1          FROM 152.8.100.114
GRAF L0005 DROP FROM OPERATOR 0100 DIALED= 0
ICH408I USER(VSIMAINT) GROUP(SYS1          ) NAME(#####)
LOGON/JOB INITIATION - INVALID PASSWORD ENTERED AT TERMINAL 98086472
GRAF L0006 DIALED TO OPERATOR 0200 DIALED= 1          FROM 152.8.100.114
GRAF L0006 DROP FROM OPERATOR 0200 DIALED= 0
ICH408I USER(ZVPS          ) GROUP(SYS1          ) NAME(#####)
LOGON/JOB INITIATION - INVALID PASSWORD ENTERED AT TERMINAL 98086472

```

MORE... VSIVM4

```

07:1 OPERATOR console 2050 44
:55:07 OPERATOR GRAF L0006 DISCONNECT TIMK     USERS = 154     FORCED BY SYS
:46:10 ZALERT     SUSELNX2 RUNNING CRAZY
:56:11 ZALERT     SUSELNX2 RUNNING CRAZY
:00:00 OPERATOR HCPMXE6224I Event recording is pending because there are n
      users connected to *MONITOR for this type of data.
:00:00 OPERATOR HCPMXE6224I Sample recording is pending because there are
      users connected to *MONITOR for this type of data.
:01:06 DIRMAINT DVHRLY3887I Hourly processing completed; 0 log
:01:06 DIRMAINT DVHRLY3887I files processed, 1 log files remaining.
:01:10 ZALERT     S11S20RA RUNNING CRAZY
:06:10 ZALERT     SUSELNX2 RUNNING CRAZY
:16:10 ZALERT     SUSELNX2 RUNNING CRAZY
:16:41 OPERATOR GRAF L0007 LOGON   AS   ZMAP     USERS = 154     BY DSADEV   F
      192.168.5.225
:26:11 ZALERT     SUSELNX2 RUNNING CRAZY
:46:11 ZALERT     SUSELNX2 RUNNING CRAZY
:56:11 ZALERT     SUSELNX2 RUNNING CRAZY
:00:00 OPERATOR HCPMXE6224I Event recording is pending because there are n
      users connected to *MONITOR for this type of data.
:00:00 OPERATOR HCPMXE6224I Sample recording is pending because there are
      users connected to *MONITOR for this type of data.
:01:07 DIRMAINT DVHRLY3887I Hourly processing completed; 0 log
:01:07 DIRMAINT DVHRLY3887I files processed, 1 log files remaining.
:06:10 ZALERT     SUSELNX2 RUNNING CRAZY
:07:53 OPERATOR GRAF L000D RECONNECT DSADEV     USERS = 154     FROM 192.168.
      25
:16:11 ZALERT     SLES10  RUNNING CRAZY
:16:11 ZALERT     SUSELNX2 RUNNING CRAZY
:26:11 ZALERT     SUSELNX2 RUNNING CRAZY
:33:52 OPERATOR GRAF L0007 LOGOFF AS   ZMAP     USERS = 153
:34:01 OPERATOR GRAF L000D DISCONNECT DSADEV     USERS = 153
:36:11 ZALERT     SUSELNX2 RUNNING CRAZY
:46:10 ZALERT     SUSELNX2 RUNNING CRAZY
:50:42 OPERATOR GRAF L0007 LOGON   AS   ZVPS     USERS = 154     BY TIMK     F
      75.103.4.82
:55:07 OPERATOR GRAF L0006 DISCONNECT TIMK     USERS = 154     FORCED BY SYS
:56:11 ZALERT     SUSELNX2 RUNNING CRAZY
1=Help      2=
3=Quit      4=Del Hold   5=All      6=PFKEY Off
7=Backward  8=
9=Del or Back 10=
11=
12=Previous

```

## Redisplay and searching

- Page or search forward or backward
- Date and/or time
- Literals
- ALL command
- Multiple operands with & | ↵

```

:57:19 OPERATOR USER DSC LOGOFF AS TIMVPS USERS = 144 FORCED BY SYS
:24:14 OPERATOR USER DSC LOGOFF AS TIMK USERS = 143 FORCED BY SYS
:22:11 OPERATOR USER DSC LOGOFF AS TIMVPS USERS = 143 FORCED BY SYS
:58:14 OPERATOR USER DSC LOGOFF AS TIMVPS USERS = 143 FORCED BY SYS
----- Friday June 21 2013 -----
:46:16 OPERATOR USER DSC LOGOFF AS DEMOWS61 USERS = 151 FORCED BY SYS
----- Saturday June 22 2013 -----
----- Sunday June 23 2013 -----
:04:24 OPERATOR USER DSC LOGOFF AS RKSDEV USERS = 145 FORCED BY SYS
----- Monday June 24 2013 -----
----- Tuesday June 25 2013 -----
----- Wednesday June 26 2013 -----
----- Thursday June 27 2013 -----
----- Friday June 28 2013 -----
----- Saturday June 29 2013 -----
:29:36 OPERATOR USER DSC LOGOFF AS DXTVPS USERS = 156 FORCED BY SYS
----- Sunday June 30 2013 -----
----- Monday July 01 2013 -----
:32:10 OPERATOR USER DSC LOGOFF AS DXTVPS USERS = 158 FORCED BY SYS
----- Tuesday July 02 2013 -----
----- Wednesday July 03 2013 -----
----- Thursday July 04 2013 -----
:59:44 OPERATOR USER DSC LOGOFF AS RKSDEV USERS = 157 FORCED BY SYS
----- Friday July 05 2013 -----
----- Saturday July 06 2013 -----
:27:41 OPERATOR USER DSC LOGOFF AS DXTDEV USERS = 156 FORCED BY SYS
:30:47 OPERATOR USER DSC LOGOFF AS DXTVPS USERS = 155 FORCED BY SYS
----- Sunday July 07 2013 -----
----- Monday July 08 2013 -----
----- Tuesday July 09 2013 -----
----- Wednesday July 10 2013 -----
:42:44 OPERATOR USER DSC LOGOFF AS TIMVPS USERS = 154 FORCED BY SYS
----- Thursday July 11 2013 -----
:33:43 OPERATOR USER DSC LOGOFF AS TIMK USERS = 154 FORCED BY SYS
:34:34 OPERATOR USER DSC LOGOFF AS TIMVPS USERS = 153 FORCED BY SYS
----- Friday July 12 2013 -----
:37:40 OPERATOR USER DSC LOGOFF AS DXTDEV USERS = 155 FORCED BY SYS
1=Help 2= 3=Return 4= 5=All 6=PFKEY Off
7=Backward 8=Forward 9=Loc Back 10=Loc Fwd 11= 12=Retrieve

```

## Other display options

- Split screen
- SCALE
- ZONE
- PFKEY
- SUPPRESS
- USER
- TIME
- WRAP

## Remote access

- DIAL terminals
  - Option to restrict commands
  - One terminal buffer
  - Terminal size must be less than or equal to original size
- View from another CMS user
- zVIEW web page
  - Automatically updates every 30 seconds
  - Select date and time range
  - Select user (next release)

## Message rules processing

- Easy online configuration
- Fast and efficient processing
- Unique or common to each zOPERATOR instance

## ZOPER ZOPRULES Configuration

### zOPERATOR Action Rules

Match: Msg type CMSOUT User ID \_\_\_\_\_ Comment zOPERATOR error  
Start col 10 End col 12 = Target ZOP  
& Start col2 19 End col2 19 = Target E

Action: Color RED Ext highlight REVERSE Suppress \_\_\_ Hold YES Stop \_\_\_  
Send to \_\_\_\_\_ Send type \_\_\_\_\_ Send zSERVE \_\_\_  
Cmd \_\_\_\_\_ File \_\_\_\_\_  
EMAIL address \_\_\_\_\_ SNMP trap \_\_\_

Match: Msg type CPOUT User ID \_\_\_\_\_ Comment Log ons  
Start col 30 End col 34 = Target LOGON  
Start col2 \_\_\_\_\_ End col2 \_\_\_\_\_ Target \_\_\_\_\_

Action: Color GREEN Ext highlight \_\_\_\_\_ Suppress YES Hold \_\_\_ Stop YES  
Send to \_\_\_\_\_ Send type \_\_\_\_\_ Send zSERVE \_\_\_  
Cmd \_\_\_\_\_ File \_\_\_\_\_  
EMAIL address \_\_\_\_\_ SNMP trap \_\_\_

Match: Msg type \* User ID \_\_\_\_\_ Comment DIRMAINT hour process start  
Start col 10 End col \* = Target DVHRLY3886I  
Start col2 \_\_\_\_\_ End col2 \_\_\_\_\_ Target \_\_\_\_\_

Action: Color GREEN Ext highlight \_\_\_\_\_ Suppress YES Hold \_\_\_ Stop YES  
Send to \_\_\_\_\_ Send type \_\_\_\_\_ Send zSERVE \_\_\_  
Cmd \_\_\_\_\_ File \_\_\_\_\_  
EMAIL address \_\_\_\_\_ SNMP trap \_\_\_

# Alerts

Richard Smrcina  
Velocity Software, Inc.

VM Workshop 2014



```
06:53:51 AUTO LOGON   ***           LINUX001 USERS = 35      BY OPERATOR
07:00:40 HCPPGT401I 90 percent of all paging space is in use.
07:03:00 HCPPGT400I All paging space is in use.
07:03:43 HCPPGT401I 90 percent of all spooling space is in use.

07:03:57 HCPDMP908I SYSTEM FAILURE ON CPU 0000, CODE - PGT004
HCPDMP9250E SYSTEM DUMP FAILURE; NO DUMP UNIT - INSUFFICIENT SPOOL SPACE
07:04:06 HCPWRP9277I SYSTEM TERMINATION COMPLETE, ATTEMPTING RESTART
```

RUNNING VM01A

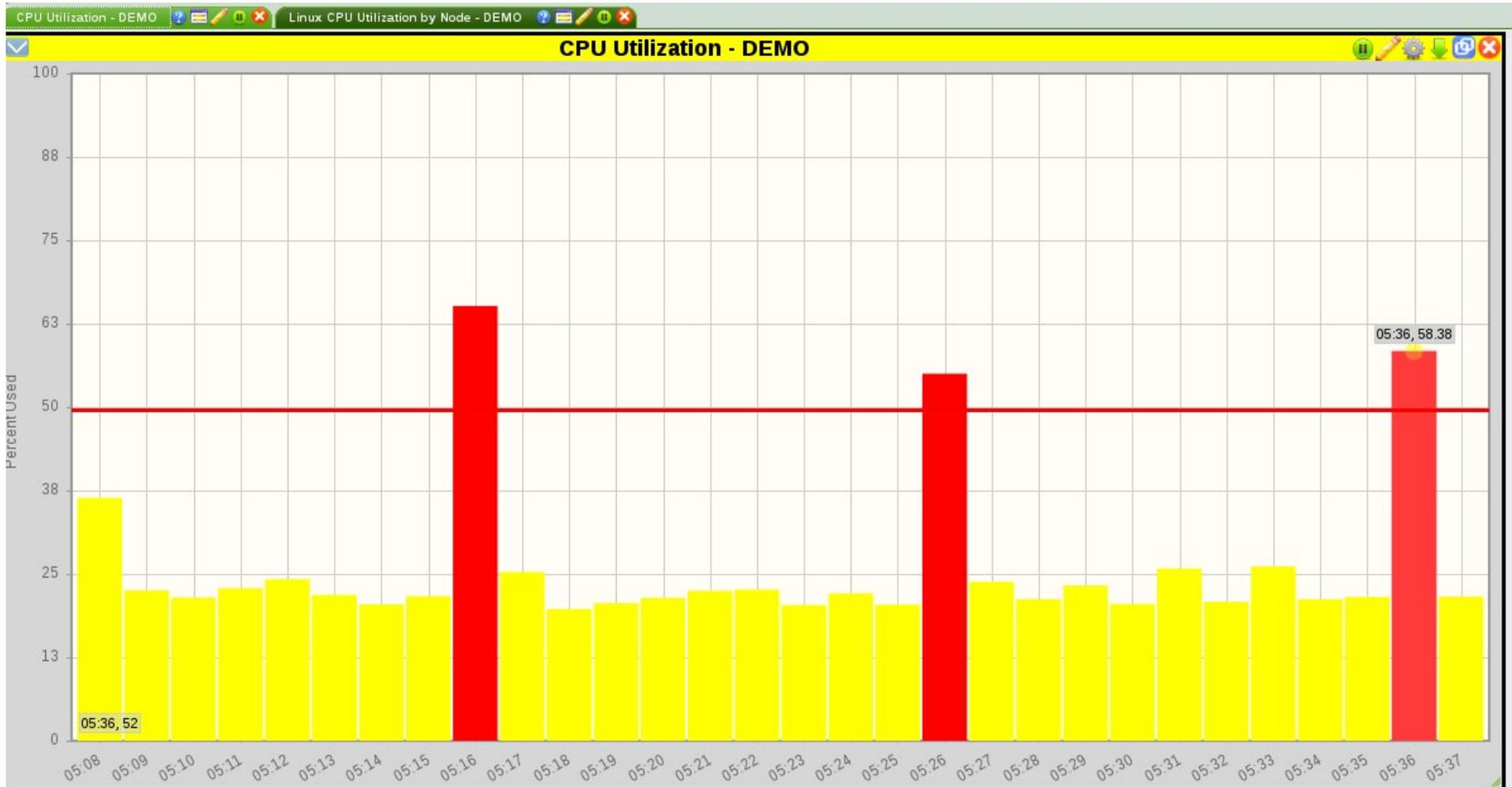


- Catastrophic events can have a large impact
  - ◆ Unavailability of applications
  - ◆ Potential for information loss
  - ◆ Disruption of customer service
  - ◆ Political ramifications
    - Complex platform
    - Outage makes z appear weak, unmanageable

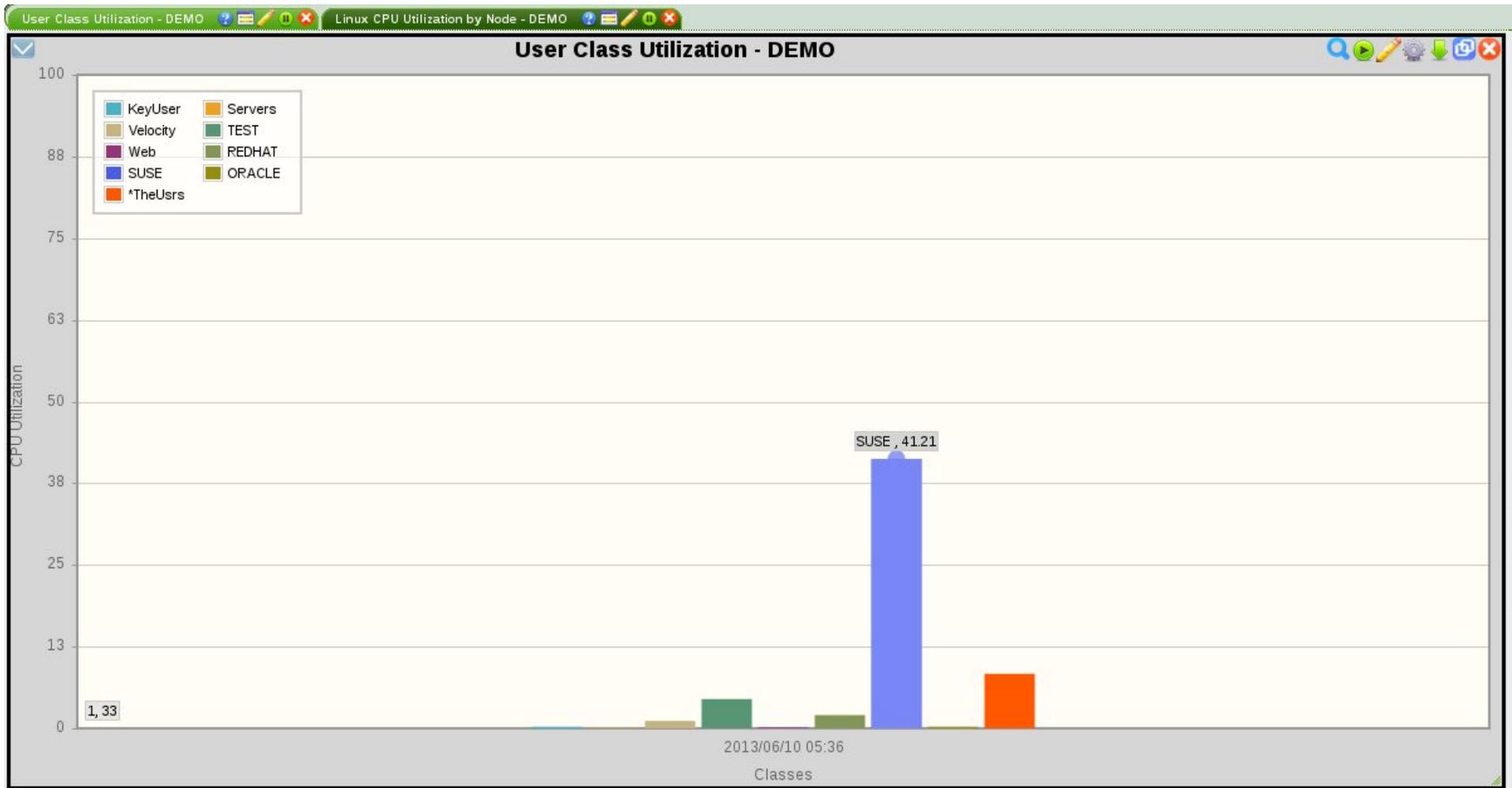
# Outage event

- Availability is critical to success
- Reduction or elimination of outages is vital
- A well maintained, highly-available system...
  - ◆ Looks good to customers, end-users, shareholders

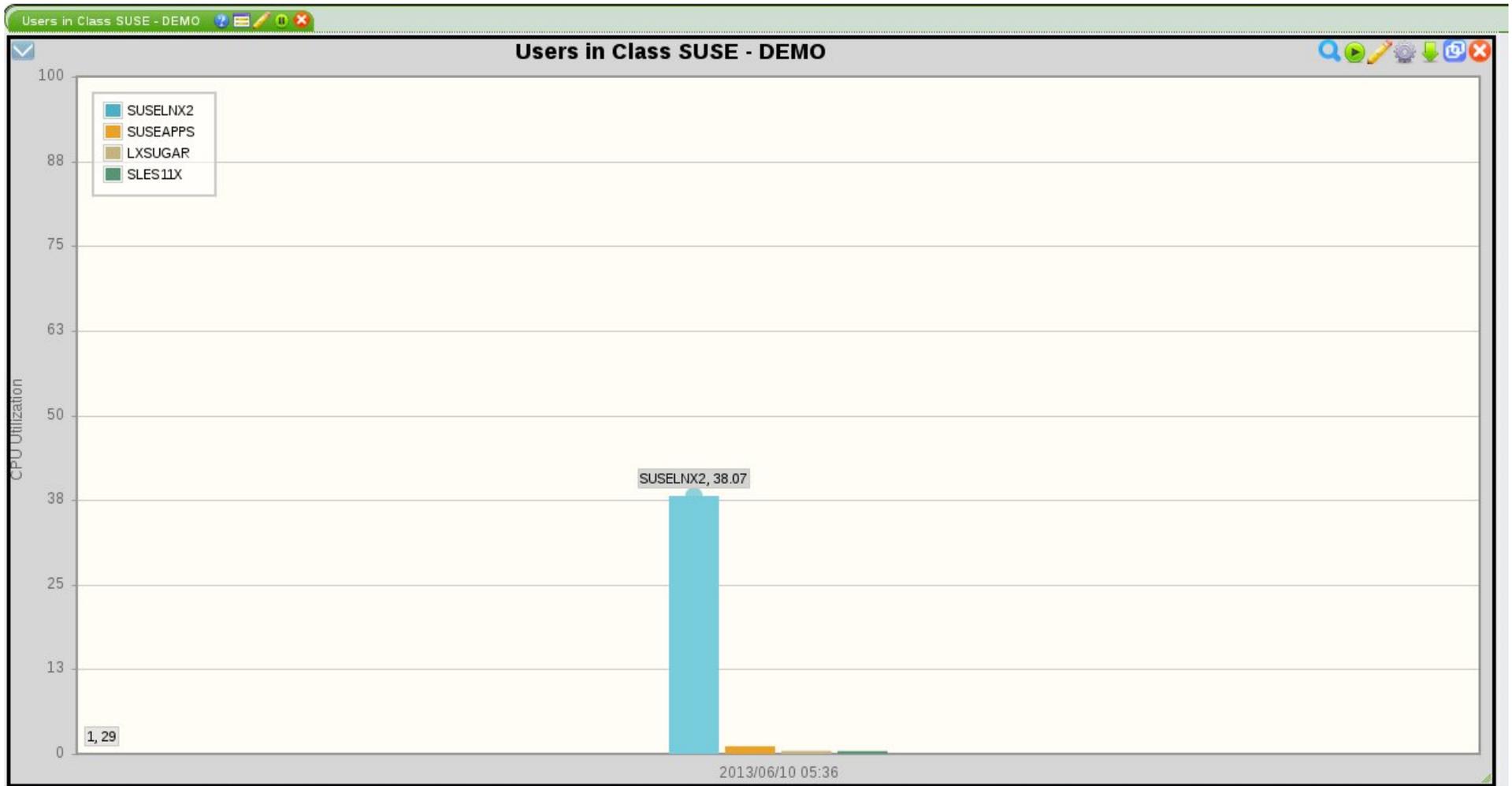
# Something a little less traumatic



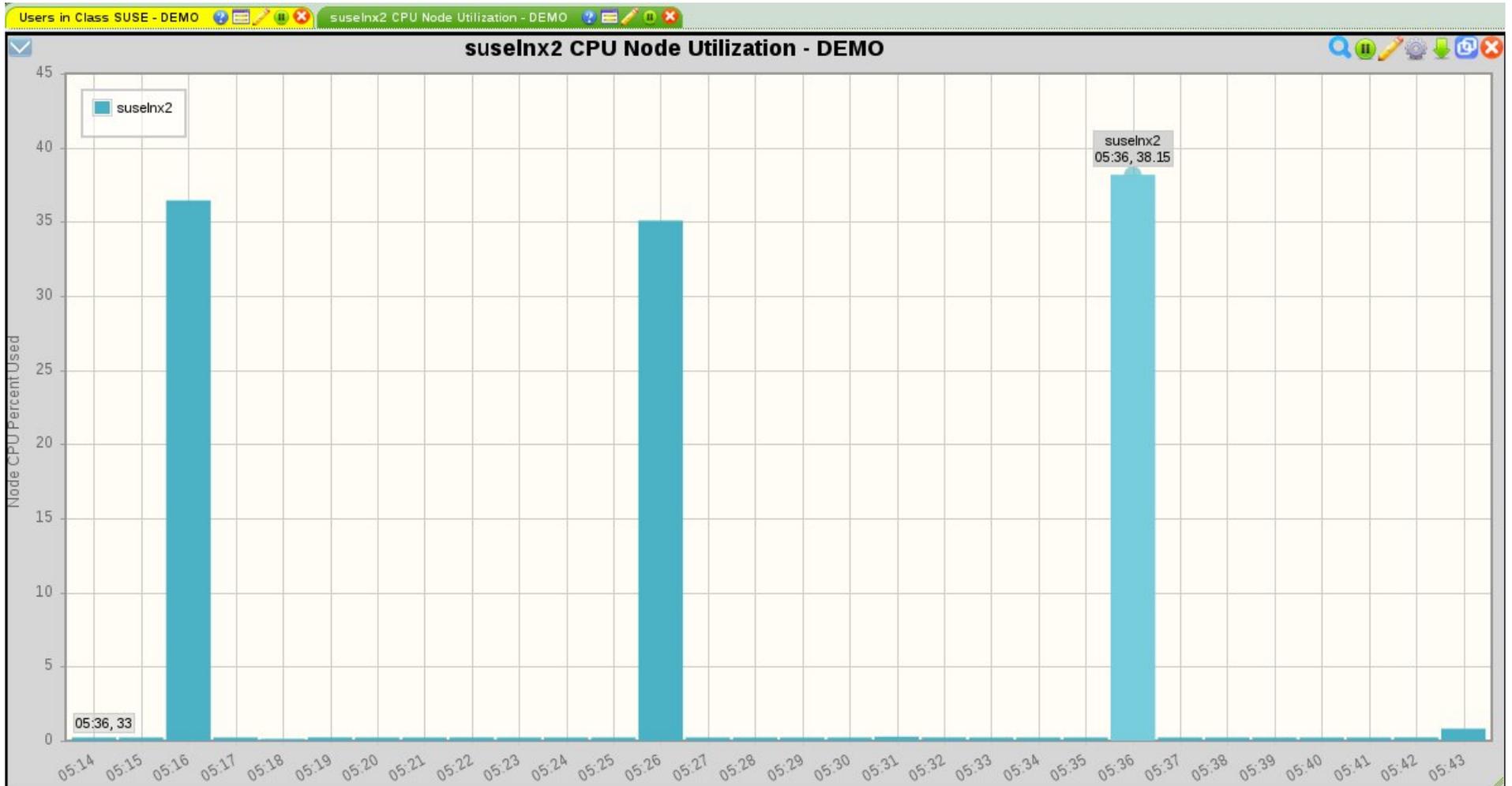
# Tracking down a spike



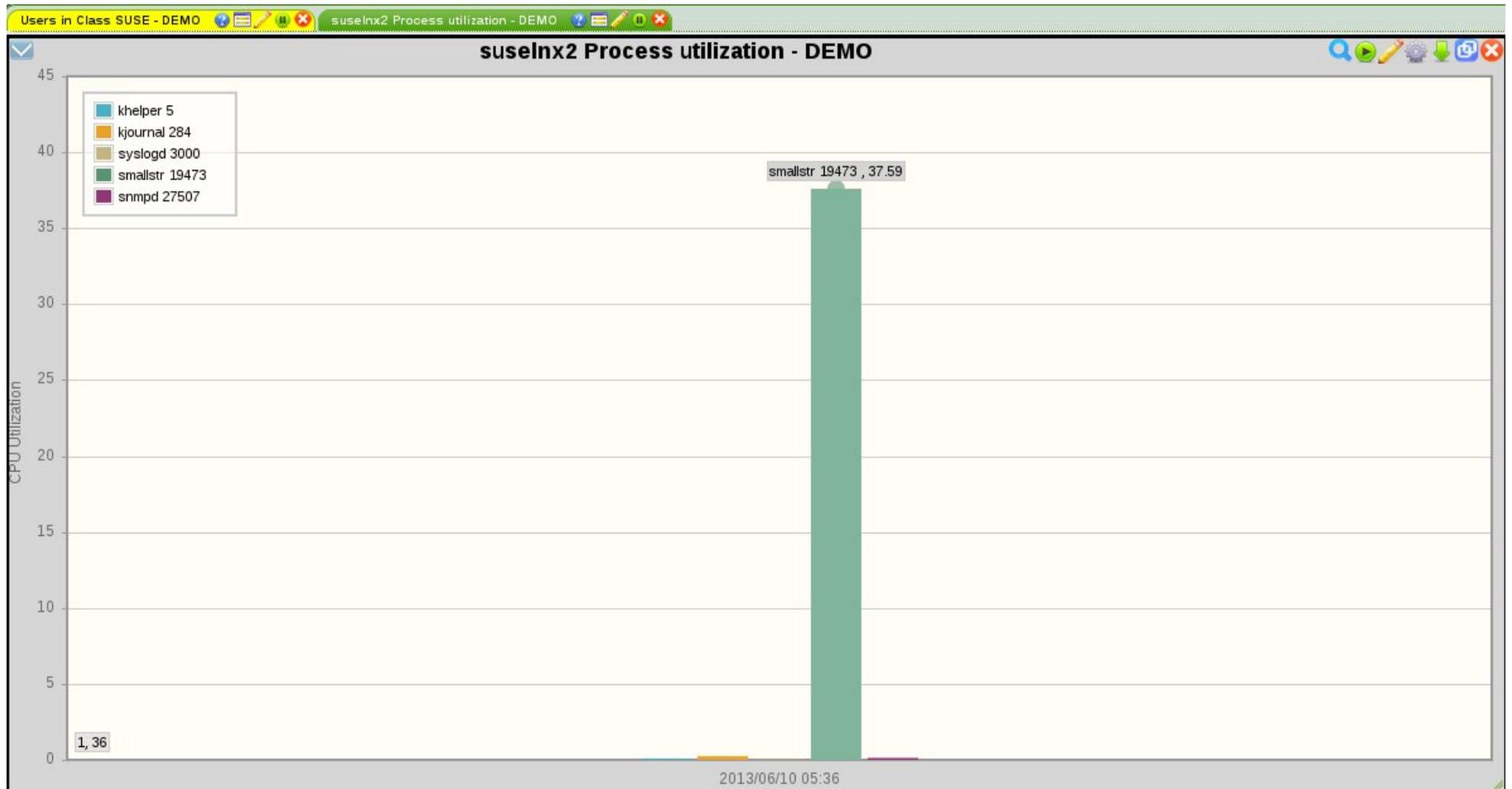
# Tracking down a spike



# Tracking down a spike



# Tracking down a spike



- Full function performance data
  - ◆ Not only for analysis of performance issues
  - ◆ Assist in determining the health of your system
- Alerts can be built from collected information

# *What are alerts?*

- An alert is an indication of an abnormal condition
- An abnormal condition can be
  - ◆ Exceeding a certain threshold
  - ◆ An object in an unwanted state
    - Volume offline
    - Virtual machine not logged on
    - Incorrect system settings

# *Defining your own alerts*

- Coding an alert requires the use of data fields from the monitor
- Data is extracted
- Analyzed to determine if it exceeds a threshold
- For values greater than threshold
  - ◆ Message issued
  - ◆ Optional action is taken

# Defining your own alerts

- Alert for page utilization

Extract

'Extract' is the beginning of an alert definition or set of alert definitions

```
var page_use | 3 2 | (sytag.calslti1*100)/sytag.calslta1

alert page_use amsp
level 05 green
level 40 yellow
level 50 pink rev
level 70 red rev notify
text Page space is &page_use% used
```

# Defining your own alerts

- Alert for page utilization

Extract

Variable defined for use  
in the following alerts

```
var page_use | 3 2 | (sytag.calslti1*100)/sytag.calslta1
```

```
alert page_use amsp  
level 05 green  
level 40 yellow  
level 50 pink rev  
level 70 red rev notify  
text Page space is &page_use% used
```

# Defining your own alerts

- Alert for page utilization

Extract

```
var page_use | 3 2 | (sytag.calslti1*100)/sytag.calslta1
```

```
alert page_use amsp  
level 05 green  
level 40 yellow  
level 50 pink rev  
level 70 red rev notify  
text Page space is &page_use% used
```

Size of each variable with optional decimal precision

# Defining your own alerts

- Alert for page utilization

Extract

```
var page_use | 3 2 | (sytag.calslti1*100)/sytag.calslta1
```

```
alert page_use amsp  
level 05 green  
level 40 yellow  
level 50 pink rev  
level 70 red rev notify  
text Page space is &page_use% used
```

Fields to extract -  
names are described in the PDR  
(Performance Data Reference)

Can be a single field or multiple  
fields involved in simple to  
complex math operations.

# Defining your own alerts

- Alert for page utilization

Extract

ALERT statement defines  
a specific alert

```
var page_use | 3 2 | (sytag.calslti1*100)/sytag.calslta1
```

```
alert page_use amsp  
level 05 green  
level 40 yellow  
level 50 pink rev  
level 70 red rev notify  
text Page space is &page_use% used
```

# Defining your own alerts

- Alert for page utilization

Extract

```
var page_use | 3 2 | (sytag.calslti1*100)/sytag.calslta1  
alert page_use amsp  
level 05 green  
level 40 yellow  
level 50 pink rev  
level 70 red rev notify  
text Page space is &page_use% used
```

Each alert requires a previously defined variable

# Defining your own alerts

- Alert for page utilization

Extract

```
var page_use | 3 2 | (sytag.calslti1*100)/sytag.calslta1
```

```
alert page_use apsp  
level 05 green  
level 40 yellow  
level 50 pink rev  
level 70 red rev notify  
text Page space is &page_use% used
```

Four character code used when displaying alerts

# Defining your own alerts

- Alert for page utilization

Extract

LEVEL statement controls  
the threshold values

```
var page_use | 3 2 | (sytag.calslti1*100)/sytag.calslta1  
  
alert page_use amsp  
level 05 green  
level 40 yellow  
level 50 pink rev  
level 70 red rev notify  
text Page space is &page_use% used
```

# Defining your own alerts

- Alert for page utilization

Extract

```
var page_use | 3 2 | (sytag.calslti1*100)/sytag.calslta1
```

```
alert page_use amsp  
level 05 green  
level 40 yellow  
level 50 pink rev  
level 70 red rev notify  
text Page space is &page_use% used
```

Values tested against  
the alert variable

# Defining your own alerts

- Alert for page utilization

Extract

```
var page_use | 3 2 | (sytag.calslti1*100)/sytag.calslta1
```

```
alert page_use amsp
```

```
level 05 green
```

```
level 40 yellow
```

```
level 50 pink rev
```

```
level 70 red rev notify
```

```
text Page space is &page_use% used
```

Color of the alert text when this level is exceeded

# Defining your own alerts

- Alert for page utilization

Extract

```
var page_use | 3 2 | (sytag.calslti1*100)/sytag.calslta1
```

```
alert page_use amsp
```

```
level 05 green
```

```
level 40 yellow
```

```
level 50 pink rev
```

```
level 70 red rev notify
```

```
text Page space is &page_use% used
```

Message displayed on  
3270 and zView alert screens

# Defining your own alerts

- Alert for page utilization

Extract

```
var page_use | 3 2 | (sytag.calslti1*100)/sytag.calslta1
```

```
alert page_use amsp  
level 05 green  
level 40 yellow  
level 50 pink rev  
level 70 red rev notify  
text Page space is &page_use% used
```

Alert variable  
substitution

# Defining your own alerts

- Alert for page utilization

Extract

```
var page_use | 3 2 | (sytag.calslti1*100)/sytag.calslta1  
alert page_use amsp  
level 05 green  
level 40 yellow  
level 50 pink rev  
level 70 red rev notify  
text Page space is &page_use% used
```

# Defining your own alerts

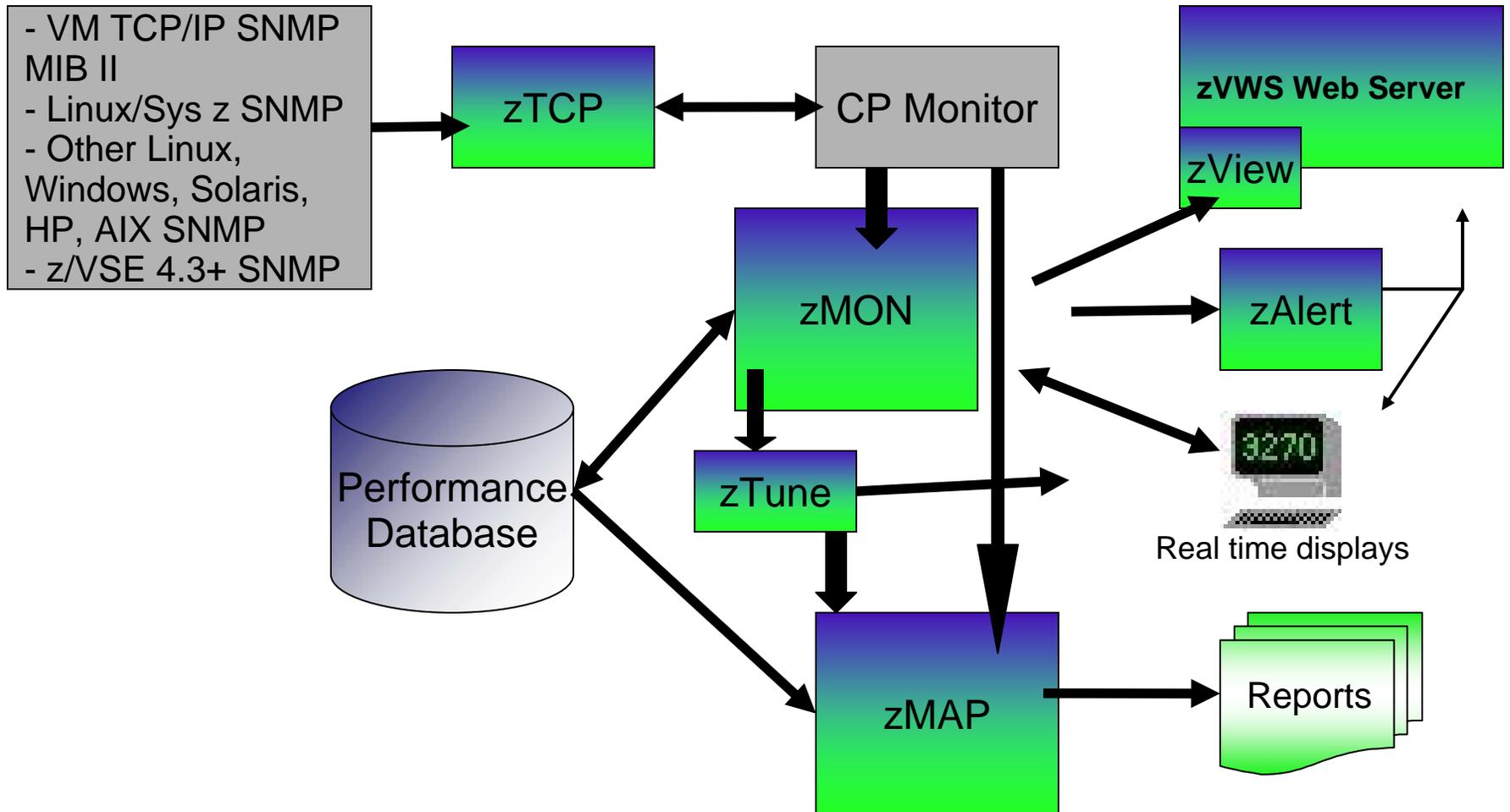
- Alert for page utilization

Extract

```
var page_use | 3 2 | (sytag.calslti1*100)/sytag.calslta1  
  
alert page_use apsp  
level 05 green  
level 40 yellow  
level 50 pink rev  
level 70 red rev notify  
text Page space is &page_use% used
```

'notify' generates an email notification for an alert at a specific threshold; other options: CP, CMS, EXEC

# Where do alerts fit?



- Separate virtual machine is used to process alerts and send notifications
- The alert virtual machine wakes up every minute, reading the provided MONALERT file
- Each of the defined extracts is executed
  - ◆ Values returned compared against user defined thresholds
  - ◆ Message displayed or action(s) taken when thresholds are exceeded

# Alert result - 3270

- Alert display on 3270

```
Screen ----- 10 Jun 2013 10:27:26
----- Exce
LN  Swap utilization for Linux node linux93 is 62%
LNS Swap utilization for Linux node linux93 is 88%
PRE Process top on node linux93 error: top process r
PFS Process top on node linux93 error: top process r

P 90
S20RA 68
L2 69
for DATAM
for DATAM0v2 110
VMXR Expanded storage rate for DATAM0V3 110
VMXR Expanded storage rate for DATAM0V4 107
VMXR Expanded storage rate for DIRMAINT 138
VMXR Expanded storage rate for DXTSERVE 150
VMXR Expanded storage rate for OPERATOR 579
VMXR Expanded storage rate for REDHAT6 622
VMXR Expanded storage rate for ROBLX1 226
VMXR Expanded storage rate for RSCS 140
VMXR Expanded storage rate for SFSVM4 424
VMXR Expanded storage rate for SFSZVPS4 429
VMXR Expanded storage rate for SMTP 114
VMXR Expanded storage rate for SNMPD 104
VMXR Expanded storage rate for SUSEAPPS 956
VMXR Expanded storage rate for S11S20RA 883
VMXR Expanded storage rate for TIMSERVE 118
VMXR Expanded storage rate for ZALERT 444
VMXR Expanded storage rate for ZPROLOG 137
VMXR Expanded storage rate for ZPRO01 214
VMXR Expanded storage rate for ZPRO02 174
VMXR Expanded storage rate for ZPRO03 174
VMXR Expanded storage rate for ZSERVE 132
XMVM User SFSZVPS not logged onto system
XPRO CPU Utilization for process stress-15496 on linux93 is 28%
XPRO CPU Utilization for process stress-15497 on linux93 is 28%

PF7=Backward PF8=Forward PF9=Disconnect PF3=Quit
:00.2 001/001
```

# Viewing alerts

- Alert display on zView



Code	Alert Description
DSCK	Node linux93 filesystem '/' is at 83%
DSCK	Node roblnx2 filesystem '/' has 395344K available
DSCK	Node xroblnx2 filesystem '/' has 395344K available
LNSU	Swap utilization for Linux node SUSEAPPS is 62%
LNSU	Swap utilization for Linux node solarisb is 88%
PGUT	Page space is 47% used
PRCK	linux93 proc top not found.
PRCK	roblx1 proc hogmem not found.
PRCK	BROBLX1 proc hogmem not found.
SPOL	Spoolspace is 78% used
TIDL	Test Idle for ESASERVE is 67
TIDL	Test Idle for RKSDEV is 25
TIDL	Test Idle for S11S20RA is 63
TIDL	Test Idle for ZTCP is 67
VMOC	VM overcommit ratio is 6.7
VMPG	Page rate for user ROBLX1 199
VMPG	Page rate for user SUSEAPPS 151
VMPG	Page rate for user S11S20RA 290
VMPG	Page rate for user ZWEB03 176
VMXR	Expanded storage rate for SFSVM4 425
VMXR	Expanded storage rate for SUSEAPPS 817
VMXR	Expanded storage rate for S11S20RA 1021
VMXR	Expanded storage rate for ZWEB08 401
XNVM	User SFSZVPS not logged onto system
XPRO	CPU Utilization for process stress-15496 on linux93 is 29%
XPRO	CPU Utilization for process stress-15497 on linux93 is 29%
XPRO	CPU Utilization for process stress-15498 on linux93 is 29%

- Alert samples are shipped with the ZALERT package
  - ◆ ALERT1 MONALERT is combined from the four previously provided sample files
  - ◆ Samples ship with alerts to check various conditions that can potentially occur
    - CPU/Spool/Page Utilization, I/O Rate, Paging Rate
    - Network node CPU utilization, I/O Rate, disk utilization, swap rate and utilization
- Additional samples available on our web site

- Adjust the number and value of levels based on local requirements
  - ◆ At least one LEVEL statement is necessary
  - ◆ LEVEL statements must appear in ascending value order
- Standard 3270 colors are allowed
  - ◆ Turquoise, Blue, Red, Yellow, Green, Pink, White
  - ◆ If no color is specified, the default is Green
  - ◆ Color modifiers are allowed
    - **REV**ideo – reverse video
    - **BL**ink – blink the entire text
    - **UNDERLINE** – underline the entire text

- A notification is a message sent to interested parties of an alert condition
- Sent in one or more of the following forms
  - ◆ CP MSG/MSGNOH
  - ◆ Email
  - ◆ Text page (via email)
  - ◆ SNMP Trap

- At it's simplest a notification can take the form of a message to a CMS user

Extract

```
var page_use | 3 0 | (sytag.calslti1*100)/sytag.calslta1
```

```
alert page_use amsp
```

```
level 30 yellow
```

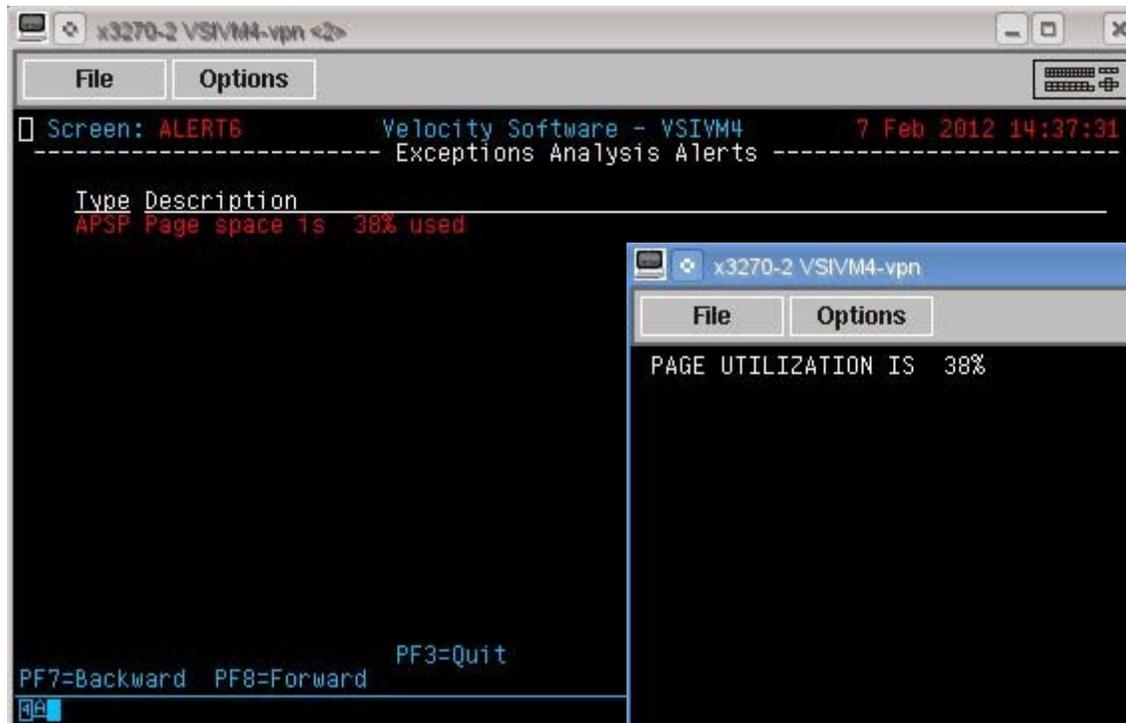
```
level 35 red ACTION CP MSG ZVPS Page utilization is &page_use%
```

```
level 50 red rev
```

```
text Page space is &page_use% used
```

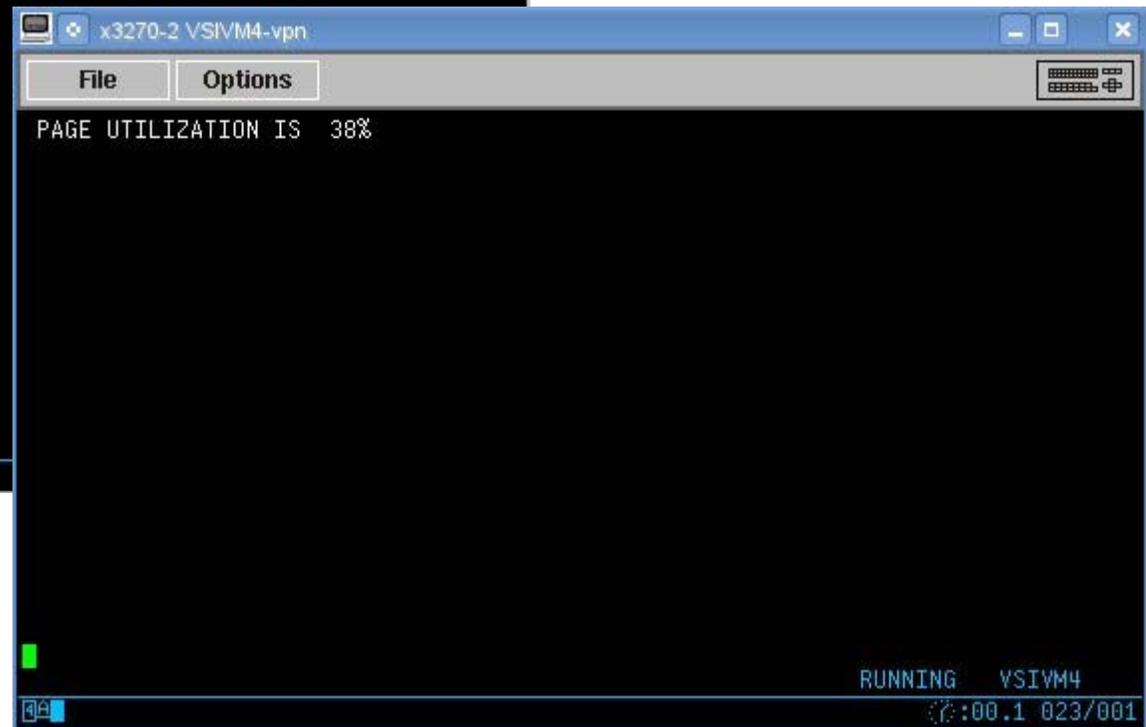
**ACTION** keyword on the LEVEL statement allows targeted messaging for a specific threshold

- Results of ACTION



A terminal window titled 'x3270-2 VSIWM4-vpn' with a menu bar containing 'File' and 'Options'. The terminal output shows a header 'Screen: ALERT6' in red, followed by 'Velocity Software - VSIWM4' and '7 Feb 2012 14:37:31'. A separator line reads '----- Exceptions Analysis Alerts -----'. Below this is a table with two columns: 'Type' and 'Description'. The first row contains 'APSP' and 'Page space is 38% used'. At the bottom, there are function key instructions: 'PF7=Backward PF8=Forward PF3=Quit' and a cursor icon.

```
x3270-2 VSIWM4-vpn
File Options
Screen: ALERT6 Velocity Software - VSIWM4 7 Feb 2012 14:37:31
----- Exceptions Analysis Alerts -----
Type Description
APSP Page space is 38% used
PF7=Backward PF8=Forward PF3=Quit
```



A terminal window titled 'x3270-2 VSIWM4-vpn' with a menu bar containing 'File' and 'Options'. The terminal output displays 'PAGE UTILIZATION IS 38%'. At the bottom right, it shows 'RUNNING VSIWM4' and a timer '00.1 023/001'. A cursor icon is visible at the bottom left.

```
x3270-2 VSIWM4-vpn
File Options
PAGE UTILIZATION IS 38%
RUNNING VSIWM4
00.1 023/001
```

- Change the recipient to interface with zOperator

Extract

```
var page_use | 3 0 | (sytag.calslti1*100)/sytag.calslta1
```

```
alert page_use aosp
```

```
level 30 yellow
```

```
level 35 red ACTION CP MSG OP Page utilization is &page_use%
```

```
level 50 red rev
```

```
text Page space is &page_use% used
```

Shorthand for OPERATOR

# Notifications

```
x3270-4 RKS2LV
File Options
Screen: ZOPER ESAMON 4.131 06/18 02:28
1 of 1 OPERATOR Console

00:00:00 SYSTEM RSCSDNS : HCPMID6001I TIME IS 00:00:00 PST WEDNESDAY 06/18/1
4
00:00:00 SYSTEM RSCSDNS :
00:00:02 OPERATOR ZOPC20109I Erasing file CONSOLE 20140319 A1
00:00:03 OPERATOR AUTO LOGON *** ZMAP USERS = 38 BY ZSERVE
00:00:03 OPERATOR AUTO LOGON *** ZVPS USERS = 39 BY ZSERVE
00:00:11 OPERATOR USER DSC LOGOFF AS ZVPS USERS = 38
00:01:03 DATAMOVE DVHNDY3880I New day processing started.
00:01:04 DIRMAINT DVHNDY3880I New day processing started.
00:01:05 DATAMOVE DVHNDY3881I New day processing completed.
00:01:07 DIRMAINT DVHNDY3881I New day processing completed.
00:01:07 DATAMOVE DVHDLY3882I Daily processing started.
00:01:07 DATAMOVE DVHDLY3885I Daily processing completed.
00:01:08 DIRMAINT DVHDLY3882I Daily processing started.
00:01:08 DIRMAINT DVHDLY3885I Daily processing completed.
00:02:01 OPERATOR HCPCFX6768I Your SECUSER set to CRON by CRON.
00:02:01 OPERATOR HCPCFX6769I Your SECUSER terminated by CRON.
00:02:01 DIRMAINT DVHBCK3871I Disk backup processing started.
00:02:01 DIRMAINT DVHBCK3872I Disk backup part 1 completed.
00:02:01 DIRMAINT DVHBCK3872I Disk backup part 2 started.
00:02:02 DIRMAINT DVHBCK3873I Disk backup processing completed.
00:03:10 ZALERT SPOOL UTILIZATION IS 56%
00:05:07 OPERATOR USER DSC LOGOFF AS ZMAP USERS = 37
00:05:10 ZALERT PAGING RATE IS 28 (ABOVE 20 FOR 1 INTERVALS)
00:28:10 ZALERT PAGE UTILIZATION IS 11.94%
00:33:10 ZALERT SPOOL UTILIZATION IS 56%
00:45:10 ZALERT PAGING RATE IS 49 (ABOVE 20 FOR 11 INTERVALS)
00:58:11 ZALERT PAGE UTILIZATION IS 11.94%
01:03:10 ZALERT SPOOL UTILIZATION IS 56%
01:15:10 ZALERT PAGING RATE IS 32 (ABOVE 20 FOR 13 INTERVALS)
01:28:10 ZALERT PAGE UTILIZATION IS 11.80%
01:33:10 ZALERT SPOOL UTILIZATION IS 56%
01:45:10 ZALERT PAGING RATE IS 31 (ABOVE 20 FOR 8 INTERVALS)
01:58:10 ZALERT PAGE UTILIZATION IS 11.82%
02:03:10 ZALERT SPOOL UTILIZATION IS 56%
02:15:10 ZALERT PAGING RATE IS 35 (ABOVE 20 FOR 11 INTERVALS)
02:28:10 ZALERT PAGE UTILIZATION IS 11.72%
PF1=Help 2= 3=Quit 4=Del Hold 5=All 6=PFKEY Off
PF7=Backward 8= 9=Loc Back 10= 11= 12=Retrieve
====> █
Ⓢ:00.3 043/008
```

- A REXX EXEC can be invoked to send an email

```
Extract
var  spool_use  | 3 0 | (sytag.calslti2*100)/sytag.calslta2

alert spool_use spol
level 50 yellow
level 75 red
level 85 red rev ACTION CMS EMAIL RKS2LV SPOL &spool_use
text Spool area utilization &spool_use%
```

Executes a CMS command -  
EMAIL EXEC

- A REXX EXEC can be invoked to send an email

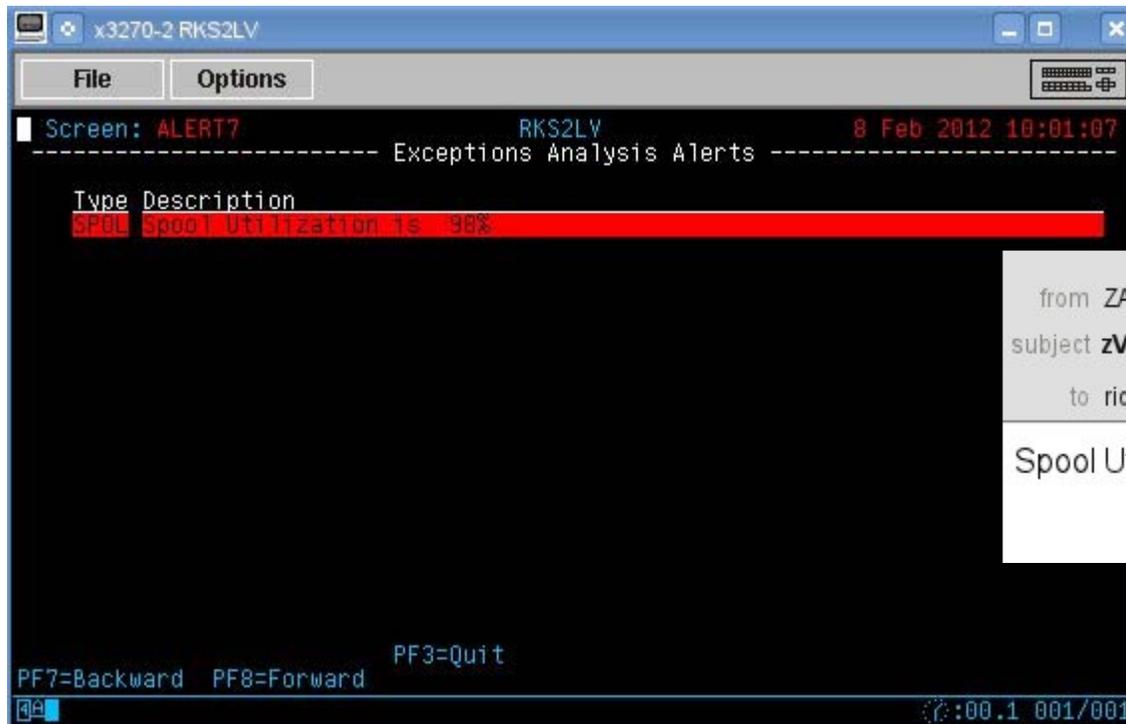
```
/* EMAIL: Sample EXEC to provide notify function */
parse arg node code value

Select
  When code='SPOL' then
    msg='Spool Utilization for 'node value'%'
  When code='XACP' then
    msg='CPU Utilization for 'node value'%'
  Otherwise
    exit
End

Queue 'input Subject: zVPS 'code' alert'
Queue 'input 'msg
Queue 'COMMAND CMS SENDFILE ( NOTE'
'EXEC NOTE rich@velocitysoftware.com (NONOTEBOOK'
exit
```

# Notifications

- A REXX EXEC can be invoked to send an email



The screenshot shows a terminal window titled 'x3270-2 RKS2LV'. The window has a menu bar with 'File' and 'Options'. The main display area shows the following text:

```
Screen: ALERT7 RKS2LV 8 Feb 2012 10:01:07
----- Exceptions Analysis Alerts -----
Type Description
SPOL Spool Utilization is 98%
```

At the bottom of the terminal, there are control instructions: PF7=Backward, PF8=Forward, PF3=Quit, and a status bar showing ':00.1 001/001'.

from ZALERT@RKS2LV.VELOCITYSOFTWARE.COM ☆  
subject **zVPS SPOL alert**  
to rich@velocitysoftware.com ☆

Spool Utilization for RKS2LV 98 %

- Cell phone text alerts
  - ◆ Produced via an email message
  - ◆ Each carrier varies in their approach
  - ◆ List of Email to SMS gateways for most providers

<http://www.tech-faq.com/how-to-send-text-messages-free.html>

AT&T (formerly Cingular) [10-digit-number]@txt.att.net

Sprint [10-digit-number]@messaging.sprintpcs.com

T-Mobile [10-digit-number]@tmomail.net

US Cellular [10-digit-number]@email.uscc.net

Verizon [10-digit-number]@vtext.com

# Notifications

- SMS/Text Message sample

The image displays a terminal window on the left and a mobile phone screenshot on the right. The terminal window shows a command prompt with the following output:

```
x3270-2 RKS2LV
File Options
Screen: ALERT7 RKS2LV 8 Feb 2012 10:0
----- Exceptions Analysis Alerts -----
Type Description
SPOL Spool Utilization is 98%
PF7=Backward PF8=Forward PF3=Quit
```

The mobile phone screenshot shows a text message from ZALERT@RKS2LV.VELOCITYSOFTWARE.COM with the subject 'zVPS SPOL alert' and the body 'Spool Utilization for RKS2LV 98 %'. The phone's status bar shows Verizon 3G, 11:13 PM, and 56% battery. The message is displayed in a text message app interface with buttons for Email, FaceTime, and Add Contact. Below the message, there is a text input field with the text 'Text Message' and a 'Send' button.

Queue 'COMMAND CMS SENDFILE ( NOTE '  
'EXEC NOTE 2015551212@vtext.com (NONOTEBOOK'



- Alerts provide the way to passively monitor your system
- Thresholds exceeded are displayed on one screen
- Notifications can be delivered for critical issues
- Management consoles fit this mechanism perfectly
- Many useful samples are provided

# Questions



Rich Smrcina  
Velocity Software, Inc  
[rich@velocitysoftware.com](mailto:rich@velocitysoftware.com)

