

IS02 – z/VSE Hints & Tips

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Ingolf Salm – salm@de.ibm.com
IBM Germany

Ingolf's z/VSE blog: <https://www.ibm.com/developerworks/mydeveloperworks/blogs/vse/>

Some useful system commands, tools, system information, ...

* Internal Attention Routine commands/parameters and output may change dependent on system requirements.
The output can not be considered as an interface.

SIR – System Information Report

- Provides status information and monitoring capabilities
- Can help to identify
 - Latest service level
 - Processor configuration
 - system bottlenecks (resource shortage)
 - ...

```

sir ?
AR 0015      SIR      SIR COMMAND HELP
AR 0015      SIR      {<RESET|SYS>}          RESET/DISPLAY SYSTEM INFORMATION
AR 0015      SIR      SMF( (,VSE)=<ON|OFF|cuu>) SUBSYSTEM MEASUREMENT DATA
AR 0015      SIR      MON(=<<id|ON(,NOSYM)>|OFF>(option)) MONITORING DATA
AR 0015      SIR      MIH( (,CUU)=<NNNNNN|ON|OFF>) DSPLY/ALTER MIH
AR 0015      SIR      VTAPEBUF(=<nnnK|nnM>)  DISPLAY/ALTER VTAPE BUF-SIZE
AR 0015      SIR      LIBR                    DISPLAY LIBRARIAN INFORMATION
AR 0015      SIR      CHPID(=chpid)          DISPLAY CHPID INFORMATION
AR 0015      SIR      VENDOR                 DISPLAY VENDOR PRODUCT INF
AR 0015      SIR      CRWMSG(=<ON|OFF>)      DSPLY/ALTER CRW MSG-REPORTING
AR 0015      SIR      VMCF(=<ON|OFF>)       DSPLY/ALTER VMCF INTERFACE
AR 0015      SIR      PMRMON(=<ON|OFF>)     PAGE MANAGER MONITORING DATA
AR 0015 1I40I  READY

```

SIR – System Information Report

```

SYSTEM:      z/VSE                    z/VSE 5.1                TURBO (01)              USER:  SYS
VM USER ID: LNXSALM1                                     TIME:  01:21:15
sir
AR 0015 CPUID      VM = 003B0BB220978000          VSE = FF3B0BB220978000
AR 0015 PROCESSOR = IBM 2097-726 51 (70B8251)    LPAR = SPB              No. = 0059
AR 0015 CPUs      = 0003 (Ded.=0000 Shr.=0003)    Cap. = 11%
AR 0015 VM-SYSTEM = z/VM 6.1.0 (1301)          USERID = LNXSALM1     VMCF = ON
AR 0015 CPUs      = 0006                          Cap. = 100%
AR 0015 PROC-MODE = z/Arch(64-BIT)             IPL(007)                10/18/2013
AR 0015 SYSTEM    = z/VSE 5.1.1                05/02/2012
AR 0015           = VSE/AF 9.1.0                DY47323                 04/09/2012
AR 0015           = VSE/POWER 9.1.0            DY47302                 04/12/2012
AR 0015 IPL-PROC  = $IPLESA                      JCL-PROC = $$JCL
AR 0015 SUPVR     = $$$A$SUPI                    TURBO-DISPATCHER (B1) ACTIVE
AR 0015           =                                     HARDWARE COMPRESSION ENABLED
AR 0015 SEC. MGR. = BASIC                          SECURITY = ONLINE
AR 0015 VIRTCPU   = 0000:00:02.044                CP = 0000:00:00.578
AR 0015 CPU-ADDR. = 0000(IPL) ACTIVE
AR 0015 ACTIVE    = 0000:00:01.144                WAIT = 0000:01:55.983
AR 0015 PARALLEL  = 0000:00:00.289                SPIN = 0000:00:00.000
AR 0015 CPU-ADDR. = 0001                          CPU INACTIVE NOT PREFIXED
AR 0015 CPU-ADDR. = 0002                          CPU INACTIVE NOT PREFIXED
AR 0015 CPU-ADDR. = 0003                          CPU INACTIVE NOT PREFIXED
AR 0015 CPU-ADDR. = 0004                          CPU INACTIVE NOT PREFIXED
AR 0015 CPU-ADDR. = 0005                          CPU INACTIVE NOT PREFIXED
AR 0015 CPU timings MEASUREMENT INTERVAL          0000:02:13.262
AR 0015 TASKS ATT.= 00015                          HIGH-MARK = 00015      MAX = 00330
AR 0015 DYN.PARTS = 00000                          HIGH-MARK = 00001      MAX = 00138
AR 0015
AR 0015 COPY-BLKS = 00015                          HIGH-MARK = 00041      MAX = 01502
AR 0015 CHANQ USED= 00004                          HIGH-MARK = 00011      MAX = 00080
AR 0015 LBL.-SEGM.= 00007                          HIGH-MARK = 00007      MAX = 00717
AR 0015 LOCKS EXT.= 0000000613                    LOCKS INT.= 0000005997
AR 0015 FAIL      = 0000000014                    FAIL = 0000000022
AR 0015 LOCK I/O  = 00000000757                    LOCK WRITE= 0000000012
AR 0015 1I40I    READY

==>
1=HLP 2=CPY 3=END 4=RTN 5=DEL 6=DELS 7=RED 8=CONT 9=EXPL 10=HLD 11=PCUU 12=RTRV
ACT_MSG:  HOLDRUN                PAUSE:  01    SCROLL:  1                MODE:  CONSOLE

```

SIR Refresh Level

- z/VSE refresh level or SPLEVEL only changed after Fast Service Upgrade
 - SPLEVEL.PROC replaced

- PSB buckets (Hiper PTFs), RSL or single PTF do not change the SIR refresh level

- VSE/AF and VSE/POWER component levels modified by FSU, PSB bucket, RSL or PTF, if component is affected
 - VSE/AF shows the Supervisor (\$A\$SUPI) APAR level
 - VSE/POWER shows the APAR level of phase IPW\$\$DT

```

sir
AR 0015 CPUID YH = 003B008220978000 YSE = FF00001820978000
AR 0015 PROCESSOR = IBM 2097-729 51 (7080251) LPAR = SPB No. = 0059
AR 0015 CPUs = 0003 (Ded.=0000 Shr.=0003) Cap. = 10%
AR 0015 YH-SYSTEM = z/YH 6.1.0 (1301) USERID = ZYSE510 YHCF = ON
AR 0015 CPUs = 0001 Cap. = 33%
AR 0015 PROC-MODE = z/Arch(64-BIT) IPL(230) 23:47:55 EST 08/27/2013
AR 0015 SYSTEM = z/YSE 5.1.2 04/19/2013 <--- Refresh Level
AR 0015 YSE/AF 9.1.0 DY47436 02/12/2013 <--- Component Level AF
AR 0015 YSE/POWER 9.1.0 DY47382 04/12/2012 <--- Component Level POWER
AR 0015 IPL-PROC = $IPLESA JCL-PROC = $$JCL
AR 0015 SUPYR = $$A$SUPI TURBO-DISPATCHER (81) ACTIVE
AR 0015 HARDWARE COMPRESSION ENABLED
AR 0015 SEC. MGR. = BASIC SECURITY = ONLINE
  
```

SIR – System Information Report *

■ SIR SMF

```

sir smf
AR 0015 DEVICE      I/O-CNT      QUEUED      CONNECT      DISCONN      TOTAL
AR 0015              msec/SSCH      msec/SSCH      msec/SSCH      msec/SSCH
AR 0015
AR 0015 46D          13605          0.169        0.317        0.002        0.489
AR 0015 46E          18855          0.146        0.177        0.005        0.329
AR 0015 970          40342          0.148        0.163        0.000        0.311
AR 0015 971          26089          0.150        0.166        0.000        0.317
AR 0015 972          12318          0.150        0.173        0.000        0.325
AR 0015 1I40I  READY

```

■ SIR PMRMON

```

sir pmrmon
AR 0015          PAGE MANAGER MONITORING REPORT
AR 0015          (BASED ON A 0000:00:21.879 INTERVAL)
AR 0015 IPFQ 31-BIT      =          0      IPFQ 64-BIT      =          0
AR 0015 PSQ 31-BIT      =      484924      PSQ 64-BIT      =      6746514
AR 0015 PF EXCH TOTAL   =      16445      PF EXCH 31->64   =      16445
AR 0015 PF EXCH 64->31  =          0      PGFLT TOTAL      =      179742
AR 0015 PGFLT PMGR      =      176790      PGFLT USER       =          2950
AR 0015 PGFLT IMM PO 31 =          2      PGFLT IMM PO 64  =      16446
AR 0015 SELCT ON PSQ 31 =      16447      SELCT ON PSQ 64  =      88394
AR 0015 SELC R=1 MAX 31 =          3      SELC R=1 MAX 64  =          6
AR 0015 RECLAIMS       =          4193      NPSQ LOW          =          0
AR 0015 PGOUT I/O TOTAL =      48444      PGIN I/O TOTAL   =          0
AR 0015 PGOUT I/O UNC.  =      13071      PGOUT I/O PRE.   =      35373
AR 0015 LRA PGM CHECK   =          0      TFIX 64-BIT FR   =          0
AR 0015 HWM MB FRM-64   =          0      HWM MB FRM-31   =          0
AR 0015 MB FRM TFIX RPL =          0      MB FRM PGO RPL   =          4
AR 0015 1I40I  READY

```

SIR MIH

- MIH = Missing Interrupt Handler = z/VSE Supervisor routine, that get control regularly
- Verifies if I/O is not completed after a defined interval
- Appropriate message will be written to the console and the recorder file, if a device is in error
- SIR MIH
 - may enable / disable the MIH process
 - without a parameter displays the current settings
 - may set an interval per device or for all devices
- Default is enabled, time interval is 3 minutes
 - z/VSE waits for at least 3 minutes, if an I/O does not complete, until it writes an (action) message (0E02t DEVICE cuu LOST CHAN+DEV END) to the z/VSE console.
- Time interval depends on the timing of your devices
 - Tape devices need longer intervals than disks

- Please change system parameters only, if required for your workload

STACK – Stack Attention Routine commands *

- The STACK command can be used to
 - Abbreviate z/VSE commands
 - Suppress or change any z/VSE command
 - Prepare a sequence of commands and/or replies

```

stack MV|MAP &0|GETVIS &0|
AR 0015 1I40I  READY
stack show
AR 0015 VIS|GETVIS &0,ALL
AR 0015 MV|MAP &0|GETVIS &0|
AR 0015 1I40I  READY
mv bg
AR 0015 1I40I  READY
AR 0015 MAP BG
AR 0015  PARTITION:  BG          SPACE-GETVIS.....:  (N/A)
AR 0015  SPACE.....:  0          ALLOC (VIRTUAL)...:  6144K  ADDR:  400000
AR 0015  STATUS...:  VIRTUAL     SIZE.....:  1280K
AR 0015  POWER-JOB:  PAUSEBG
AR 0015  JOBNUMBER:  328          GETVIS.....:  4864K  ADDR:  540000
AR 0015  JOBNAME...:  PAUSEBG
AR 0015  PHASE.....:
AR 0015  TASKS....:  ANY          PFIX (BELOW) -LIMIT :  OK
AR 0015                                     -ACTUAL:  OK
AR 0015                                     PFIX (ABOVE) -LIMIT :  OK
AR 0015                                     -ACTUAL:  OK
AR 0015 1I40I  READY
AR 0015 GETVIS BG
AR 0015 GETVIS AREA FOR BG IS NOT INITIALIZED
AR 0015 1I40I  READY

```


LOCK display and trace *

- The Attention Routine LOCK command displays and traces LOCK/UNLOCK events
- LOCK SHOW[=pid][[resource name]] to display lock resources - pid = SYSLOG id
- LOCK TRACE to activate the trace
- LOCK TRACE[=pid][,resource name] to trace all, a partition and/or a specific resource

```
lock show=f2
AR 0025 LOCKTAB ENTRY
V0006F7D0      . . . . . 7FFA0A80 00000000 C4E3E2E5 *      "3 0      DTSV*
V0006F7E0      C5C3E3C2 40404040 11800001 0006F7F4 *ECTB      0      74*
V0006F7F0      0006F7B4                      *      7©      *
AR 0025 OWNER ELEMENT
V7FFA0A80      00000000 01F40000 00011000 00000000 *      4      *
AR 0025 LOCKTAB ENTRY
V7FFA0FE0      0006F844 00000000 E5C4D6E2 D9C5E200 *      8à      VDOSRES *
V7FFA0FF0      00000000 04C00000 7FFA0FC0 0006F814 *      {      "3 { 8 *
AR 0025 OWNER ELEMENT
V0006F840      . . . . . 7FFA0EF0 00200001 00000000 *      "3 0      *
V0006F850      00000000                      *      *

```

GETVIS - retrieve partition and GETVIS information

- Use the GETVIS command e.g. to identify
 - areas of GETVIS shortage or the subpool, where the GETVIS space wasn't freed
- Command described in “System Control Statements
- Example
 - GETVIS SVA shows shortage on SVA(24 bit) storage
 - If VTAM buffers are allocated in SVA(24 bit)
 - Move them into SVA(31 bit) - set the VTAM startup parameter
 - If the SVA (31 bit) is short on storage too, Increase the SVA(31 bit)

```

getvis sva,all
AR 0015 GETVIS USAGE      SVA-24      SVA-ANY      SVA-24      SVA-ANY
AR 0015  AREA SIZE:      1,900K      34,256K
AR 0015  USED AREA:      796K       10,684K MAX. EVER USED:      828K      15,836K
AR 0015  FREE AREA:      1,104K      23,572K LARGEST FREE:      1,100K      17,348K
AR 0015 SUMMARY REPORT
AR 0015 SUBPOOL          REQUEST  <--SVA-24-AREA-->  --SVA-ANY-AREA-->
AR 0015 Default                          288K              176K
AR 0015 IJBMCB                          60K                0K
AR 0015 ISTSVF                          52K              312K
AR 0015 IPWPWR                          36K                0K
AR 0015 IJBFF300A0      SPACE          24K                0K
AR 0015 IPTIB                          20K              52K
AR 0015 INLSLD                          20K                0K
AR 0015 IINIT                          16K              96K
AR 0015 IJBHCF                          12K                0K
AR 0015 IJBFF200B0      SPACE           8K                0K
AR 0015 ISTSVP                          8K              276K
  
```

Problem management tools

- ABEND / system dump
 - Amount of dump data dependent on JCL OPTIONS
- DUMP command
 - Attention Routine command
- Stand-alone dump (program)
 - Create a stand-alone dump tape for the release you have in production
 - Have standalone dump tapes ready, just in case you need it
 - Always “STORE STATUS” before you take a standalone dump
- SDAID
 - To trace application programs and system events
- Interactive trace
 - // EXEC <program>,TRACE to trace applications
- DEBUG trace

- z/VM CP TRACE command

UI Problem handling dialogs

```
IESADMSL.IESEPROB          PROBLEM HANDLING                      APPLID: DBDCCICS
Enter the number of your selection and press the ENTER key:

  1  Online Problem Determination
  2  Inspect Message Log
  3  Storage Dump Management
  4  Inspect Dump Management Output
  5  Retrace History File
  6  Dump Program Utilities

PF1=HELP                    3=END          4=RETURN          6=ESCAPE(U)
                             9=Escape(m)

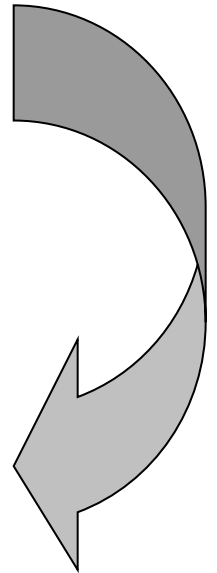
==>                          Path: 4
```

```
IESADMSL.IESEDUMP          DUMP PROGRAM UTILITIES                APPLID: DBDCCICS
Enter the number of your selection and press the ENTER key:

  1  Create Standalone Dump Program on Tape
  2  Create Standalone Dump Program on Disk
  3  Remove Standalone Dump Program from Disk
  4  Scan Dump Files on Tape
  5  Scan Dump Files on Disk
  6  Print IPL Diagnostics
  7  Format ICCF Dump Data
  8  Print SDAID Tape
  9  Print Standalone Dump

PF1=HELP                    3=END          4=RETURN          6=ESCAPE(U)
                             9=Escape(m)

==>                          Path: 46
```



z/VSE SDAID trace to VTAPE

- SDAID trace output (OUTDEV) may be redirected to a printer, real tape or SDAID buffer (BUFFER).
- To send SDAID output to a VTAPE
 - Define a virtual tape via the VTAPE command
 - Initialize the SDAID trace with a **wraparound** buffer as output destination
OUTDEV BUFFER=<size, buffer size from 4K to 256K>
 - Stop SDAID (STOPSD), when you want to finish the trace
 - Dump the SDAID buffer to the virtual tape via the Attention Routine command
DUMP BUFFER,<cuu of virtual tape>
 - You may now e.g. print the virtual tape content with DOSVSDMP or the IUI dialog
 - Verify the SDAID trace to VTAPE in a test environment before you use it for problem analysis

How to monitor the Turbo Dispatcher

- How to gather monitored information:
 - 1) SIR MON=ON - starts monitoring
 - 2) SYSDEF TD,RESETCNT - resets TD counters
 - 3) <monitor interval - e.g. 1 hour at peak>
 - 4) SIR MON=OFF - stops monitoring
 - 5) QUERY TD - displays CPU counters
 - 6) SIR MON - displays SVC counters
 - 7) To start next interval
 - 8) begin with 1)

- Monitored data can be retrieved from VSE Console

- SIR MON Attention Routine Command
 - Can help to analyze performance problems
 - Provides counters for
 - SVCs, Fast (107) SVCs and function codes
 - TD Service SVCs and function codes
 - MVS SVCs
 - Program Call codes
 - Bound conditions
 - TD performance (15 counters)

How to monitor the Turbo Dispatcher

▪ SIR MON Attention Routine Command ...

```

sir mon
AR 0015                               MONITORING REPORT
AR 0015                               (BASED ON A 0000:00:16.680 INTERVAL)
AR 0015                               SVC SUMMARY REPORT
AR 0015 EXCP      =                    53  WAIT      =                    38  SETIME      =                    17
AR 0015 SVC-0D    =                    57  SYSIO     =                   37949  EXIT IT     =                    34
AR 0015 SETIME    =                    15  WAITM     =                    18  COMREG     =                    20
AR 0015 GETIME    =                    1  POST       =                    26  SVC-31     =                    11
AR 0015 TTIMER    =                    3  SVC-35     =                   109  GETVIS     =                    88
AR 0015 FREEVIS   =                    69  CDLOAD    =                    1  SECTVAL    =                    5
AR 0015 FASTSVC   =                   579  (UN) LOCK =                    2  SVC-75     =                    65
AR 0015 PRODID    =                    2  SVC-83     =                   200  SVC-84     =                   147
AR 0015                               SVC-X '6B' DETAIL REPORT
AR 0015      FC-02 =                    25      FC-03 =                    78      FC-06 =                   109
AR 0015      FC-08 =                    26      FC-09 =                   100      FC-0A =                    76
AR 0015      FC-0D =                    16      FC-0E =                   192      FC-4F =                    1
AR 0015      FC-67 =                    1      FC-73 =                    60      FC-86 =                    22
AR 0015      FC-90 =                    62      FC-96 =                    7      FC-9F =                   156
AR 0015      FC-B6 =                    16
AR 0015                               SVC-X '75' DETAIL REPORT
AR 0015      FC-98 =                    57      FC-9C =                    8
AR 0015                               MVS-SVC 'S' DETAIL REPORT
AR 0015 SVC-01    =                    79  SVC-02    =                    43  SVC-22    =                    2
AR 0015 SVC-2E    =                    2  SVC-2F    =                    23  SVC-6B    =                   141
AR 0015 SVC-77    =                    57

```

CPU Balancing

- When CPU balancing is activated, the z/VSE Turbo Dispatcher will only use CPUs required for the current workload

- Can be activated and deactivated via AR/JCL command
 - SYSDEF TD,INT=0 to deactivate, default
 - SYSDEF TD,INT=nn (=1..99) to activate and “nn” interval in seconds, after which the CPU utilization is inspected

- Threshold can be defined after which an additional CPU is activated
 - SYSDEF TD,THR=nn (10..99) in percent, default: 50

- CPU balancing via stop or quiesce process
 - SYSDEF TD,INT=nn,STOP - the stop process to be used
 - May provide performance improvements for z/VM guests (z/VM 5.4 or higher)
 - SYSDEF TD,INT=nn,STOPQ - the quiesce process to be use, default

- QUERY TD shows current settings

- CPU balancing may reduce multiprocessing overhead

CPU Balancing ...

- Retrieve CPU time values: QUERY TD

```

query td
AR 0015 CPU STATUS SPIN_TIME NP_TIME TOTAL_TIME NP/TOT
AR 0015 00 ACTIVE 0 63715 96636 0.659
AR 0015 01 ACTIVE 0 13668 22614 0.604
AR 0015 02 INACTIVE 210 23692 34187 0.693
AR 0015 -----
AR 0015 TOTAL 210 101075 153437 0.658
AR 0015
AR 0015 NP/TOT: 0.658 SPIN/(SPIN+TOT): 0.001
AR 0015 OVERALL UTILIZATION: 80% NP UTILIZATION: 53%
AR 0015
AR 0015 CPU BALANCING (STOP): INT: 9 SECONDS THR: 50%
AR 0015
AR 0015 ELAPSED TIME SINCE LAST RESET: 190550
AR 0015 1I40I READY

```

TOTAL_TIME = CPU time used by workload

NP_TIME = non-parallel CPU time, contained in TOTAL_TIME

SPIN_TIME = CPU time needed to wait for a non-parallel work unit

All above values given in milliseconds.

NP/TOT = ratio NP_TIME / TOTAL_TIME = non-parallel share

SPIN/(SPIN+TOT) = spin time ratio

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Recent additions and updates:

- ↓ [z/VSE CPU Monitor Tool](#) (updated 03/2017)
- ↓ [LE z/VSE Run-Time Library Add-Ons](#) (new 12/2016)
- ↓ [LE/VSE Control Center V4.1](#) (updated 02/2016 for z/VSE V5.2 and V6.1)
- ↓ [LE/VSE CEETRACE Feature V1.2.1a](#) (updated 01/2016 for z/VSE V5.2 and V6.1)
- ↓ [LE/VSE CEETRACE Feature V1.2.0d](#) (updated 01/2016 for z/VSE V5.1)

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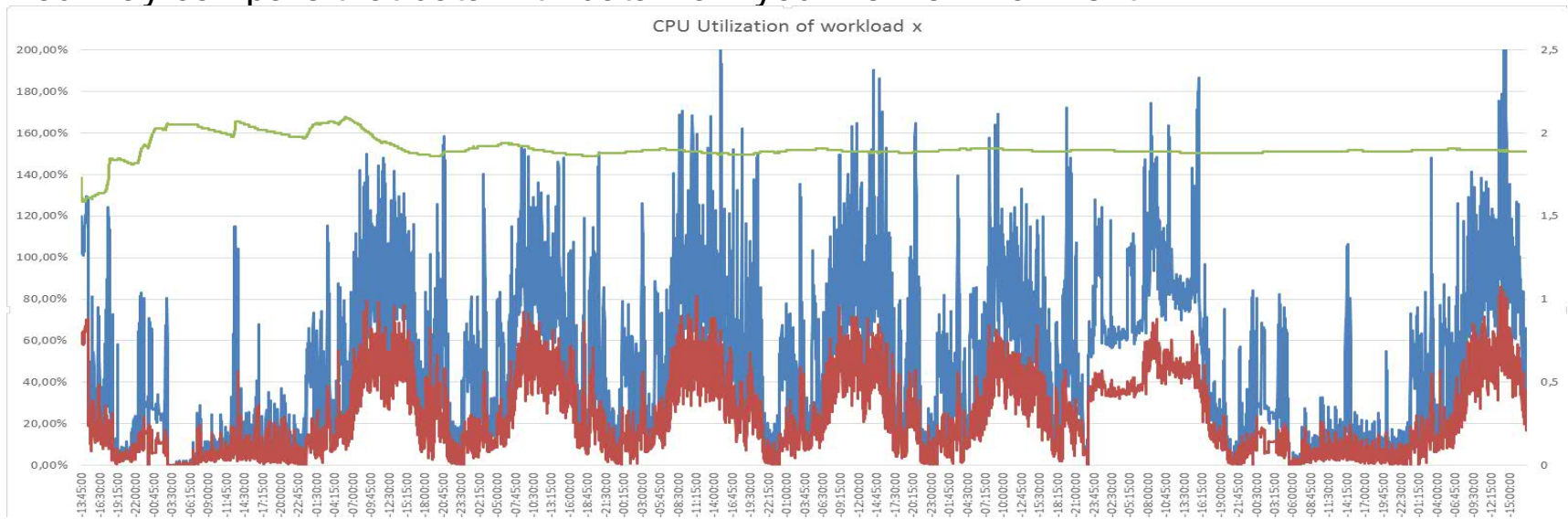
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How to get the CPU utilization of a workload

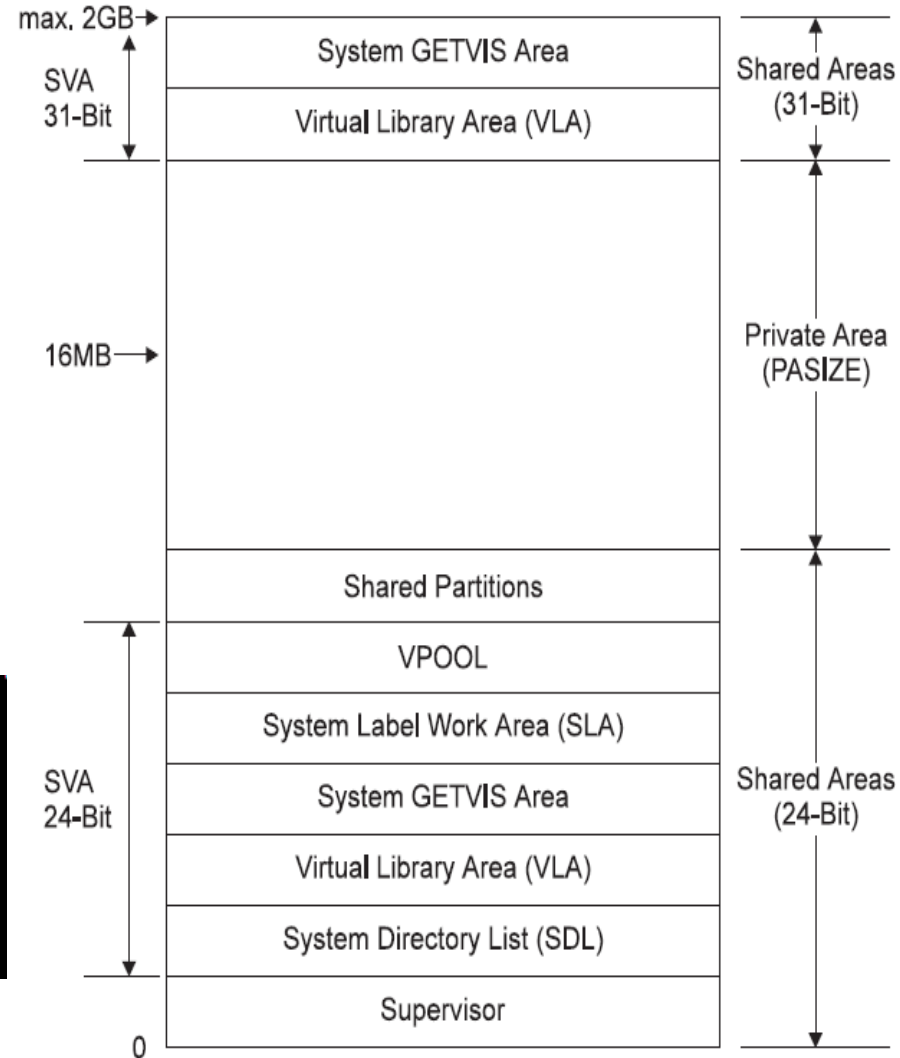
- The z/VSE CPU monitoring tool (CPUMON) can be used to get the CPU utilization.
- CPUMON can be downloaded from the z/VSE web pages.
<http://www-03.ibm.com/systems/z/os/zvse/downloads/tools.html#cpumontool>
- CPUMON may run for a day or more and measures in e.g. minute intervals.
- The monitored data can be loaded into a spreadsheet. A line chart can show workload peaks.
- Use CPUMON to understand the CPU requirements of your workload.
- Run CPUMON before you upgrade your hardware or z/VSE release and save the data. You may compare that data with data from your new environment.



What to do with unused shared area (24-bit) space ?

- SVA (24 bit) starts after the Supervisor area
- Private area starts at MB boundary
- SVA-24 bit unused space as of MAP command can not be allocated after IPL complete. Except for allocation of shared partitions (SPSIZE not zero)
- You may tune your IPL parameters to use this space – or reduce the space to get to a lower MB boundary
- Consider your vendor product requirements
- **But** only change values, if you need additional resources.

```
map
AR 0015 SPACE AREA      V-SIZE  GETVIS  V-ADDR  UNUSED NAME
AR 0015  S  SUP          764K     0         $$$SUPI
AR 0015  S  SVA-24      1356K    1848K    BF000    128K
AR 0015  0  BG V        1280K    8960K    400000   143360K PAUSEBG
AR 0015  1  F1 V        1500K    29220K   400000   0K POWSTART
AR 0015  2  F2 V        2048K    40450K   400000   0K CICS16CF
```



How to interrupt the IPL process

- To temporarily add new devices, modify IPL statements, IPL / JCL procedures or Supervisor names
 - LPAR: Use the IPL load parameter and enter the parameter values on the HMC load panel.
 - z/VM guest: add the load parameter value to the IPL command, e.g. IPL 200 LOADP ..P.

- The load parameter allows to add up to 8 values:
 - 1st value: I = console type,
 - 2nd S = IPL message suppression,
 - 3rd P = IPL parameter prompting,
 - 4th P = startup mode prompting,
 - 5th D = debug mode for installation disk.
 - Values 6 to 8 are reserved.
 - Add periods in positions for defaults. Combinations are possible.

- Examples:
 - to prompt for the startup mode (mini, basic, cold) – use load parameter "...P".
 - To add or change IPL commands - use the parameter "..P"
 - after message 0I03D ENTER SUPERVISOR PARAMETERS OR ASI PARAMETERS
 - enter Supervisor parameters such as the Supervisor name, VIO, NOPDS or VSIZE, VPOOL, ..., or
 - enter IPL procedure (IPL=) and JCL procedure (JCL=), e.g. IPL=\$IPLESA,JCL=\$\$JCL, or
 - Use the STOP= parameter, e.g. STOP=SYS or STOP=ADD to add or change an IPL command.
You will be prompted before the first SYS or ADD command (in the example)

 - Please verify those changes in your test environment first.

How to get control during z/VSE system startup

- It may be necessary to get control before the first „// JOB“ statement after the IPL complete message, e.g. to recreate the hardcopy or recorder file (via SET HC=CREATE or SET RF=CREATE)
- You may use the following procedure:
 1. Specify the IPL parameter LOADPARAM ..P
 2. You will be prompted to enter the Supervisor or ASI parameters
 3. Enter your IPL procedure and a JCL procedure, e.g. IPL=\$IPLESA,JCL=\$\$JCLXXX, where the procedure \$\$JCLXXX does not exist.
 4. You will be prompted after IPL complete with message:

```
BG 0000 // EXEC PROC=$0JCLXXX STATEMENT IS GENERATED
BG-0000 1N20D PROCEDURE NOT FOUND
```
 5. Now you can instruct z/VSE e.g. to recreate the hardcopy file with the command SET HC=CREATE - see book [z/VSE System Control Statements](#) for details
 6. Continue with your BG startup procedure - e.g. // EXEC PROC=\$0JCL
It is just necessary to process the first // JOB statement to open the hardcopy file.
 7. Re-IPL your system

Please be careful when using such system commands.

How to prevent a job from execution

- If a VSE/POWER job causes a system failure, it may be necessary to stop a job from execution after a re-IPL.
- Use the SET NORUN=YES card in the VSE/POWER startup
 - Applies to locally submitted VSE/POWER job
 - Causes a disposition of „X“ for all active reader queue entries at time of failure, except reader queue entries submitted with „* \$\$ JOB JNM=...,NORUN=IGN“
 - DISP X entries may be listed via „PDISPLAY RDR,CDISP=X
 - You may change the disposition back to the original disposition: PALTER RDR,CDISP=X,DISP=*
- „Emulate“ NORUN=YES by the following sequence
 - PAUSE F1 AR command after IPL complete message
 - // UPSI 1 statement in partition F1, when prompted
 - VSE/POWER startup completes
 - Dispositions of queue entries may now be changed
- Special considerations apply to shared spool environments
 - See VSE/POWER Administration and Operation book for details

How to prevent a job from execution ...

```

BG 0000 0I20I IPL COMPLETE FOR VSE/AF 5686CF906 52C 920 GA-LEVEL
BG 0000 SUPVR USERID IS: Z.VSE.SUPI
BG 0000 PRTY BG,FA,F9,F8,F6,F5,F4,F2,F7,FB,F3,F1
BG 0000 // JOB BGINIT
DATE 04/08/2014, CLOCK 12/22/24
BG 0000 1I93I RECORDER FILE IS 1% FULL
BG 0000 IESI0221I PARTITIONS F3 F2 F1 WILL BE INITIALIZED IN RECOV START MODE.

```

```

BG 0000 IESI0222I REMAINING PARTITIONS WILL BE INITIALIZED IN WARM START MODE.
IF YOU WANT TO INTERRUPT THEN ENTER MSG BG.
pause f1
AR 0015 1I40I READY
BG 0000 EXPLAIN ON
EXPLAIN ON
BG 0000 ALLOC BG=10M

```

```

BG 0000 STOP
F1 0001 // JOB POWSTART
DATE 04/08/2014, CLOCK 12/22/33
F1-0001 1I00D READY FOR COMMUNICATIONS.
1 // UPSI 1
F1-0001
1
F1 0001 1QB7I FULL QUEUE FILE RECOVERY IN PROGRESS
F1 0001 1QBCI QUEUE FILE RECOVERY DETECTED NEW DISP=X JOB(S) IN READER QUEUE

```

```

d rdr,cdisp=x
AR 0015 1C39I COMMAND PASSED TO VSE/POWER
F1 0001 1R46I READER QUEUE P D C S CARDS BU
F1 0001 1R46I PAUSEBG 00268 3 X 0 4 FROM=(SYSA)
F1 0001 1R46I CICSICCF 00248 3 X 2 71 FROM=(SYSA)
F1 0001 1R46I VTAMSTRT 00235 3 X 3 20 FROM=(SYSA)
F1 0001 1R46I PAUSEF4 00280 3 X 4 4 FROM=(SYSA)
F1 0001 1R46I PAUSEC 00281 3 X C 3 FROM=(SYSA)
==>

```


How to prevent a job from execution ...

- **Caution:** The following example does not work for VSE/POWER share spooling environments
- Prevent jobs from execution with the „MINI“ startup. „Active“ partitions are in disposition „K“

```

BG 0000 0120I IPL COMPLETE FOR VSE/AF 5686CF906 52C 920 GA-LEVEL
BG 0000      SUPVR USERID IS: Z.VSE.SUPI
BG 0000 PRTY BG,FA,F9,F8,F6,F5,F4,F2,F7,FB,F3,F1
BG 0000 // JOB BGINIT
          DATE 04/08/2014, CLOCK 13/07/41
BG 0000 1193I RECORDER FILE IS 1% FULL
BG 0000 IESI0221I PARTITIONS F3 F2 F1 WILL BE INITIALIZED IN RECOV START MODE.
BG 0000 IESI0222I REMAINING PARTITIONS WILL BE INITIALIZED IN WARM START MODE.
          IF YOU WANT TO INTERRUPT THEN ENTER MSG BG.
msg bg
AR 0015 1140I  READY
BG 0000 IESI0214I SELECT STARTUP MODE FOR SYSTEM : MINI  BASIC COLD.
BG 0000 IESI0215A OR, IF NO CHANGE, ENTER: END .
BG-0000
0 mini
BG 0000 ALLOC F1=6M
BG 0000 STOP
F1 0001 // JOB POWSTART
          DATE 04/08/2014, CLOCK 13/08/02
F1 0001 * -----
F1 0001 * CAUTION:  MINI STARTUP JOB WILL EXECUTE IPWPOWER, WHICH IS NOT
F1 0001 *          GENERATED FOR SHARED SPOOLING.
F1 0001 *          IF OTHER SHARING SYSTEMS ARE EXECUTING THIS JOB MAY
F1 0001 *          DESTROY THE POWER QUEUE AND DATA FILE.
F1 0001 *          SHARING SYSTEMS SHOULD BE SHUT DOWN BEFORE PERFORMING
F1 0001 *          A MINI STARTUP.
F1 0001 *
F1 0001 * 1. REPLY "1 CANCEL (END/ENTER)" TO CANCEL THIS JOB
F1 0001 * 2. REPLY "1 (END/ENTER)" AT THE FOLLOWING PAUSE-STATEMENT TO
F1 0001 *          CONTINUE THIS JOB.
F1 0001 * -----
F1-0001 // PAUSE
1
F1 0001 * ***** MESSAGE 1Q1CI MAY BE IGNORED !!!          *****
F1 0001 1QB7I  FULL QUEUE FILE RECOVERY IN PROGRESS
F1 0001 1QB7I  FULL QUEUE FILE RECOVERY COMPLETED

```

How to get the time from Time-Of-Day (TOD) clock

- There are multiple ways to get the TOD clock value translated to day / time, e.g.
 - Use/write a REXX program
 - Write a program that uses the GETIME macro to translate the value
 - ... or use the Attention Routine TIME command:

TIME TOD=<first 4 byte of TOD clock value> - returns the date and time.

– Examples:

```
time tod=CE8B684c
AR 0015 TIME IS: 05:05:29 (GMT)    DATE 02/22/2015  SUNDAY

time tod=CE8B684d
AR 0015 TIME IS: 05:05:30 (GMT)    DATE 02/22/2015  SUNDAY

time tod=CE911B8A
AR 0015 TIME IS: 17:54:01 (GMT)    DATE 02/26/2015  THURSDAY
```

Clock changes (Daylight Saving Time)

- SET ZONEDEF and SET ZONEBDY (IPL commands)
 - Switch between standard and daylight local times without changing the IPL startup procedure
 - IPL required in order to switch to the new time zone
 - See z/VSE System Control Statements for details.

- A local time change forward has normally no effect on subsystem operation. It may have an impact on accounting, however.
- A local time change backwards could affect subsystems and accounting routines more severely.
- Therefore I recommend to IPL the z/VSE system for any time changes.

- More information:
 - Technote "Daylight Saving Time changes effect on CICS".
<http://www-01.ibm.com/support/docview.wss?uid=swg21220678>
 - z/VSE Hints & Tips, see section "System Date and Time".
<http://www-03.ibm.com/systems/z/os/zvse/documentation/#hints>

Some more tips

- Improve TCP/IP performance for z/VSE guests
 - Via the z/VM Queued Direct I/O (QDIO) assist
 - z/VSE exploits QDIO assist for OSA-Express (CHPID type OSD) and HiperSockets (CHPID type IQD)
 - QDIO instructions directly passed to the hardware
 - I/O interrupt directly passed from the hardware to the z/VM guest
 - Before IPL of the z/VSE system use CP command „SET QIOASSIST ON“
 - z/VM has to run in an LPAR

- z/VSE Supervisor (copy) buffer usage
 - Copy buffers are used for I/O processing, allocate in Supervisor area (24 bit storage)
 - Allocated based on the IPL command „SYS BUFSIZE“
 - IPL message displays the actual BUFSIZE value
 - SIR command shows the copy block usage, high water mark and MAX value

```
IR 0015 COPY-BLKS = 00015          HIGH-MARK = 00041          MAX = 01502
PR 0015 CHANO USED= 00004          HIGH-MARK = 00011          MAX = 00080
```

 - If high water mark is close to MAX, consider to increase the copy buffers
 - Copy buffer shortage may cause system hangs
 - More copy buffers may be needed
 - if you migrate from ECKD to SCSI
 - For VTAM 31 bit I/O buffers

- Concurrent microcode update recommended during maintenance window

Hardware and z/VSE Upgrade

Migration – General considerations

- Hardware upgrade can be any changes on the hardware infrastructure, such as processors, I/O, network, crypto cards, disks, ...
- Software upgrade can be upgrade to new SPE / release / version via Fast Service Upgrade (FSU) or initial installation
- Upgrade tasks:
 - Collect reference data
 - Backup your data and system
 - Obtain required software license and updates from vendors
- Recommendation: do not upgrade to a new processor and release in one step

Processor upgrade

Tasks before the upgrade

- Check the Preventive Service Planning (PSP) bucket
 - PSP describes service requirements for the new processor
e.g. PTFs IOCP, EREP, HLASM, z/VSE base PTFs for toleration and exploitation
 - PSP buckets: <http://www14.software.ibm.com/webapp/set2/psearch/search?domain=psp>
- Install the required z/VSE, z/VM and vendor PTFs
- Review / update your z/VSE definitions, e.g.
 - Stop sub-capacity pricing data collection (CMT) before you upgrade
 - Save your CMT files
 - If you use a \$ASIPROC.PROC, add the new CPU id.
 - If you use DASD sharing, initialize the lock file at first IPL
- Review / update z/VM definitions
 - Verify, if the z/VM release is supported on the new processor
 - Review definitions of guest systems
- Review / upgrade vendor definitions
 - Update vendor software before the upgrade, if required
 - Verify license requirements

Processor upgrade ...

- Processor upgrade:
 - Generate the IOCDs for the new processor
 - Define the LPARs
 - Configure the terminal sessions, if you use the OSA-Express Integrated Console Controller
 - Configure your OSA-Express devices (e.g. CHPID type OSE for SNA or TCP/IP)
 - Verify your settings in a test environment before going into production

- Disk / tape upgrade
 - Check the PSP bucket for the device
 - Install required PTFs, if any
 - Upgrade to the new devices

- Concurrent microcode upgrade for IBM System Storage (tape / disk)
 - Recommendation: shutdown your system, upgrade to new device, re-ipl

z/VSE Release / Version upgrade

- Planning tasks
 - Verify requirements for new release / version (see z/VSE Planning book for details)
 - e.g. required hardware (processor, installation medium)
 - Decide on a migration via Fast Service Upgrade (FSU) or initial installation
 - Contact your vendors, if software updates are required
 - Update the vendor software before the FSU migration, if possible
- Get an MSHP retrace of your system (to get list of installed products and service levels)
- Use the latest service level of your target release / version

- Post migration tasks
 - Create a standalone dump tape or disk

- Data migration
 - Use the utilities provided by the product / component
 - Migration from ECKD to SCSI, see paper z/VSE SCSI Support and Migration Options ftp://public.dhe.ibm.com/eserver/zseries/zos/vse/pdf3/zVSE_SCSI_and_Migration_Whitepaper.pdf
 - Initial installation:
 - Migrate batch environment (jobs, settings, procedures, ...)
 - Migrate your CICS environment (SIT, recompile CICS tables / exits, ...)

- Detailed upgrade information in paper: z/VSE Release and Hardware Upgrade ftp://public.dhe.ibm.com/eserver/zseries/zos/vse/pdf3/zVSE_Release_and_Hardware_Upgrade.pdf

CICS on z/VSE

- z/VSE 4.2 is the last release with 2 CICS releases :
 - CICS/VSE 2.3
 - In service for about 17 years; End-of-Support (EOS) since October 2012
 - z/VSE 4.2: last release that includes CICS/VSE in z/VSE package
 - z/VSE 4.3: CICS/VSE access to DL/I does not work
 - z/VSE Version 5 & 6: CICS/VSE not supported (will not run on z/VSE Version 5 & 6)
 - CICS TS for VSE/ESA 1.1
 - In service since 1999
 - Migration target for CICS/VSE
 - Recommendation: If you are still running applications on CICS/VSE, migrate them to CICS TS prior to the migration to z/VSE Version 5 or 6
 - End of marketing: March 13, 2017, end of service: October 31, 2018

- New CICS TS version with z/VSE 6.1: CICS TS for z/VSE 2.1
- New CICS TS release with z/VSE 6.2: CICS TS for z/VSE 2.2
- New IBM Redbook: Migration to CICS TS for z/VSE
<http://www.redbooks.ibm.com/Redbooks.nsf/RedbookAbstracts/sg248390.html?Open>

z/VSE 6.2 Compatibility

- Architectural Level Set (ALS) to z114 / z196
- Tape delivery dropped with z/VSE 6.2
 - z/VSE will be delivered on DVD or electronically via Shopz
- z/VSE 6.2 can not be installed on 3380 disks (or 3390 in 3380 track compatibility mode)
 - 3380 disks still supported as data disks
- Upgrade to z/VSE 6.2 via initial installation or Fast Service Upgrade (FSU)
 - FSU from z/VSE 6.1 to z/VSE 6.2 only
 - FSU not supported from z/VSE V5 or if system disks are on 3380
 - z/VSE 6.2 upgrade will fail, if z/VSE not on z114 / z196 or higher

z/VSE 6.2 Compatibility ...

- CICS TS for z/VSE 2.2
 - Replaces CICS TS for z/VSE 2.1 (not supported on z/VSE 6.2)
 - SIT need to be recompiled
 - Recommendation: Recompile / relink CICS tables from earlier
 - TCPIPSERVICE need to be redefined
- CICS transactions no longer protected via DTSECTXN table
 - DTSECTXN table entries to be migrated to Basic Security Manager (BSM) control file
- IBM IPv6/VSE 1.3 replaces IBM IPv6/VSE 1.2 (not supported on z/VSE 6.2)
- IBM TCP/IP for z/VSE 2.2 replaces IBM TCP for z/VSE 2.1 (not supported on z/VSE 6.2)
- Starting with z/VSE V6.1, z/VSE is shipped as English version only.

Upgrade to a supported z/VSE release

- Please upgrade to a supported z/VSE release
 - to get the latest software service, hardware exploitation and functionality
 - **z/VSE 5.1 end of service since June 30, 2016**

- The only supported releases today are z/VSE 5.2 and 6.1
 - **z/VSE 5.2** supports processors z9 and higher
 - Fast Service Upgrade (FSU) from z/VSE 4.3 / z/VSE 5.1 to z/VSE 5.2 supported
 - **z/VSE 6.1** requires an initial installation and supports z10 and higher
 - **FSU** from z/VSE 6.1 to z/VSE 6.2
 - z/VSE 6.2 supports z114 / z196 and higher (available on December 1, 2017)

- Multi-Version Measurement (MVM) - <http://www-03.ibm.com/systems/z/os/zvse/howtobuy/>

- z/VSE release & hardware upgrade white paper available:
<http://www-03.ibm.com/systems/z/os/zvse/documentation/documents.html#articles>

- CICS TS for z/VSE V2 migration aspects in CICS TS for z/VSE Enhancements Guide:
<http://www-03.ibm.com/systems/z/os/zvse/documentation/#cics>

News, z/VSE status, Documentation , ...

z/VSE status

- z/VSE status web page: <http://www-03.ibm.com/systems/z/os/zvse/about/status.html>
 - Supported z/VSE release
 - z/VSE adapters and crypto
 - z/VSE storage support
 - z/VSE server support

Supported z/VSE releases

Version.Release	Date available	Withdrawal from Marketing effective (1)	Withdrawal from Service effective	Minimum z/VM level (2)
→ z/VSE V6.2	12/01/2017 Announcement	TBD	TBD	z/VM V5.4
→ z/VSE V6.1	11/27/2015 Announcement	12/01/2017	TBD	z/VM V5.4
→ z/VSE V5.2	04/25/2014 Announcement	03/13/2017 Announcement	10/31/2018 Announcement	z/VM V5.4

Note (1): If you have a need for z/VSE tapes from a release that is no longer available for ordering, i.e. for an intermediate FSU step during release upgrade from older releases, then please [contact the z/VSE team](#).

z/VSE status ...

z/VSE server support			
IBM z Systems, IBM System z, zSeries and S/390 Server	z/VSE V6.2	z/VSE V6.1	z/VSE V5.2
IBM z14 (1)	Yes	Yes	Yes (4)
IBM z13s (1)	Yes	Yes	Yes
IBM z13 (1)	Yes	Yes	Yes
IBM zEnterprise BC12 (1)	Yes	Yes	Yes
IBM zEnterprise EC12 (1)	Yes	Yes	Yes
IBM zEnterprise 114	Yes	Yes	Yes
IBM zEnterprise 196	Yes	Yes	Yes
IBM zEnterprise BladeCenter Extension (zBX) - IEDN Support	Yes (2,3)	Yes (2,3)	Yes (2,3)
IBM System z10 BC	No	Yes	Yes
IBM System z10 EC	No	Yes	Yes
IBM System z9 EC (formerly z9-109)	No	No	Yes
IBM System z9 BC	No	No	Yes
zSeries 990, 890	No	No	No
zSeries 900, 800	No	No	No
S/390 Parallel Enterprise Server G5/G6	No	No	No
S/390 Multiprise 3000	No	No	No

z/VSE status ...

- z/VSE status web page for old releases: <http://www-03.ibm.com/systems/z/os/zvse/about/statusold.html>

Unsupported releases may run on these servers at user's risk

IBM z Systems, IBM System z, zSeries and S/390 Server	z/VSE V5.1 (1)	z/VSE V4.1, V4.2 and V4.3 (1)	z/VSE V3.1 (1, 5)	VSE/ESA V2.7 and V2.6 (1)	VSE/ESA V2.5 (1)	VSE/ESA V2.4 (1)	VSE/ESA V2.3 (1)
IBM z14 (7)	Yes (8)	LPAR: No z/VM: Yes (6, 9)	No	No	No	No	No
IBM z13s (7)	Yes	Yes (6)	Yes (4)	Yes (4)	No (2)	No (2)	No (2)
IBM z13 (7)	Yes	Yes (6)	Yes (4)	Yes (4)	No (2)	No (2)	No (2)
IBM zEnterprise BC12 (7)	Yes	Yes (6)	Yes (4)	Yes (4)	No (2)	No (2)	No (2)
IBM zEnterprise EC12 (7)	Yes	Yes (6)	Yes (4)	Yes (4)	No (2)	No (2)	No (2)
IBM zEnterprise 114	Yes	Yes (6)	Yes (4)	Yes (4)	No (2)	No (2)	No (2)
IBM zEnterprise 196	Yes	Yes (6)	Yes (4)	Yes (4)	No (2)	No (2)	No (2)
IBM System z10 EC	Yes	Yes (6)	Yes (6)	Yes (4)	Yes (4)	No (2)	No (2)
IBM System z10 BC	Yes	Yes	Yes (4)	Yes (4)	No (2)	No (2)	No (2)
IBM System z9 EC (formerly z9-109)	Yes	Yes	Yes (4)	Yes (4)	No (2)	No (2)	No (2)
IBM System z9 BC	Yes	Yes	Yes (4)	Yes (4)	No (2)	No (2)	No (2)
zSeries 990/890	No	Yes	Yes (4)	Yes (4)	Yes (4)	No (2)	No (2)
zSeries 900/800	No	Yes	Yes	Yes	Yes	Yes	Yes

z/VSE Service & Support

- Service and support web page on <http://www-03.ibm.com/systems/z/os/zvse/support/>
- Hot service news shows important updates on our service and support web pages <http://www-03.ibm.com/systems/z/os/zvse/support/#news>
- Preventive service: information on
 - Service refreshes,
 - PSP buckets and
 - Recommended Service Levels (RSLs)
 - Security and system integrity
- Corrective service
 - Latest APARs per z/VSE component
- z/VSE security and system integrity APARs
- CICS TS for VSE/ESA 1.1.1 fix list -> <http://www-01.ibm.com/support/docview.wss?rs=1083&uid=swg27015142>
- CICS TS for z/VSE 2.1 fix list -> <http://www-01.ibm.com/support/docview.wss?uid=swg27046982>
- Product Status of Independent Software Vendors (ISVs)
<http://www-03.ibm.com/systems/z/os/zvse/partners/>
- IBM Software Support Handbook:
<https://www-304.ibm.com/support/customer/sas/f/handbook/home.html>

z/VSE Service & Support

- The z/VSE service team may ask for the following material for problem analysis
 - SIR command output
 - Console log
 - Information about hardware / system changes
 - Did the workload change ?
 - Were any new PTFs / products installed ?
 - Did the configuration change (new processor / devices) ?
 - Does the problem occur once or multiple times ? Is it reproducible ?
 - Does the problem occur on the test or production system ?

Service Management Connect – z/VSE

<http://www.ibm.com/developerworks/servicemanagement/z/zvse/index.html>

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IBM z/VSE

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Overview

Release Plan

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Resources

z/VSE is a widely used mainframe operating system. z/VSE is designed to offer a stable, secure, and continuously available environment for applications running on the mainframe (IBM System z). z/VSE today is the result of nearly five decades of technological advancement. z/VSE evolved from a simple operating system that could process a single program at a time to a sophisticated operating system that can handle many programs and interactive users concurrently.

What it does for you:

z/VSE is designed to take advantage of the z/Architecture. It supports the latest IBM System z processors (mainframe) and IBM System Storage (ECKD, SCSI disks and tape systems).

More information is on the [z/VSE home page](#)

Beta program

For our z/VSE release in development we are looking for z/VSE users that want to run some tests with their workload. Please → [contact us](#) for details. The next beta test period may start in September 2014.

Request for enhancement



Request for Enhancement



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Collaborate



Support Portal



Easy, Fast, Smart. Your customized support experience.

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z/VSE Events

- Conferences
 - The latest news about conferences is here: <http://www-03.ibm.com/systems/z/os/zvse/events/>
- Next conferences
 - October 23-25, 2017: 11th European GSE/IBM Technical University for z/VSE, z/VM and Linux on z Systems in Hamburg, Germany
- Live Virtual Classes (LVCs)
 - The latest news for LVCs are on the z/VSE education web page: <http://www-03.ibm.com/systems/z/os/zvse/education/index.html>
 - There are announcements for new LVCs as well as presentations and playbacks of completed ones.
 - Next LVC on November 28, 2017: z/VSE 6.2

Documentation related to z/VSE

- z/VSE documentation page - <http://www-03.ibm.com/systems/z/os/zvse/documentation/>

- z/VSE Collection Kit
 - Available for download in IBM Publication Center; electronic only, not on physical DVD

- IBM Knowledge Center:
 - z/VSE <https://www.ibm.com/support/knowledgecenter/SSB27H>
 - CICS TS for z/VSE: <https://www.ibm.com/support/knowledgecenter/SSECAB>

z/VSE Knowledge Center



IBM Knowledge Center

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z/VSE welcome page

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This page provides an entry point to product information about z/VSE. Use the links in the Table of Contents to find documentation for specific versions and editions of this product family. Generated links to developerWorks, Redbooks, and white papers are also provided when articles about the product are available. On this page, you can find entry points to sites that help you learn more about this product and other IBM products. There are also links to web sites that help you find support and stay current.

Learn more

[z/VSE Home Page](#)[z/VSE products and components](#)[Find IBM Content](#)

https://www.ibm.com/support/knowledgecenter/SSB27H/zvse_welcome.html

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<https://www.ibm.com/support/knowledgecenter/SSECAB>

Documentation related to z/VSE ...

- Technical articles:

- <http://www-03.ibm.com/systems/z/os/zvse/documentation/documents.html#articles>

- z/VSE Release and Hardware Upgrade
 - Migrating from MQ Server on z/VSE to MQ Client using the z/VSE MQ Client Trigger Monitor
 - Big data and Hadoop with z/VSE
 - Getting started with mobile development for z/VSE
 - z/VSE SCSI Support and Migration Options
 - SHOWCB enhancements in z/VSE 5.1
 - z/VSE z/VM IP assist
 - Parallel Access Volume (PAV) white paper
 - z/VSE release and hardware upgrade

- White paper

- IBM 3270 emulation: security considerations - <https://ibm.biz/BdiaHG>

IBM Redbook news

- IBM Redbook blog: 5 things to know -

<https://www.ibm.com/developerworks/community/blogs/5things/?sortby=0&maxresults=15&lang=en>



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5 Things to Know About OSA-Express features on System z

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"Good things come in small packages." This is certainly true for IBM's System z OSA-Express device, which is a powerful network control unit about the size of a paperback novel. Here are 5 things to know about OSA-Express features: 1. OSA-Express devices access the internet as well as intranets. OSA devices are designed for high-speed communication in the mainframe enterprise backbone or between campuses, to connect server farms, or to... [Continue Reading]

Tags: [osaexpress](#) [network](#) [system_z](#) [osa](#)



IBM Redbook news ...

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<http://www.redbooks.ibm.com/redbooks.nsf/pages/mobileapp?Open>

IBM Redbooks >



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<http://www.redbooks.ibm.com/abstracts/sg247436.html?Open>

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Introduction to the New Mainframe: IBM z/VSE Basics

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Migration to CICS Transaction Server for z/VSE V2

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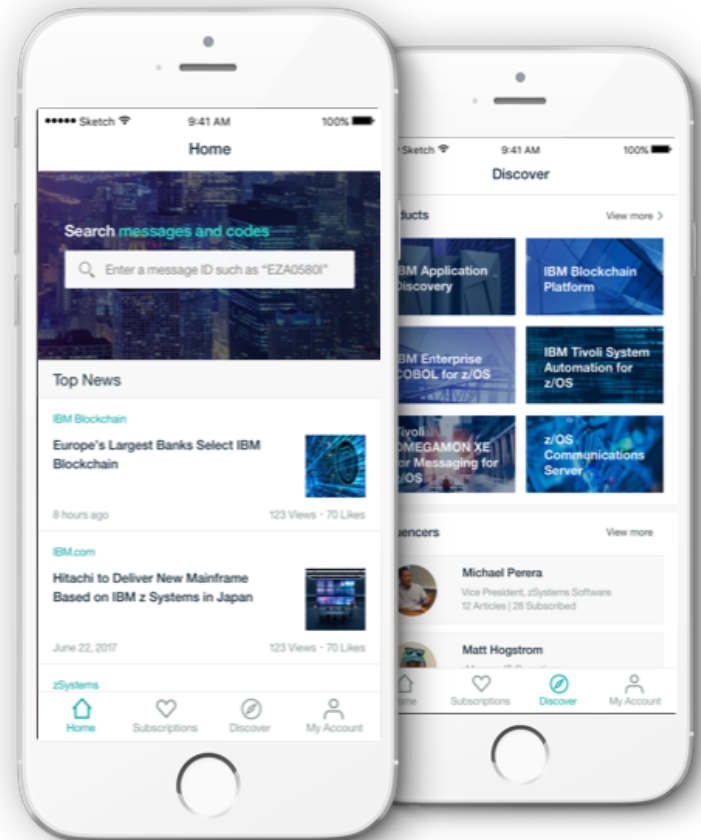


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