z/VSE 6.2

Ingolf Salm - salm@de.ibm.com

Ingolf's z/VSE blog: https://www.ibm.com/developerworks/mydeveloperworks/blogs/vse/
z/VSE web pages: http://www.ibm.com/zVSE

z/VSE Roadmap

z/VSE releases in service

Unsupported z/VSE releases

z/VSE 6.2 *GA planned for 12/01/2017*
z114 / *z196 or higher*, *zHPF / SIMD support, Tapeless installation SCSI / ECKD, CICS TS for z/VSE 2.2, security and connector enhancements*

z/VSE 6.1 *Ann 10/ 05/2015, GA 11/27/2015*
z10 or higher, CICS TS for z/VSE 2.1: CICS Explorer update, Channels & Containers; TCP/IP for z/VSE 2.1, IPv6/VSE 1.2, IBM Z exploitation

z/VSE 5.2 *04/2014, end of service 10/31/2018*
z9 or higher, IBM Z exploitation, device support, Tapeless installation, networking / security enhancements

z/VSE 5.1 *11/2011, end of service 06/30/2016*
z9 or higher , 64 bit virtual, IBM Z exploitation,
z/VSE 5.1.1 06/2012: CICS Explorer, LFP in LPAR, database connector
z/VSE 5.1.2 06/2013: TS1140, 64 bit I/O, openSSL, db connector enhancements

z/VSE 4.3 *11/2010**, end of service 10/31/2014*
Virtual storage constraint relief, 4 digit cuus, z/VSE 4.3.1 08/2011

z/VSE 4.2 *October 2008, end of service 10/31/2012*
*M*ore tasks, more memory, EF for z/VSE 1.1, CPU balancing, SCRT on z/VSE
z/VSE 4.2.1 07/2009 - PAV, EF for z/VSE 1.2, **z/VSE 4.2.2** 04/2010 - IPv6/VSE 05/2010
CICS/VSE end of service 10/31/2012

z/VSE 4.1 *March 2007, end of service 04/30/2011*
z/Architecture only, 64 bit real addressing, MWLC – full and sub-capacity pricing

IBM Z server support

- z/VSE 5.2 last release that supports   z9 BC / EC

- z/VSE 6.1 last release that supports z10 BC / EC

- z/VSE 6.2 supports z114 / z196 or higher

- z13 / z13s are the last IBM Z servers to support running
  an operating system in **ESA/390 architecture mode**
  - all 24-bit and 31-bit problemstate application programs originally written to run
    on the ESA/390 architecture are unaffected by this change.

- z14 – IPL in z/Architecture mode only
  - In LPAR and z/VM 6.4 guest
    - z/VSE Version 6 and z/VSE 5.2, PTF required for z/VSE 5.1 in LPAR and z/VM guest
  - In z/VM 6.4 guest (ESA/390 – APAR VM65942)
    - z/VSE Version 4
  - Not possible to IPL z/VSE 3.1 or VSE/ESA releases

IBM Z server support – z/VSE

VSE Release	z800 / z900 z890 / z990	z9	z10	z196 / z114 / zEC12 zBC12 / z13 / z13s	z14	VSE EoM	VSE EoS
z/VSE V6.2	No	No	No	Yes	Yes	tbd	tbd
z/VSE V6.1	No	No	Yes	Yes	Yes	tbd	tbd
z/VSE V5.2	No	Yes	Yes	Yes	Yes	03/13/2017	10/31/2018
z/VSE V5.1	No	Yes	Yes	Yes	Yes (PTF)	05/23/2014	06/30/2016
z/VSE V4.3	Yes	Yes	Yes	Yes	z/VM guest	06/25/2012	10/31/2014
z/VSE V4.2	Yes	Yes	Yes	Yes	z/VM guest	10/26/2010	10/31/2012
z/VSE V4.1	Yes	Yes	Yes	Yes	z/VM guest	10/17/2008	04/30/2011
z/VSE V3.1	Yes	Yes	Yes	Yes	no	05/31/2008	07/31/2009
VSE/ESA V2.7	Yes	Yes	Yes	Yes	no	09/30/2005	02/28/2007
VSE/ESA V2.6	Yes	Yes	Yes	Yes	no	03/14/2003	03/31/2006

z/VSE release / hardware status: http://www-03.ibm.com/systems/z/os/zvse/about/status.html

Announcements: z/VSE ordering / end of marketing / service

- z/VSE 5.2 end of marketing (eom) was March 13, 2017
  - After end of marketing products can no longer be ordered.
  - eom announcement: https://ibm.biz/BdiaE7

- z/VSE 5.2 end of service (eos) is planned for October 31, 2018
  - The affected products are:
    - z/VSE 5.2
    - z/VSE Central Functions 9.2
    - CICS TS for VSE/ESA 1.1.1
    - IBM IPv6/VSE 1.1
    - IBM TCP/IP for VSE/ESA 1.5
  - eos announcement: https://ibm.biz/BdiaEW

- z/VSE 6.1 can be ordered via Shopz until z/VSE 6.2 is orderable – 11/28/2017

# Multi-Version Measurement (MVM)

- MVM replaces the Migration Pricing Option (MPO) and Single Version Charging (SVC)

- No time limits for running multiple eligible versions of a software program on the same machine
  - VSE/ESA V1 / V2, z/VSE 3.1, z/VSE V4, z/VSE V5, z/VSE V6, in any combination

- E.g. systems with zELC, AEWLC and MWLC pricing are eligible for MVM.

- MVM only possible for versions within same machine. Multiple machines can not be combined.

- Full-capacity clients:

  - No additional requirements

  - Need to request MVM, except SVC systems

  - If one non-subcapacity Version on machine,
       you will be billed at the highest version price as full capacity.

Multi-Version Measurement (MVM) … & SCRT

- Sub-capacity clients

  - Pay for the combined MSUs (concurrent peak) at the latest version price.

  - Sub-Capacity Reporting Tool (SCRT) requirement:
    - SCRT (Classic) support ended October 2017
    - SCRT V25.1.0 (Java)
      - Command line interface
      - Java-version, 32- and 64-bit Java supported on Windows & Linux
      - Download: https://www-01.ibm.com/common/ssi/cgi-bin/ssialias?htmlfid=ZSL03435USEN
    - All reports submitted now need to be generated with Java version

    - z/VSE provides a sample on how to automate the SCRT process (data transfer)
      http://www-03.ibm.com/systems/z/os/zvse/downloads/samples.html#rexx
    - .. and a paper "Using SCRT (Java Version) with z/VSE – Best Practices"
      http://www-03.ibm.com/systems/z/os/zvse/documentation/documents.html#articles

  - See web page for Monthly License Charge (MLC) programs
    http://www-03.ibm.com/systems/z/resources/swprice/reference/exhibits/mlc.html

- See MVM announcement letter for details: https://ibm.biz/BdiaXF

z/VSE Network Appliance (VNA)

- Available for z13 GA2 / z13s, z14
- VNA acts as a router for z/VSE
- TCP/IP application uses Linux Fast Path (LFP) and connects through HiperSockets to VNA
- Based on IBM Secure Service Container, delivered with z13 GA2 / z13s / z14

- No Linux license,
  No TCP/IP stack required on z/VSE,
  No z/VM required to connect to the network

- Supported with z/VSE V6, 5.2, works with 5.1

- VNA for LPAR only

- zVSE - z/VM IP Assist (VIA) for z/VM guests

Linux Fast Path (LFP)

z/VSE application

TCP/IP Stack

z/VSE Supervisor

z/VSE Network Appliance

z13s, z13 (GA2), z14

network
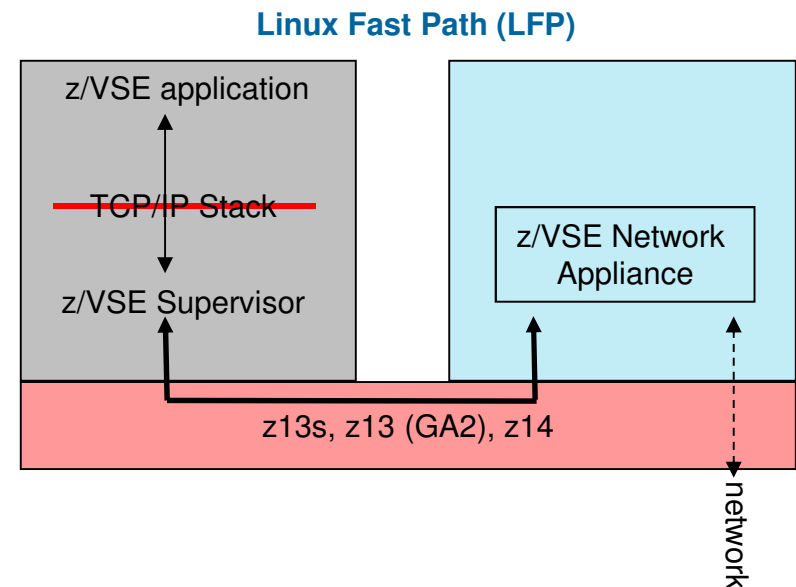
z/VSE 6.2

- Preview: 04/11/2017, GA announcement: 10/10/2017, GA planned for 12/01/2017

- Hardware support
  - Architectural Level Set to IBM zEnterprise 114 (z114) or IBM zEnterprise 196 (z196) or later

  - Support for
    - High Performance FICON (zHPF)
    - Vector Facility (Single Instruction Multipe Data - SIMD)
    - Elliptic Curve Cryptography (ECC) accelerated with CryptoExpress5S of z13 / z13s / z14, exploited by openSSL
    - FlashCopy Space Efficient (SE) for Extent Space Efficient (ESE) volumes configured in an DS8880
    - Support for TS7700 R4.1.1

  - Tapeless initial installation using SCSI or FBA disks
  - Support for stand-alone dump on SCSI disks

z/VSE 6.2 …

- CICS TS for z/VSE enhancements
  - CICS Explorer enhancements (define programs, files, etc.)
  - Channels & containers enhancements
  - HTTP 1.1 upgrade for CICS Web Support (CWS)
  - Enhancements to the CICS Application Programming Interface (API).

- Connector enhancements
  - z/VSE SOAP engine to exploit Channels and Containers
  - new z/VSE Representational State Transfer (REST) engine
    with JSON (JavaScript Object Notation) support
  - z/VSE database connector enhancements

z/VSE 6.2 …

- Security enhancements
    - Basic Security Manager (BSM) enhancement
    - IUI dialog for batch resources (DTSECTAB security)
    - Upgrade to openSSL 1.0.2h
    - openSSL for online and batch environment, for CICS Web Support (CWS)
        o EZA multiplexer & EZA openSSL support for any TCP/IP stack
    - Secure connection (SSL/TLS) for remote virtual tapes (VTAPEs)
    - LDAP sign-on enhancements
    - PNET TLS 1.0 (and higher) connections

z/VSE 6.2 …

- Networking enhancements
  - Linux Fast Path (LFP) connectivity from z/VM guest to LPAR
  - IBM IPv6/VSE 1.3
  - IBM TCP/IP for z/VSE 2.2

- DL/I 1.12 enhancements (as PTF after GA)
  - DL/I partitioning for direct (HD) databases (removed 4GB segment type limitation)

- Product delivery of z/VSE on DVD and electronically only

- z/VSE 6.2 announcement letter: https://ibm.biz/BdjKsH

High Performance FICON support in z/VSE

- High Performance FICON (zHPF) for ECKD devices only
  - Channel programs are translated to zHPF commands
  - Miltiple channel commands are sent as a single entitiy to the control unit
  - May reduce overhead and increase I/O rates on the channel
  - Available on all z/VSE 6.2 supported servers

- z/VSE
  - Supports zHPF implementation phase 1
  - Translates a subset of CCW commands (define extent, locate record, TIC, …)
  - I/O APIs will not change, translation occurs at low level I/O interfaces

  - If transport mode I/O results in an I/O error, the request will be retried in command mode
  - LPAR and z/VM guests supported (z/VM APAR may be required)

High Performance FICON support in z/VSE …

- Interfaces
    - SYSDEF SYSTEM command extended to start / stop the zHPF support
        - SYSDEF SYSTEM,ZHPF=START
        - SYSDEF SYSTEM,ZHPF=STOP
    - zHPF support may be started, stopped or restarted any time
        - Can be used to verify, if the workload benefits from z/VSE's zHPF support
    - The SIR SMF command shows the I/O counters

- Benefits
    - Transparent to applications
    - May improve I/O performance
    - Highly dependent on workload characteristics

Vector Facility support in z/VSE

- Vector Facility also called Single Instruction Multiple Data (SIMD)
  - New set of vector instructions described in the z/Architecture Principles of Operation
  - Vector instructions work on 32 128-bit registers
  - Vector registers are partially shared with floating point registers
  - Available on z13 / z13s / z14

- z/VSE
  - Instructions can be exploited by assembler applications
  - z/VSE uses 31-bit vector register save area to save / restore status
  - Application has to activate / deactivate vector register support via VECTOR macro
    o Activate allocates save area for task / partition, deactivate frees save area virt. storage
    o To save 31-bit virtual storage, if vector registers are not used

  - LPAR and z/VM guests supported (z/VM APAR may be required)

- Benefits for applications, that exploit vector instructions
  - May improve performance
  - Highly dependent on workload characteristics

Enhancements for SCSI device support

- Tapeless installation
    - Available since z/VSE 5.2 for ECKD
    - Tools provided to create an installation disk (supported for LPAR and z/VM guest)
    - Installation disk
        - Contains a boot program and the z/VSE base tape in AWS file format
        - Created on LPAR may be used by a z/VM guest or vice versa
        - LPAR: create installation disk by using the DVD with the HMC or SE Load function

    - Installation from installation disk possible on ECKD, FBA and FBA-SCSI
    - Files required for the creation of the installation disk delivered on DVD or via the Internet

    - Tapeless installation enhanced for installation disk on **FCP-attached SCSI devices**
    - Installation on ECKD, FBA and FCP-attached SCSI disks supported

    - Supports initial installation only

- Stand-alone dump
    - Can be created on tape or disk device
    - Currently only stand-alone dump to ECKD or FBA disks are supported
    - z/VSE 6.2 will support stand-alone dump to SCSI disk

CICS TS for z/VSE 2.2 – CICS Explorer

- CICS Explorer
  - Monitoring with z/VSE V5, monitoring and update with z/VSE V6
  - System management framework for CICS TS
  - Consists of CICS Explorer client and a CICS TS server extension
  - CICS Explorer client
    - o Eclipse-based user interface on workstation
    - o Connects to CICS TS via TCP/IP - Communication via HTTP requests
    - o One CICS Explorer client for z/VSE and z/OS

- CICS Explorer enhancements
  - Definition of new CICS resources (programs, files, transactions)
  - Change / delete existing CICS resources
  - Definition view of client for selected CICS resources

  - Monitor, control or update
    - • Dynamic storage areas
    - • Global temporary storage queue statistics

CICS TS for z/VSE 2.2 – Channels & Containers

- z/VSE ported channel and container APIs from CICS TS for z/OS 3.1

- Channels and containers lift the 32K Commarea limitation
    - Applicable for both LINK and XCTL, Distributed Program Link (DPL)
    - Local and transcation routing
    - START with data

- Language support is provided for C, COBOL, HLASM, and PL/I.

- Channels and Containers limitations
    - In 31 bit virtual storage only
    - No support for
      External CICS Interface (EXCI), External Call Interface (ECI), CICS Web Support (CWS)

CICS TS for z/VSE 2.2 – Channels & Containers

- Container
    - Named block of data designed for passing information between programs
        - Like named COMMAREAs
    - CONTAINER API
        - Created using (EXEC CICS) PUT CONTAINER, defines the size of the container
        - Read   using (EXEC CICS) GET CONTAINER
        - Delete   using (EXEC CICS) DELETE CONTAINER, to free storage
    - No CICS enforced size limitation
    - Containers are stored within the CICS EDSA (31 bit partition virtual storage)

- Channel
    - A group of Containers - no limit on the number of Containers in a Channel
    - A Channel is a sort of program interface
        - Passed on LINK, XCTL, pseudoconversational RETURN, and START commands
    - Non-persistent - non-recoverable resource similar to COMMAREAs

CICS TS for z/VSE 2.2 – Channels & Containers

- Channel and container enhancements

    - Support UTF-8 and UTF-16 in code page conversion
        On PUT CONTAINER and GET CONTAINER as source and target code page

    - Add the APPEND parameter for PUT CONTAINER
        to append the specified data to existing data in a container

    - Add the BYTEOFFSET parameter for GET CONTAINER
        to retrieve data beginning at a specified offset in a container

CICS TS for z/VSE 2.2 - HTTP 1.1 support

- Upgrade of CICS Web Support (CWS)
- Ported from CICS TS for z/OS 3.1, CICS acting as a server
- Supports latest web browsers and applications
- TCPIPSERVICE PROTOCOL(<u>HTTP</u>|ECI|USER) for port 80 / 443

- Improves performance and security
    - Persistent connections
        - Keeps connections open (SOCKETCLOSE hhmmss)
        - Avoids overhead for open / close connection
    - Pipelining
        - Sends multiple requests without waiting for response
        - Response must be returned in the same sequence as request was received
    - Chunking
        - Messages send in chunks each with ist own size and data

- Support for
    - OPTIONS method
        - To get capabilities of the server without requesting a resource
    - TRACE method
        - Client can see what the other end received

CICS TS for z/VSE 2.2 enhancements …

- Relative addressing instructions in Assembler programs (without base register)
  - New operands added to DFHEIENT and DFHEIRET macros
  - Beneficial for translated programs that are greater than 4095 bytes

- Common date and time stamp formats used on the internet
  - Define correct date and time stamp in HTTP header
  - New CONVERTTIME command and new option for FORMATTIME

- Language Environment (LE) MAIN for Assembler applications
  - New translator option LEASM to enable LE functions and setup LE environment
  - Assembler programs translated with LEASM con be used as
    task-related user exits (TRUEs) or global user exits (GLUEs)

- New SIT parameter: MAXSOCKETS
  - Specifies the maximum number of IP sockets, that can be handled by CICS

z/VSE 6.2 Security enhancements

- OpenSSL enhancements

  - Upgraded to openSSL 1.0.2h (newer SSL/TLS functions)
  - Elliptic Curve Cryptography (ECC) hardware acceleration with CryptoExpress5S / 6S
    - If hardware not available, ECC software implementation will be used

  - CICS Web Support : SSL/TLS support of openSSL or SSL of TCP/IP for z/VSE stack
    - Does not need LE environment

- EZA Multiplexer and EZA openSSL support

  - EZA multiplexer can be configured to use interface phase for given TCP/IP stack
  - OpenSSL may be used independent of the TCP/IP stack
  - Similar to the LE/C TCP/IP socket API multiplexer

- SSL/TLS connection to secure remote VTAPE network transfer

- Operator interface for crypto device driver when BSM is not used

z/VSE 6.2 Security enhancements …

▪ Basic Security Manager (BSM) uses the following files to store security related information

 – VSE Control File – central repository for user profiles (e.g. userid)

 – BSM Control File – profiles for resource classes

 ○ CICS resources: transactions, programs, files, journals, temp. storage queue, transient data queue, …

 ○ VTAM applications, MQ resources, Facility (e.g. VSAM IDCAMS)
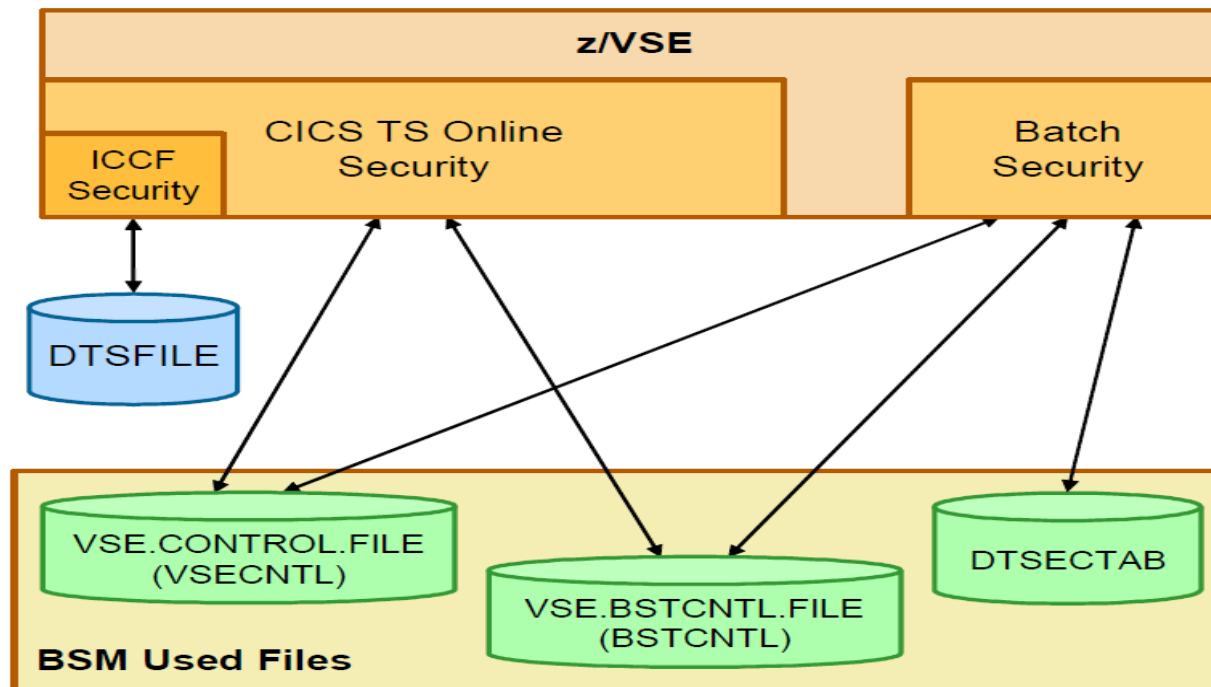
IBM Redbook "Security on IBM z/VSE" http://www.redbooks.ibm.com/abstracts/sg247691.html?Open

z/VSE 6.2 Security enhancements …

- Basic Security Manager (BSM) …

  - Repositories for online and batch security (VSE / BSM control file, DTSECTAB)
  - Batch resources protected via DTSECTAB phase
  - z/VSE 6.2 provides a common interface for online and batch resources via IUI dialogs
    - New dialogs generate the DTSECTAB

- LDAP sign-on enhancements provide

  - RESET option for LDAP user mapping tool to clear cached user password hash
    - Forces full LDAP sign-on at next user sign-on
  - Wildcard support for CHANGE and DELETE commands of user mapping tool

Connector enhancements

- z/VSE SOAP Engine to exploit channels and containers

  - Additional option to use channels and containers instead of CICS COMMAREA

  - z/VSE as SOAP client
    - SOAP engine detects automatically,
      if it was called with COMMAREA or channels & containers

  - z/VSE as SOAP server
    - COMMAREA or channels and containers use dependent on
      - New option passed with message or in RULES
      - Default is COMMAREA

Connector enhancements …

- z/VSE web services enhancements

    - New z/VSE REST Engine with JavaScript Object Notification (JSON) support
    - z/VSE implements Representational State Transfer (REST) engine
    - Allows clients to provide RESTful web services running in a CICS environement
    - JSON and XML supported

- z/VSE database connector DBCLI (Database Call Level interface) enhancements
    - Supports languages Assembler, COBOL, PL/I, C and REXX

    - Batch query tool - // EXEC IESDBCLI
        o Allows to connect to a database, execute query commands and retrieve results
    - Interactive query tool via CICS transaction IDBT
    - CICS REXX support for DBCLI

Networking enhancements

- z/VSE Linux Fast Path (LFP) enhancements
  - LFP running as z/VM guest
    can communicate with with a TCP/IP stack in LPAR or the z/VSE Network Appliance (VNA)

- IBM IPv6/VSE 1.3
  - New FTP server security interface
    - FTP access to z/VSE file system may be protected by Basic Security Mager (BSM)
      or External Security Manger (ESM) using the resource class FACILITY

  - SSH copy facility
    - Uses a Linux pass-through image for a SSL connection to a remote host
    - Secure file transfer via SSH to and from z/VSE
    - Compatible with IBM TCP/IP for z/VSE, LFP, z/VM IP Assist (VIA) and VNA

  - TXT2PDF generation facility
    - Based on open source txt2pdf
    - Converts a text file into a Portable Docment Format (PDF) file

- IBM TCP/IP for z/VSE 2.2
  - Enhanced security with TLS 1.1 and TLS 1.2 support

DL/I partitioning

- Available after z/VSE 6.2 GA (not this year) as DL/I 1.12 PTF
- Partitioning only supported on z/VSE 6.2

- For hierarchical direct (HD) databases.
- Allows users to increase the database storage capacity for one segment type up to 8 GB (may be more). This eliminates the current limitation of 4 GB.
- Partitioning function splits a DL/I segment type into partitions (VSAM datasets)
- Exit provided, that selects the correct partition for the records to be retrieved.
- Each dataset can be up to about 4 GB in size.

- To migrate to DL/I partitioning you have to
  - Add the number of partitions + 6 character database name to the Database Descriptor (DBD)
  - Unload the database,
  - Run the DBDgen / ACBgen with the new partition parameters
  - Do a database reload.

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 releases
  - 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.

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

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
    https://www-05.ibm.com/e-business/linkweb/publications/servlet/pbi.wss
  - Electonic only, not on physical DVD

- Documentation of z/VSE releases - z/VSE Internet Library on
  http://www.ibm.com/systems/z/os/zos/bkserv/vse.html

- z/VSE Knowlede Center:
  http://www.ibm.com/support/knowledgecenter/SSB27H/zvse_welcome.html

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

z/VSE Knowledge Center

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

CICS TS for VSE Knowledge Center

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

© 2017 IBM Corporation

z/VSE Requirements

▪ You may submit requirements at conferences (GSE, zUniversity, VM Workshop, …)

▪ **z/VSE** requirements via the Request for Enhancements (RFE) database:
   http://www.ibm.com/developerworks/rfe/

   – Please select the following for z/VSE requirements
     • *Brand = Servers and System Software*
     • *Product family = z Systems Software*
     • *Product = z/VSE*
     • *Component = General, z/VSE, VSE/AF, VSE/VSAM, VSE/POWER, VSE Unique Code,
       ...*
     • *Operating system = IBM z/VSE*
     • *Source = Share, IBM user group, IBM Conference, ..., Other*

▪ **CICS Transaction Server** requirements via the Request for Enhancement (RFE) database:
   http://www.ibm.com/developerworks/rfe/

   – Please select the following for z/VSE-CICS requirements:
     • *Brand = Servers and Systems Software*
     • *Product family = Transaction Processing*
     • *Product = CICS Transaction Server*
     • *Component = Runtime or Explorer*
     • *Operating system = IBM z/VSE*

Documentation related to z/VSE ...

- IBM Redbooks - http://www.redbooks.ibm.com/
  - Redbook page with new / updated IBM z Systems mainframe Redboooks
    - zEC12 / zBC12 / z13 / z13s / z14 Technical Guides
    - IBM System z Connectivity Handbook, SG24-5444
  - Introduction to the New Mainframe: z/VSE Basics
    http://www.redbooks.ibm.com/abstracts/sg247436.html?Open
  - Security on IBM z/VSE – updated
    http://www.redbooks.ibm.com/Redbooks.nsf/RedbookAbstracts/sg247691.html?Open
  - z/VSE Using DB2 on Linux for System z
    http://www.redbooks.ibm.com/abstracts/sg247690.html?Open
  - Enhanced Networking on IBM z/VSE
    http://www.redbooks.ibm.com/Redbooks.nsf/RedpieceAbstracts/sg248091.html?Open
  - New: Migration to CICS TS for z/VSE
    http://www.redbooks.ibm.com/Redbooks.nsf/RedbookAbstracts/sg248390.html?Open

Documentation related to z/VSE ...

http://www.redbooks.ibm.com/Redbooks.nsf/RedbookAbstracts/sg248390.html?Open

Documentation related to z/VSE ...

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

  - Using SCRT (Java Version) with z/VSE – Best Practices

  - z/VSE release & hardware upgrade

  - z/VSE SCSI Support and Migration Options

  - z/VSE z/VM IP assist

  - Parallel Access Volume (PAV) white paper

- Hints and Tips for z/VSE 6.1:
  http://www.ibm.com/systems/z/os/zvse/documentation/#hints

- SCRT samples: Transfer SCRT89 records via the Host Transfer File
  http://www-03.ibm.com/systems/z/os/zvse/downloads/samples.html#rexx

IBM Doc Buddy

IBM Doc Buddy v2.0

With the IBM Doc Buddy mobile app, you can search messages and codes issued from IBM Z products online and offline. IBM Doc Buddy V2 also aggregates mainframe content including blogs, videos, IBM Knowledge Center topics, and Thought Leader opinions.
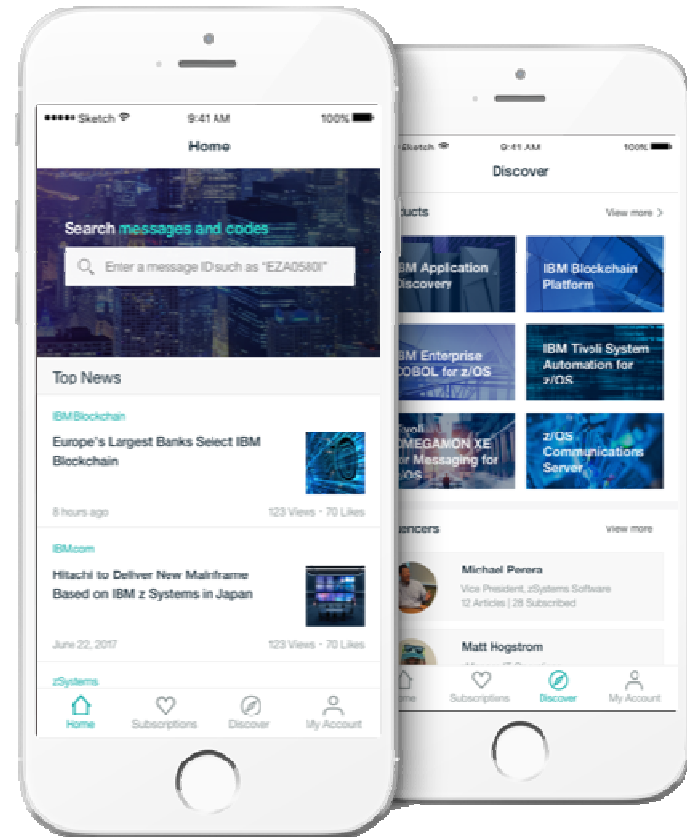
https://ibmdocbuddy.mybluemix.net/

iOS   Android

https://ibmdocbuddy.mybluemix.net

Session reference links

- z/VSE Homepage: www.ibm.com/vse

- Ingolf's z/VSE blog: www.ibm.com/developerworks/mydeveloperworks/blogs/vse/
  - Use „Tags" to search for topics

- VSE-L discussion list: https://groups.google.com/forum/?fromgroups#!forum/bit.listserv.vse-l

- Hints and Tips for z/VSE 6.1: http://www.ibm.com/systems/z/os/zvse/documentation/#hints

Thank you !

Questions ?

z/VSE Live Virtual Classes

z/VSE   @ http://www.ibm.com/zvse/education/

LINUX + z/VM + z/VSE   @ http://www.vm.ibm.com/education/lvc/

Join the LVC distribution list by sending a short mail to zvse@de.ibm.com

Trademarks

The following are trademarks of the International Business Machines Corporation in the United States and/or other countries.

BigInsights	DFSMSdss	FICON*	IMS	RACF*	System z10*	zEnterprise*
BlueMix	DFSMShsm	GDPS*	Language Environment*	Rational*	Tivoli*	z/OS*
CICS*	DFSORT	HyperSwap	MQSeries*	Redbooks*	UrbanCode	zSecure
COGNOS*	DS6000*	IBM*	Parallel Sysplex*	REXX	WebSphere*	z Systems
DB2*	DS8000*	IBM (logo)*	PartnerWorld*	SmartCloud*	z13	z/VM*
DFSMSdfp						

* Registered trademarks of IBM Corporation

The following are trademarks or registered trademarks of other companies.

Adobe, the Adobe logo, PostScript, and the PostScript logo are either registered trademarks or trademarks of Adobe Systems Incorporated in the United States, and/or other countries.
Cell Broadband Engine is a trademark of Sony Computer Entertainment, Inc. in the United States, other countries, or both and is used under license therefrom.
Intel, Intel logo, Intel Inside, Intel Inside logo, Intel Centrino, Intel Centrino logo, Celeron, Intel Xeon, Intel SpeedStep, Itanium, and Pentium are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.
IT Infrastructure Library is a registered trademark of the Central Computer and Telecommunications Agency which is now part of the Office of Government Commerce.
ITIL is a registered trademark, and a registered community trademark of the Office of Government Commerce, and is registered in the U.S. Patent and Trademark Office.
Java and all Java based trademarks and logos are trademarks or registered trademarks of Oracle and/or its affiliates.
Linear Tape-Open, LTO, the LTO Logo, Ultrium, and the Ultrium logo are trademarks of HP, IBM Corp. and Quantum in the U.S. and
Linux is a registered trademark of Linus Torvalds in the United States, other countries, or both.
Microsoft, Windows, Windows NT, and the Windows logo are trademarks of Microsoft Corporation in the United States, other countries, or both.
OpenStack is a trademark of OpenStack LLC. The OpenStack trademark policy is available on the OpenStack website.
TEALEAF is a registered trademark of Tealeaf, an IBM Company.
Windows Server and the Windows logo are trademarks of the Microsoft group of countries.
Worklight is a trademark or registered trademark of Worklight, an IBM Company.
UNIX is a registered trademark of The Open Group in the United States and other countries.
* Other product and service names might be trademarks of IBM or other companies.

Notes:

Performance is in Internal Throughput Rate (ITR) ratio based on measurements and projections using standard IBM benchmarks in a controlled environment. The actual throughput that any user will experience will vary depending upon considerations such as the amount of multiprogramming in the user's job stream, the I/O configuration, the storage configuration, and the workload processed. Therefore, no assurance can be given that an individual user will achieve throughput improvements equivalent to the performance ratios stated here.

IBM hardware products are manufactured from new parts, or new and serviceable used parts. Regardless, our warranty terms apply.

All customer examples cited or described in this presentation are presented as illustrations of the manner in which some customers have used IBM products and the results they may have achieved. Actual environmental costs and performance characteristics will vary depending on individual customer configurations and conditions.

This publication was produced in the United States. IBM may not offer the products, services or features discussed in this document in other countries, and the information may be subject to change without notice. Consult your local IBM business contact for information on the product or services available in your area.

All statements regarding IBM's future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only.

Information about non-IBM products is obtained from the manufacturers of those products or their published announcements. IBM has not tested those products and cannot confirm the performance, compatibility, or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

Prices subject to change without notice. Contact your IBM representative or Business Partner for the most current pricing in your geography.

This information provides only general descriptions of the types and portions of workloads that are eligible for execution on Specialty Engines (e.g, zIIPs, zAAPs, and IFLs) ("SEs"). IBM authorizes customers to use IBM SE only to execute the processing of Eligible Workloads of specific Programs expressly authorized by IBM as specified in the "Authorized Use Table for IBM Machines" provided at www.ibm.com/systems/support/machine_warranties/machine_code/aut.html ("AUT"). No other workload processing is authorized for execution on an SE. IBM offers SE at a lower price than General Processors/Central Processors because customers are authorized to use SEs only to process certain types and/or amounts of workloads as specified by IBM in the AUT.