

Announcing



z/VSE® Version 5.1

Additional Enhancements

z/VSE Version 5.1 Additional Enhancements Available

In addition to function already available with z/VSE V5.1, you get supplemental enhancements that are designed to:

§ Support innovative IBM zEnterprise EC12 technology

- Configurable Crypto Express4S
- OSA-Express4S 1000BASE-T

§ Support enhanced IBM System Storage options

- IBM System Storage TS1140
- IBM System Storage TS7700 Virtualization Engine Release 3.0
- IBM System Storage DS8870
- IBM Storwize V7000 Release 6.4

§ Allow 64-bit Input/Output (I/O) processing for applications

§ Extend the z/VSE connectivity and networking options in heterogeneous environments

§ Provide IPv6/VSE V1.1 security enhancements



Statements of Direction

§ IBM intends to add functionality that **allows initial installation of z/VSE without requiring a physical tape.**

- Clients who use a tape for initial installation only, may no longer be forced to include a tape in the z/VSE configuration.
- With this ease of use function IBM will fulfill client requirements.

§ IBM intends in the **future to enhance IBM CICS Explorer** for IBM CICS Transaction Server for VSE/ESA to provide updates to CICS resources.

§ It is planned to **reduce** the AEWLC and MWLC **list price of IPv6/VSE V1.1.**

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z/VSE Support Status (as of April 2013)

<i>VSE Version and Release</i>	<i>Marketed</i>	<i>Supported</i>	<i>End of Support</i>
z/VSE V5.1	a	a	tbd
z/VSE V4.3	r	a	05/31/2014
z/VSE V4.2	r	r	10/31/2012
z/VSE V4.1²⁾	r	r	04/30/2011
z/VSE V3.1¹⁾	r	r	07/31/2009
VSE/ESA V2.7	r	r	02/28/2007

¹⁾ z/VSE V3 is 31-bit mode only. It does not implement z/Architecture, and specifically does not implement 64-bit mode capabilities. z/VSE is designed to exploit select features of IBM System z10, System z9, and zSeries hardware.

²⁾ z/VSE V4 is designed to exploit 64-bit real memory addressing, but will not support 64-bit virtual memory addressing

z/VSE V5.1 supports IBM System z servers:

§ **zEnterprise EC12**

§ **zEnterprise 114 (z114)**

§ **zEnterprise 196 (z196)**

§ **System z10 Enterprise Class (z10 EC)**

§ **System z10 Business Class (z10 BC)**

§ **System z9 Enterprise Class (z9 EC)**

§ **System z9 Business Class (z9 BC)**



z/VSE V5.1 offers Midrange Workload License Charge (MWLC) pricing metrics, including a subcapacity option, for zEnterprise EC12, zEnterprise 196, System z10, and System z9 servers.

The smallest z10 BC and z9 BC server capacity setting, A01, does not qualify for MWLC. Clients using the z10 BC and z9 BC capacity setting A01 will always pay a zSeries Entry License Charge (zELC) for their IBM monthly license charge software.

IBM offers Advanced Entry Workload License Charge (AEWLC) pricing metrics, including a subcapacity option, for the z114 server.

z/VSE continues to demonstrate IBM's commitment

Hardware Support
More Capacity
Quality
z/OS Affinity
Interoperability
Protect **I**ntegrate **E**xtend



z/VSE V4.3 - 4Q2010

- Ø z196 toleration / exploitation
- Ø 4-digit device addresses
- Ø 24-bit virtual storage constraint relief
- Ø IPv6/VSE as optional product
- Ø Linux Fast Path with z/VM

+ SoD: 64-bit virtual support



z/VSE V5.1 - 4Q2011

- Ø zEnterprise exploitation
- Ø IEDN connection to zBX
- Ø 64-bit virtual memory objects
- Ø ALS to System z9 (+ higher)
- Ø z/VSE z/VM IP Assist (VIA)

+ SoD: CICS Explorer, LFP in LPAR



z/VSE V5.1+ - 2Q2012

- Ø CICS Explorer Monitoring
- Ø Universal database connector
- Ø Linux Fast Path in LPAR

z/VSE V5.1++ - 2Q2013

- Ø 64-bit I/O for applications
- Ø Networking enhancements
- Ø Security enhancements

+ SoD: CICS Explorer Update, DVD Install, Price Reduction IPv6/VSE

z/VSE 5.1+ and ++ denote enhancements made available via PTF

z/VSE V5.1++ Additional Enhancements

§ **Support innovative zEnterprise EC12 technology**

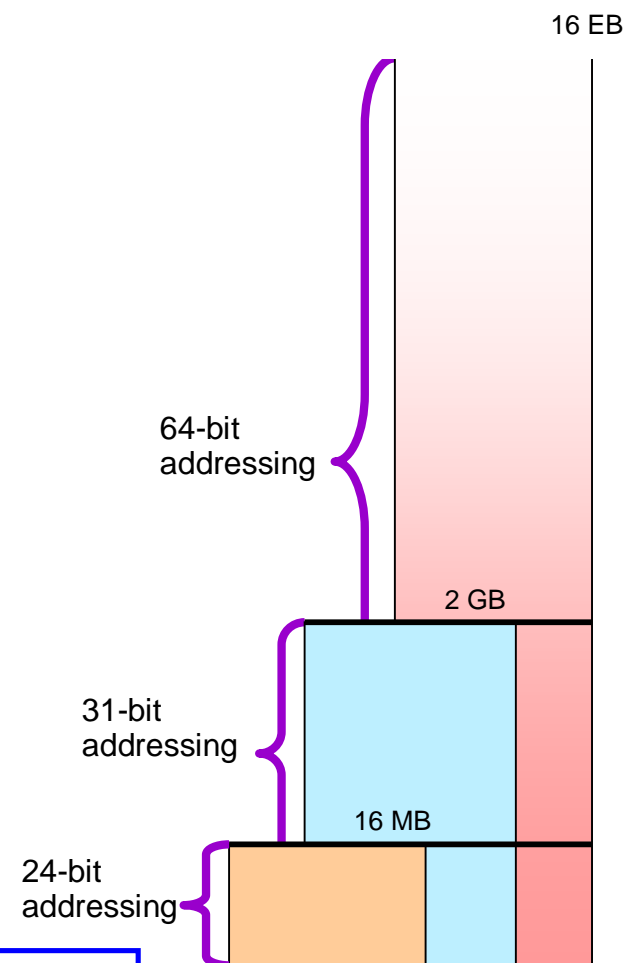
§ **Support enhanced IBM System Storage options**

§ **64-bit Input / Output processing for applications**

- Enhances 64-bit virtual support
- Allows to use 64-bit virtual storage also for I/O buffers

§ **Provide IPv6/VSE security enhancements**

§ **Extend z/VSE connectivity and networking options in heterogeneous environments**



Announce April-2-2013, GA June-14-2013

§ Made available with PTFs on top of z/VSE V5.1

§ Selected hardware support is also available with z/VSE V4.3

z/VSE supports innovative zEnterprise EC12 technology

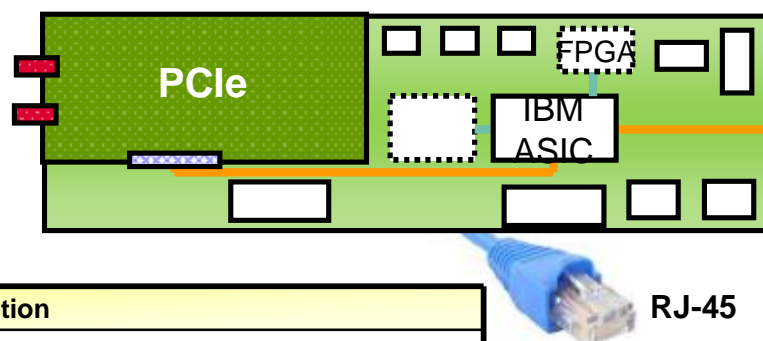
§ Configurable Crypto Express4S

- z/VSE 5.1 (with PTF UD53863) supports the Crypto Express4S adapter in both IBM Common Cryptographic Architecture (CCA) coprocessor and accelerator mode.
- It can be used both in an LPAR and z/VM guest environment.
- Each cryptographic coprocessor includes a general-purpose processor, non-volatile storage, and specialized cryptographic electronics.
- The Crypto Express4S feature provides tamper-sensing and tamper-responding, high-performance cryptographic operations.



§ OSA-Express4S 1000BASE-T Gigabit Ethernet

- Auto-negotiation to 10, 100, 1000 Mbps
- 2 ports per card



Mode	CHPID	Description
OSA-ICC	OSC	TN3270E, non-SNA DFT, IPL CPCs, and LPARs, OS system console operations
QDIO	OSD	TCP/IP traffic when Layer 3, Protocol-independent when Layer 2
Non-QDIO	OSE	TCP/IP and/or SNA/APPN/HPR traffic
Unified Resource Manager	OSM	Connectivity to intranode management network (INMN) from zEC12 to Unified Resource Manager functions
OSA for NCP (LP-to-LP)	OSN	NCP running under IBM Communication Controller for Linux (CDLC)

Support enhanced IBM System Storage options

§ IBM System Storage TS1140

- Tape Drive Model E07 (machine type 3592) - fourth generation
- Designed to provide higher levels of performance, reliability, and cartridge capacity than the TS1130 Model E06 Tape Drive
- Also supports drive-based data encryption

§ IBM System Storage TS7700 Virtualization Engine Release 3.0

- New enhancements including disk-based encryption (managed internally within the TS7700 system)
- z/VSE V4.3 supports the TS7700 as a standalone system in transparency mode
- z/VSE V5.1 and later supports Multi Cluster GRID and COPY EXPORT

§ IBM System Storage DS8870

- Newest member of the IBM System Storage DS8000 series, features IBM POWER7 server technology to help support high performance
- z/VSE V4.3 and later transparently supports the DS8870 for use with ECKD (TM) and FCP-attached SCSI disks

§ IBM Storwize V7000 Release 6.4

- z/VSE V4.3 and later transparently supports the Storwize V7000
- FCP-attached SCSI disks



IPv6/VSE Enhancements

§ Security enhancements - Secure Sockets Layer (SSL) support

- Protocols supported: HTTPS, FTPS, SMTPS, and TN3270E over SSL
- IPv6/VSE provides an SSL proxy server
- Secure transmission of data to and from remote systems
- Exploits hardware-assisted encryption with System z cryptographic adapters and CPACF
 - If cryptographic hardware is not available, encryption is performed in software



§ Layer-2 support for IPv4 links in addition to IPv6

- Layer 2 support for OSA-Express devices (CHPID types OSD and OSX)
- More flexibility in mixed z/VSE, z/VM, Linux on System z configurations

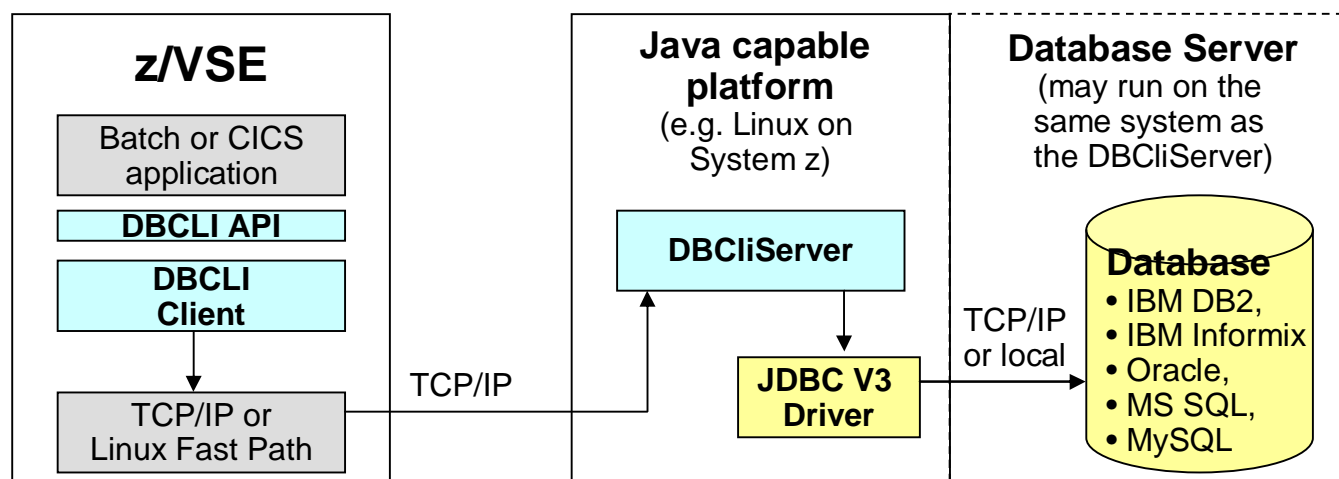
§ SoD:

- It is planned to reduce the AEWLC and MWLC list price of IPv6/VSE V1.1

Extend z/VSE connectivity and networking options in heterogeneous environments

§ z/VSE database connector connection pooling

- Performance improvement



§ Configurable HyperSockets buffers

- Allow configure the number of QDIO input buffers for HyperSockets and OSA-Express devices >8
- Improved throughput to Linux on System z

z/VSE Version 5.1

- § 64-bit virtual addressing to reduce memory constraints through exploitation of data in memory
- § Extend with Linux on System z to build modern integrated solutions
- § Exploitation of selected zEnterprise functions and features as well as IBM System Storage options
- § Hybrid systems connectivity
- § Continued usability enhancements
 - CICS Explorer
 - Initial installation without requiring a tape device (SoD)



z/VSE “**PIE**” Strategy:

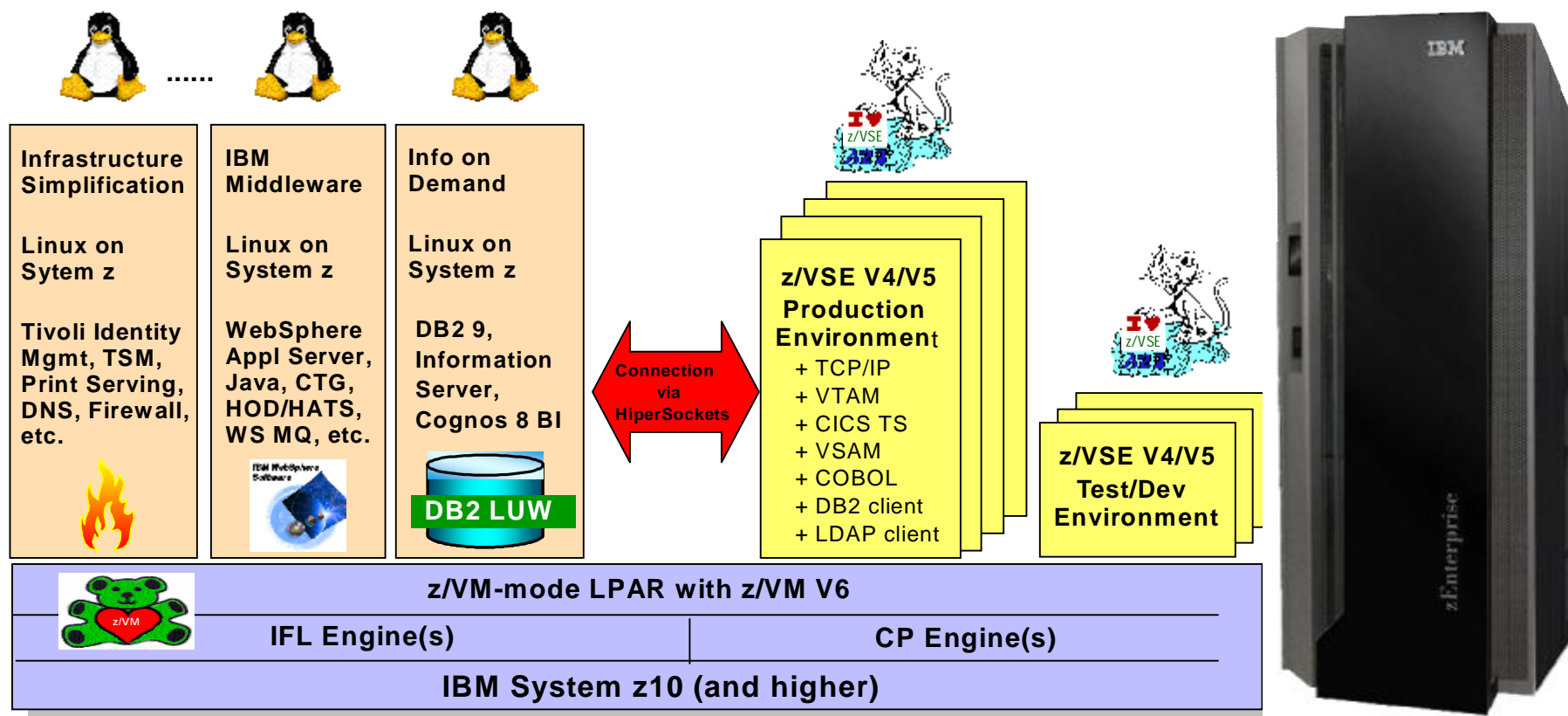
- P**rotect existing investments
- I**ntegrate with other systems
- E**xtend for new workloads



z/VSE Strategy w/ Linux on System z

Hybrid Environment leveraging z/VSE, z/VM, and Linux on System z

- P**rotect existing VSE investments
- I**ntegrate using middleware and VSE connectors
- E**xtend with Linux on IBM System z technology & solutions



For more information, please see the z/VSE web site:
<http://www.ibm.com/zvse/>

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- IBM Storage

z/VSE

z/VSE is designed to help provide robust, cost-effective solutions for customers with a wide range of capacity needs, in most industries, worldwide. z/VSE is built on a heritage of ongoing refinement and innovation that spans four decades. It brings the value of innovative IBM System z and IBM System Storage technology to z/VSE clients.

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z/VSE V5.1.1 is available

Built on a heritage of ongoing refinement and innovation that spans more than four decades



IBM z/VSE V5.1 - Additional enhancements

In addition to function delivered at general availability of IBM z/VSE V5.1, you get supplemental enhancements:

- **Support for IBM CICS Explorer - "The new face of CICS Transaction Server for VSE/ESA V1.1"**
CICS Explorer V1.1 capabilities can now be used with CICS TS. The CICS Explorer is the new systems management framework for CICS TS. It provides read-only capabilities to display CICS resources. Please see the [CICS web page](#) for additional information and updates.
- **The Fast Path to Linux on System z function (Linux Fast Path) in a logical partition (LPAR) environment**
Linux Fast Path was introduced with z/VSE V4.3 for use in a z/VM guest environment. Now LPAR support is added, which is intended to extend the connectivity options for z/VSE clients. Linux Fast Path in an LPAR environment requires [IBM zEnterprise](#) technology with the HyperSockets Completion Queue function.
- **64-bit Input/Output (I/O) processing for applications**
64-bit virtual addressing for applications was introduced at general availability of z/VSE V5.1. z/VSE V5.1 enhancements add 64-bit I/O processing for applications. With 64-bit I/O processing, clients have the flexibility to also use 64-bit virtual storage for I/O buffers and thus benefit from increased processor storage available with the latest IBM System z servers.
- **A z/VSE database connector**

We're here to help



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Covington, KY, USA

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Announcing



Questions?



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Backup

z/VSE V5.1 - GA since 11/25/2011

§ Introduction of an Architectural Level Set (ALS) that requires System z9 (or later)

- z/VSE V5 will run on System z9 BC/EC, z10 EC/BC, zEnterprise z196/z114, and zEC12/zBC12

§ 64-bit virtual addressing for growing / future workloads

- Keep 'more data in memory' to benefit from increased processor storage
- Built upon 64-bit real addressing, compatible API with z/OS

§ IBM zEnterprise exploitation

- Support Static Power Save Mode for MWLC clients with subcapacity option on z196
- 4096-bit RSA keys with Crypto Express3 for enhanced security
- Support of OSA-Express for zBX (CHPID OSX) to participate in an Intra Ensemble Data Network (IEDN)
- z/VSE z/VM IP Assist (VIA)

§ Exploitation of IBM System Storage options

- Copy Export function of TS7700 Virtualization Engine for disaster recovery
- IBM Storwize V7000 Midrange Disk System

§ Networking enhancements

- IPv6 support added to Linux Fast Path connector
- GDPS client for high availability in z/VSE



§ Statement of Direction

- CICS Explorer capabilities for CICS TS for VSE/ESA to deliver additional value
- Allow the Linux Fast Path function to be used in an LPAR environment

z/VSE V5.1.1 - GA since 06/15/2012

§ **Support IBM CICS Explorer – the new face of CICS Transaction Server**

- Add value to CICS TS for VSE/ESA
- New systems management framework for CICS TS (consists of client and server part)
- Client part of CICS Explorer common for z/OS and z/VSE, server part requires CICS TS and z/VSE V5.1
- *Fulfills SOD in z/VSE V5.1 Preview Announcement (RFA54520), 04/12/2011*

§ **Fast Path to Linux on System z (LFP) in LPAR**

- Allows TCP/IP applications to communicate with TCP/IP stack on Linux w/o using a TCP/IP stack on z/VSE
- LFP in a z/VM guest environment available since z/VSE V4.3 – now LPAR support is added
- LFP in LPAR requires HiperSockets Completion Queue function of zEnterprise
- *Fulfills SOD in zEnterprise Announcement (RFA54727), 07/12/2011*
- *Fulfills SOD in z/VSE V5.1 Announcement (RFA55492), 10/12/2011*

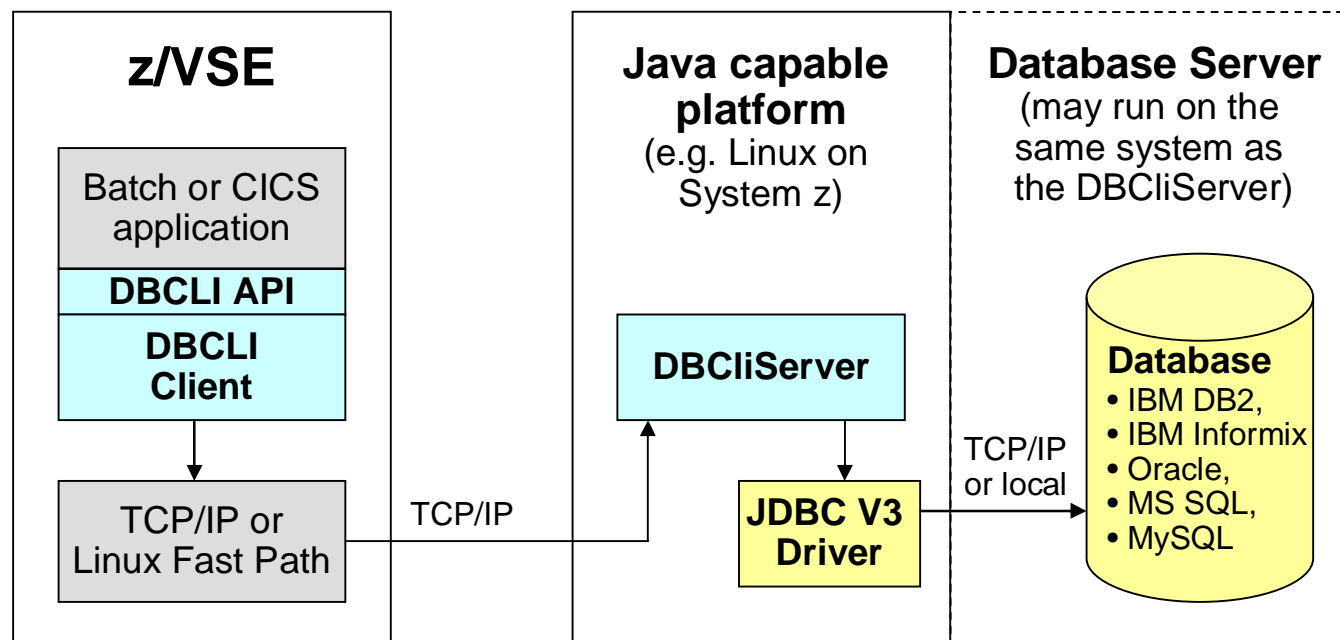
§ **z/VSE database connector for z/VSE applications**

- Allows to utilize a new Call Level Interface (CLI) to advanced database functions
- Flexibility to use a database server on a platform other than z/VSE (for example in a zBX environment)

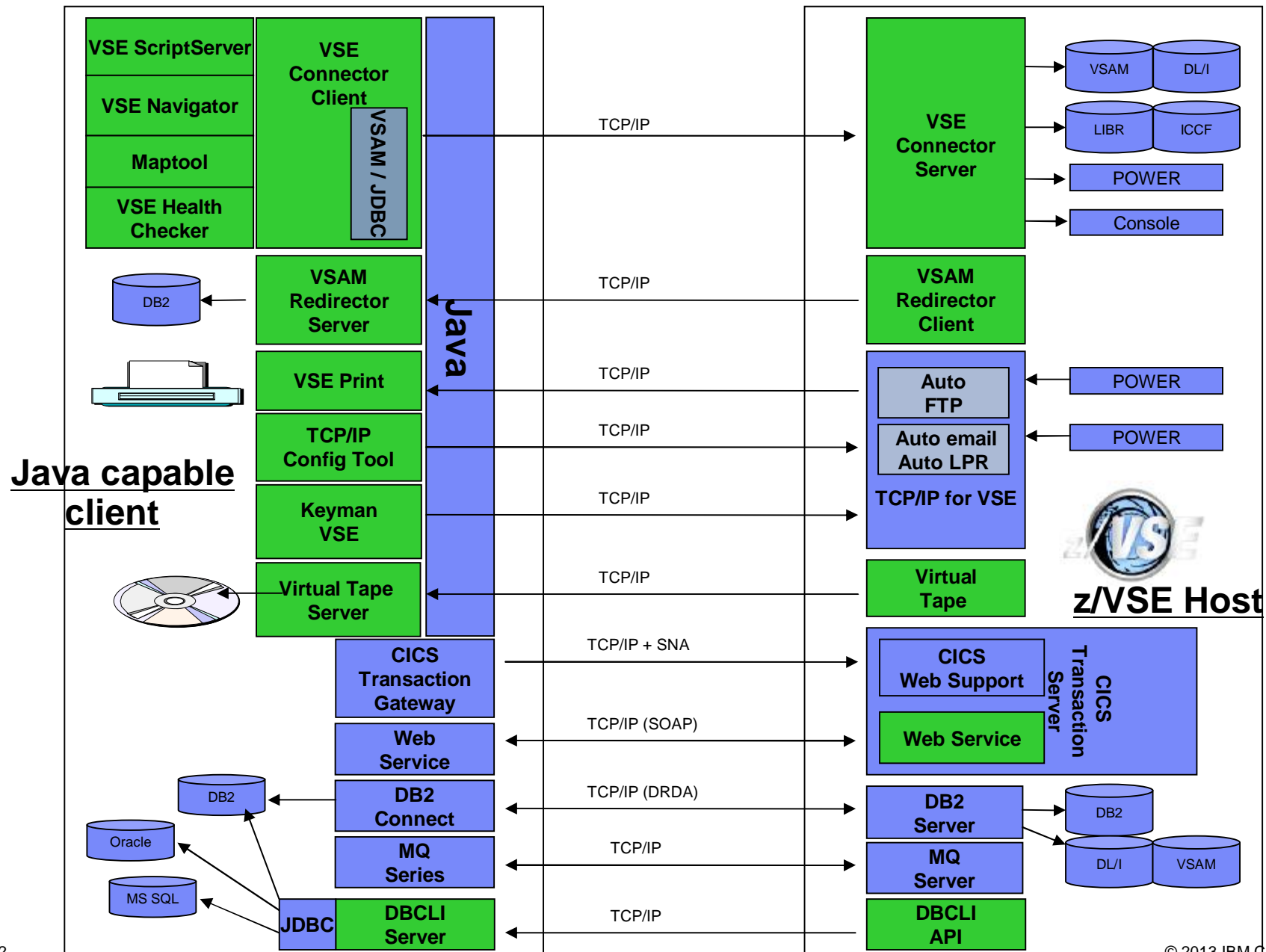
z/VSE universal database connector for z/VSE applications

z/VSE Database Call Level Interface (DBCLI)

- § Allows z/VSE applications to access a relational database on any suitable database server
 - IBM DB2, IBM Informix, Oracle, MS SQL Server, MySQL, etc.
 - à *The database product must provide a JDBC driver that supports JDBC V3.0 or later*
- § Utilize advanced database functions and use SQL statements
- § Flexibility to use a database server on a platform other than z/VSE
 - for example, zBX environment



Integration of z/VSE using IBM Middleware & Connectors



z/VSE Live Virtual Classes

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