Preview: IBM z/VSE Version 4 Release 3 offers more capacity and IBM zEnterprise exploitation

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At a glance

IBM® z/VSE™ V4.3 is designed to offer:

- Exploitation of innovative IBM System z10® and zEnterprise™ 196 technology:
  - Ability to dynamically add logical CPs without preplanning.
  - Large page (1 megabyte page) support for data spaces.
  - Fast Path to Linux® on System z® function in a z/VM® mode LPAR.
  - Use of Adjunct Processor-queue adapter-interruption facility for cryptographic operations.
  - Configurable Crypto Express3 for data encryption and SSL acceleration.
  - FICON® Express8, supporting a link rate of up to 8 gigabits per second (Gbps).
- Virtual storage constraint relief for CICS® workload growth and system consolidation.
- Four-digit device addresses for ease of use and infrastructure simplification in mixed IT environments consisting of z/VSE, z/VM, Linux on System z, and/or z/OS®.
- An IPv6 solution for z/VSE, IPv6/VSE V1.
- Networking, security, and auditability enhancements.

Overview

z/VSE V4.3 shows IBM's commitment and dedication to clients' needs.

This announcement supersedes Software Announcement 209-319, dated October 20, 2009.

z/VSE V4.3 is designed to:

- Offer the value of innovative IBM System z10 and IBM zEnterprise 196 technology
- Exploit enhanced IBM System Storage® options
- Address requirements for growing z/VSE workloads
- Allow consolidation of z/VSE systems
- Help clients protect their existing investment in z/VSE
- Provide ease of use for configuration of mixed IT environments
- Deliver an IPv6 solution for z/VSE

z/VSE V4.3 continues the z/VSE focus on scalability, security, service-oriented architecture (SOA), and hybrid solutions that exploit z/VSE and Linux on System z. Hybrid solutions may run on z/VM's state-of-the-art virtualization technology

and might benefit from the dynamic capabilities of the latest IBM System z10 and zEnterprise 196 technology.

Enhancements planned for z/VSE V4.3 include:

- Exploitation of innovative IBM System z10 and IBM zEnterprise 196 technology:
  - The ability to dynamically add logical CPs reduces preplanning requirements and the need for planned outages. Clients can increase the capacity of the z/VSE system dependent on workload needs.
  - Large page (1 megabyte page) support for data spaces can help you to even better exploit large processor storage and might result in better performance for long-running applications with intensive data space access.
  - The Fast Path to Linux on System z function (Linux Fast Path) in a z/VM mode LPAR allows selected TCP/IP IPv4 applications to communicate with a TCP/IP stack on Linux on System z without requiring a TCP/IP stack on z/VSE.
  - The use of the AP (Adjunct Processor)-queue adapter-interruption facility might accelerate the SSL throughput when performing cryptographic operations.
  - Configurable Crypto Express3 offers data encryption and SSL acceleration.
  - FICON Express8 supports a link rate of up to 8 gigabits per second (Gbps).
- Exploitation of IBM System Storage options:
  - IBM System Storage DS8000™:
    - Full Disk Encryption
    - Solid State Disk (SSD)
    - Remote Mirror and Copy (RMC) feature support through ICKDSF
    - FlashCopy® Consistency Group support
  - IBM System Storage SAN Volume Controller
  - IBM System Storage TS7700 Virtualization Engine™
    - TS7700 WORM volumes
    - TS7720 disk-only virtual tape system
- Virtual storage constraint relief:
  - z/VSE V4.3 will fulfill several user requirements and move selected system programs and buffers from 24-bit into 31-bit storage. This allows users with growing CICS workloads and/or those who want to consolidate their z/VSE systems to satisfy their increased needs of limited 24-bit storage.
- Ease of use through four-digit device addresses:
  - Gives clients more flexibility and allows for advanced planning.
  - Provides infrastructure simplification in mixed IT environments consisting of z/VSE, z/VM, Linux on System z, and/or z/OS.
- Delivery of an IPv6 solution to z/VSE:
  - IPv6/VSE V1 (IPv6/VSE) is an optional product of z/VSE V4.3. It is designed to deliver an IPv6 solution, thus bringing the benefits of IPv6 functionality to z/VSE clients. IPv6/VSE provides an IPv6 TCP/IP stack, IPv6 application programming interfaces (APIs), and IPv6-enabled applications. IPv6/VSE fulfills the statement of direction in Software Announcement 209-319, dated October 20, 2009. Also see Software Announcement 210-066, dated April 06, 2010. IPv6/VSE is a trademark of Barnard Software Inc.
- Networking, security and auditability enhancements.
- DOS/VS RPG II support for CICS Transaction Server for VSE/ESA™ (CICS TS):
  - Allows RPG programs implemented for CICS/VSE® V2.3 to run with CICS TS. Support will also be made available on z/VSE V4.2.

Migration from CICS/VSE V2.3 to CICS Transaction Server for VSE/ESA on z/VSE V4.2:

- z/VSE V4.3 fulfills the statement of direction in Software Announcement 207-228, dated October 09, 2007. It will no longer offer CICS/VSE V2.3 as part of the z/VSE V4.3 package and will remove the CICS coexistence environment.
- Recent improvements, including BSM security enhancements in z/VSE V3, additional VSE tasks, and DOS/VS RPG II support for CICS TS in z/VSE V4.2, offer you the capability of migrating your CICS/VSE programs on z/VSE V4.2 prior to performing an upgrade to z/VSE V4.3.
- Clients migrating to CICS TS might benefit from virtual storage constraint relief in CICS TS and z/VSE V4.3. Constraint relief addresses the needs of growing CICS workloads.

z/VSE V4.3 supports IBM System z servers:

- IBM zEnterprise 196 (z196)
- IBM System z10 Enterprise Class (z10™ EC) and IBM System z10 Business Class (z10 BC)
- IBM System z9® Enterprise Class (z9™ EC) and IBM System z9 Business Class (z9 BC)
- IBM eServer™ zSeries® 990, 890, 900, and 800

z/VSE Version 4 executes in z/Architecture® mode only and supports 64-bit real addressing for selected system functions. z/VSE V4.3 is not designed to support 64-bit virtual addressing.

z/VSE V4.3 can run in basic mode (z900 and z800 only), in LPAR mode, or as a guest under all supported z/VM releases including z/VM V6.1. z/VM V6.1 requires IBM System z10 or later.

z/VSE V4.3 offers Midrange Workload License Charge (MWLC) pricing metrics, including a sub-capacity option, for System zEnterprise 196, z10, and z9 servers. The smallest z10 BC and z9 BC server capacity setting, A01, does not qualify for MWLC. Clients on the z10 BC and z9 BC capacity setting A01 will always pay zELC for their IBM monthly license charge software.

Key prerequisites

Refer to the Technical information section for details.

Planned availability date

Fourth quarter 2010.

Previews provide insight into IBM plans and direction. Availability, prices, ordering information, and terms and conditions will be provided when the product is announced.

Description

Exploitation of innovative IBM System z10 and zEnterprise 196 technology:

- **Ability to dynamically add logical CPs without preplanning:**

  IBM System z10 and later allows users to dynamically change logical processor definitions for a logical partition (LPAR) without requiring the LPAR to be deactivated and reactivated. z/VSE V4.3 is designed to exploit this feature and to allow adding central processors (CPs) dynamically without re-IPL of the z/VSE system. This allows clients to increase the capacity of the z/VSE V4.3 system dependent on workload needs. Preplanning requirements and the need for planned outages are reduced. Once a CP is no longer needed, z/VSE V4.3 allows you to remove it from the online configuration of the LPAR, so that it no

longer consumes LPAR CP share. The support is not available in a z/VM guest environment.

- **Large page (1 megabyte page) support:**

  IBM System z10 and later large page support allows backing of MB pages in virtual storage with MB pages in processor storage. z/VSE V4.3 is designed to exploit large pages for data spaces. Long-running applications accessing data spaces frequently may benefit from improved CPU utilization. Large page support for data spaces can help you to even better exploit large processor storage. z/VSE V4.3 is designed to implement the support transparently for applications. The support is not available in a z/VM guest environment.

- **Fast Path to Linux on System z function (Linux Fast Path) in a z/VM environment:**

  Linux Fast Path is a z/VSE function that allows selected TCP/IP IPv4 applications to communicate with a TCP/IP stack on Linux on System z without requiring a TCP/IP stack on z/VSE. Linux Fast Path uses an IUCV connection and therefore requires that z/VSE and Linux on System z run as z/VM guests in the same z/VM system. It runs best in a z/VM mode LPAR, in which multiple types of System z processors can be defined: z/VSE can continue to use CPs (Central Processors) whereas Linux on System z can run on IFL (Integrated Facility for Linux) processors.

  The z/VM mode LPAR requires IBM System z10 or later and z/VM V5.4 or later. The Linux Fast Path function requires a Linux on System z distribution.

- **AP (Adjunct Processor)-queue adapter-interruption facility:**

  When performing cryptographic operations on a Crypto Express2 or Crypto Express3 card, the use of the AP-queue adapter-interruption facility may accelerate the SSL throughput. The AP-queue adapter-interruption facility is available on IBM System z10 and later. The support is not available in a z/VM guest environment.

- **Crypto Express3:**

  Crypto Express3 is exclusive to IBM System z10 and later. The Crypto Express3 generation of cryptographic cards is suited to applications requiring high-speed RSA acceleration and cryptographic operations for data encryption. For details refer to Hardware Announcement 109-678, dated October 20, 2009.

  z/VSE supports the Crypto Express3 card in both coprocessor and accelerator mode. The Crypto Express3 card is also supported with z/VSE V4.2 and PTF UD53485.

- **FICON Express8:**

  FICON Express8 is exclusive to IBM System z10 and later. It is designed to provide faster access to data with a link rate of 8 gigabits per second (Gbps) and the ability to auto-negotiate to 2 or 4 Gbps. z/VSE V4.1 and later supports FICON Express8 in two modes of operation:

  – CHPID TYPE FC - when utilizing native FICON or Channel-To-Channel (CTC)
  – CHPID TYPE FCP - for support of SCSI disks

  The support of FICON Express8 is expected to be transparent to applications. For details refer to Hardware Announcement 109-417, dated July 21, 2009.

Exploitation of IBM System Storage options:

- **IBM System Storage DS8000:**
  – Remote Mirror and Copy (RMC) feature:

    The RMC feature is a licensed feature of the DS8000 and is supported in z/VSE through the ICKDSF component. The support is also available with z/VSE 4.1 plus PTFs and later.

  – Full Disk Encryption:

Full Disk Encryption provides the ability to encrypt data "at rest" on a DS8000. The Full Disk Encryption disk drive sets are optional for the DS8000 series. Full Disk Encryption is transparent to z/VSE applications, and can be used with z/VSE 4.1 and later.

  - Solid State Disk (SSD):

    z/VSE V4.1 and later supports SSDs. SSD support is transparent to z/VSE applications. For performance considerations refer to the IBM System Storage home page

    http://www.ibm.com/systems/storage/disk/ds8000/index.html

  - FlashCopy Consistency Group:

    Consistency groups help create a consistent Point-in-Time copy across multiple volumes, and even across multiple DS8000 storage systems, thus managing the consistency of dependent writes. This is useful when applications have their data spread over multiple volumes.

- **IBM System Storage SAN Volume Controller**
- **IBM System Storage TS7700 Virtualization Engine:**
  - z/VSE V4.1 and later supports the TS7700 Release 1.7 as a stand-alone system in transparency mode.

    COPY EXPORT is not supported.

  - z/VSE V4.2 with PTFs and later supports the TS7720 disk-only virtual tape system.
  - z/VSE V4.3 exploits TS7700 WORM volumes.

Virtual storage constraint relief:

z/VSE V4.3 will fulfill several user requirements and move selected system programs and buffers from 24-bit into 31-bit storage. This will allow clients with growing workloads (for example CICS) and/or those who want to consolidate their VSE systems to satisfy their increased 24-bit storage needs. Among the areas that will be addressed are VSE/VSAM, DL/I, and the z/VSE supervisor.

Ease-of-use configuration and infrastructure simplification:

Support of four-digit device addresses gives clients more flexibility and allows for advanced planning. You are no longer required to provide a z/VSE specific configuration. This is specifically helpful in mixed IT environments where clients may run z/VSE together with other IBM System z operating systems (z/VM, Linux on System z, and/or z/OS). To provide transparency for system, vendor, and user applications that rely on three-digit device addresses, z/VSE V4.3 will map a four-digit device address to a three-digit one during Initial Program Load (IPL). Thereafter only the three-digit device address will be used.

An IPv6 solution for z/VSE:

IPV6/VSE V1 (IPv6/VSE) is designed to deliver an IPv6 solution, thus bringing the benefits of IPv6 functionality to z/VSE users. IPv6/VSE provides an IPv6 TCP/IP stack, IPv6 application programming interfaces (APIs), and IPv6-enabled applications. IPv6/VSE fulfills the statement of direction in Software Announcement 209-319, dated October 20, 2009. For details refer to Software Announcement 210-066, dated April 06, 2010.

IPv6/VSE requires a unique user access key. IPv6/VSE can be used for 30 days after activation without a key.

IPv6/VSE is an optional product of z/VSE V4.3. IPv6/VSE can be also be used with z/VSE V4.2. When used with z/VSE V4.2.2, the minimum required service level is APAR DY47077 or z/VSE V4.2.2.

Security enhancements:

Basic Security Manager (BSM) will provide security for WebSphere® MQ for z/VSE V3 to protect MQ resources using MQ resource classes. With z/VSE V4.3, BSM will include DTSECTAB resources into the SMF logging and reporting.

Networking enhancements:

z/VSE V4.3 systems running in a z/VM guest environment can now benefit from the z/VM Queue I/O (QIO) performance assist for real networking devices. z/VSE V4.3 exploits this performance assist for OSA Express® adapters (CHPID type OSD) and HiperSockets™ (CHPID type IQD).

System management enhancements:

SNMP (Simple Network Management Protocol) is a widely used standard network protocol that allows systems to monitor elements of a network. z/VSE V4.3 will provide a monitoring agent that allows SNMP version 1 clients to retrieve z/VSE-specific system and performance data. This will help performance monitors to collect data that can be used for planning purposes.

Additional Floating Point (AFP™) support:

AFP support allows you to use all floating point registers for floating point operations.

DOS/VS RPG II support for CICS TS:

DOS/VS RPG II compiler support will be added to allow RPG programs implemented for CICS/VSE to run with CICS TS. Clients who stayed with CICS/VSE because of RPG can now migrate to CICS TS. DOS/VS RPG II support will also be made available with z/VSE 4.2.

DL/I V1.12:

z/VSE V4.3 will deliver a new DL/I release, which will provide 24-bit virtual storage constraint relief for the CICS TS environment. DL/I V1.12 is the only DL/I release that is available with z/VSE V4.3.

DL/I V1.12 replaces DL/I V1.10 and DL/I V1.11.

New Redbooks®:

- z/VSE Using DB2® on Linux for System z (SG24-7690)
- Security on IBM z/VSE (SG24-7691)

Migration from CICS/VSE V2.3 to CICS Transaction Server for VSE/ESA (CICS TS) on z/VSE V4.2:

- z/VSE V4.3 fulfills the statement of direction in Software Announcement 207-228, dated October 09, 2007. It will no longer offer CICS/VSE V2.3 as part of the z/VSE V4.3 package and will remove the CICS coexistence environment.
- Recent improvements, including BSM security enhancements in z/VSE V3, additional VSE tasks, and DOS/VS RPG II support for CICS TS in z/VSE V4.2, offer you the capability of migrating your CICS/VSE programs on z/VSE V4.2 prior to performing an upgrade to z/VSE V4.3.
- Clients migrating to CICS TS might benefit from virtual storage constraint relief in CICS TS and z/VSE V4.3. Constraint relief addresses the needs of growing CICS workloads.

Note: Items mentioned as being available for z/VSE V4.1 or z/VSE V4.2 might require the user to install additional PTFs.

z/VSE V4.3 supports IBM System z servers:

- IBM System zEnterprise 196 (z196)

- IBM System z10 Enterprise Class (z10 EC) and IBM System z10 Business Class (z10 BC)
- IBM System z9 Enterprise Class (z9 EC) and IBM System z9 Business Class (z9 BC)
- IBM eServer zSeries 990, 890, 900, and 800

z/VSE V4.3 is designed to exploit selected features of innovative IBM System z10 and zEnterprise 196 technology. z/VSE Version 4 executes in z/Architecture mode only and supports 64-bit real addressing for selected system functions. z/VSE V4.3 is not designed to support 64-bit virtual addressing. z/VSE V4.3 can run in basic mode (z900 and z800 only), in LPAR mode, or as a guest under all supported z/VM releases including z/VM V6.1. z/VM V6.1 requires IBM System z10 or later. z/VSE V4.3 is the preferred follow-on product for clients with z/VSE V4.2, z/VSE V4.1, z/VSE V3, or VSE/ESA installed. You can use the Fast Service Upgrade (FSU) process when migrating from z/VSE V4.2 or z/VSE V4.1.

z/VSE V4.3 offers Midrange Workload License Charge (MWLC) pricing metrics, including a sub-capacity option, for System zEnterprise 196, z10, and z9 servers. The smallest z10 BC and z9 BC server capacity setting, A01, does not qualify for MWLC. Clients on the z10 BC and z9 BC capacity setting A01 will always pay zELC for all IBM monthly license charge software.

Product positioning

IT departments and data centers today are facing significant challenges. As they try to manage the rising cost of providing the IT services their business needs, they see two conflicting pressures: first, the need to operate and maintain the existing operations on which the business depends and second, the need to deploy new workloads and provide the new IT services that the changing and evolving business requires to innovate and gain competitive advantage.

z/VSE Version 4.3 is designed to help you introduce competitive new IT solutions at low cost, low risk, and fast time to market.

z/VSE clients have the option of continuing to use their core VSE solutions while at the same time adding new applications. New solutions regardless of the chosen platform will be able to leverage and exploit existing core z/VSE applications and data.

z/VSE V4.3 will continue to adhere to the strategy of "Protect, Integrate, and Extend" -- in short "PIE."

- **Protect** focuses on investment protection. z/VSE clients should be able to exploit the latest IBM System z and IBM System Storage technology to enhance and grow core z/VSE environments.
- **Integrate** enables seamless integration. z/VSE clients should be able to extend their core z/VSE information assets into their overall IT system and network.
- **Extend** refers to adding new solutions. z/VSE clients should be able to extend their core z/VSE solutions with solutions that exploit the advanced, standards-based capabilities of any platform, especially Linux on System z.

The "PIE strategy" is fundamentally based on an open hybrid model. This hybrid model can give clients the best of both worlds: it helps them to protect their z/VSE investments as they exploit the capabilities of complementary platforms. z/VSE plus Linux on System z is a compelling combination.

Protect

z/VSE V4.3 will continue to protect core z/VSE client investments. Timely hardware support helps enable z/VSE users grow and exploit innovative IBM System z10 and zEnterprise 196 technology. This includes virtual storage constraint relief, addressing requirements of clients with growing workloads and/or those who want

to consolidate their VSE systems. A new release of DL/I will relieve virtual storage constraints for the CICS TS environment.

Integrate

The requirement to integrate z/VSE systems into the larger IT environment is a key part of the z/VSE strategy. By enabling hybrid solutions to leverage z/VSE business data and business logic, clients may be able to achieve substantial advantages. These benefits may include low cost, low risk, and fast time-to-market for new business solutions. Interoperability enhancements in z/VSE V4.3 will include four-digit device addressing providing configuration and infrastructure simplification in mixed environments where clients may run z/VSE together with other IBM System z operating systems, like Linux on System z, z/VM, and/or z/OS.

Security and systems management enhancements with z/VSE V4.3 will include protection of MQ resources for WebSphere MQ for z/VSE V3 and an SNMP agent for the collection and retrieval of z/VSE-specific system and performance data. IPv6/VSE brings the benefits of IPv6 functionality to z/VSE users by providing an IPv6 TCP/IP stack, application programming interfaces (APIs), and IPv6-enabled applications.

Extend

The z/VSE strategy seeks to enable the effective use of z/VSE together with other platforms, such as Linux on System z, to help you create modern IT solutions. Linux offers WebSphere, Java™, DB2 Universal Database™, a rich set of development tools, and a growing selection of packaged applications. IBM System z IFLs can provide a robust, highly scalable, cost-effective server environment. z/VM adds exceptional flexibility and manageability through its premier virtualization technology.

z/VM virtualization technology is designed to provide the capability for clients to run a large number of Linux servers in a single mainframe, running with other System z operating systems such as z/OS and z/VSE, or as a large-scale Linux enterprise-server solution. z/VM V6.1 is the newest version of z/VM and is intended to be the base for future z/VM enhancements. z/VM V6.1 provides additional support and exploitation opportunities for many users who have built enterprise-wide automation and infrastructure enhancements on the VM platform in support of their applications, database systems, and on-demand business solutions.

Business Partner information

If you are a Direct Reseller - System Reseller acquiring products from IBM, you may link directly to Business Partner information for this announcement. A PartnerWorld® ID and password are required (use IBM ID).

Technical information

Preview announcements are made solely to provide clients with important planning information. Previews contain no dates or prices. However, the following additional information is being provided to give clients essential information to use in their planning processes. These statements do not represent a commitment from IBM. They are based on IBM's current plans and those plans are subject to change or withdrawal without notice.

IBM intends to deliver z/VSE V4.3 in fourth quarter 2010.

Clients are encouraged to avoid delaying hardware or software upgrades in the interim. It is suggested that clients consider proceeding with any plans they have to install z/VSE V4.2. Similarly, clients planning to install IBM System z10 or zEnterprise 196 servers should install with z/VSE V4.2 and begin receiving the benefits of these appealing server solutions immediately. The Fast Service Upgrade

(FSU) process is planned to be available to help users migrate to z/VSE V4.3 from z/VSE V4.2 and z/VSE V4.1.

Hardware requirements

z/VSE V4.3 supports IBM System z servers:

- IBM System zEnterprise 196 (z196)
- IBM System z10 Enterprise Class (z10 EC) and IBM System z10 Business Class (z10 BC)
- IBM System z9 Enterprise Class (z9 EC) and IBM System z9 Business Class (z9 BC)
- IBM eServer zSeries 990, 890, 900, and 800

z/VSE V4 operates in z/Architecture mode only.

Software requirements

Many z/VSE clients select to run under z/VM for operational flexibility or to supplement the capabilities of z/VSE alone. z/VSE clients who choose to run one or more z/VSE V4.3 systems as guest systems under z/VM will require z/VM V5.4 or later.

For specific functions and for the most current information on z/VM, refer to

http://www.ibm.com/eserver/zseries/zvm

Compatibility

The optional feature GPS (shipped with TCP/IP for VSE/ESA) does not support Double Byte Character Set (DBCS) printing.

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