IBM System z
Introduction
October 2009

z/VM Version 6 Release 1
Frequently Asked Questions

Worldwide

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z/VM Positioning

Question:

What is IBM System z® virtualization technology?

Answer:

System z virtualization technology allows customers to create virtual processors, communications, memory, I/O, and networking resources, thus helping to reduce the overhead of planning, purchasing and installing new hardware to consolidate and support new workloads.

Notice that the virtualization technology for System z platforms is composed of multiple dimensions. There is a hardware dimension and a software dimension, and both dimensions are considered at the time that the System z servers are designed. System z virtualization is not an afterthought; it is designed in from the bottom up.

Question:

What does the hardware dimension provide for System z virtualization technology?

Answer:

The IBM System z hardware provide the foundation dimension with functions critical to the success of virtualization, particularly on a large scale, such as the ability to partition the machine, device sharing, and inter-partition communication.

Question:

What does the software dimension provide for System z virtualization technology?

Answer:

The software dimension can extend the capabilities of the hardware from the standpoint of sharing hardware, virtualizing resource, and communication. It also introduces the flexibility required to support large numbers of virtual servers in an on-demand enterprise. Operational support, control, accountability and maintenance are a large part of the operation of any group of servers.

The z/VM® hypervisor is the IBM System z product providing the software dimension functionality.

Question:

Why is z/VM vital in the area of system virtualization?

Answer:

z/VM is vital because it helps to:

- Create a dynamic infrastructure
- Maximize the value of your IT investments
- Make your business become more efficient and responsive
- Integrate your business

Question:

What does z/VM contribute to a dynamic infrastructure?

Answer:

A dynamic infrastructure can be characterized by several attributes, one of them is virtualization. z/VM is the virtualization technology on System z servers and is a critical component of the Linux® on System z environment. For Linux on System z to embrace on demand business, z/VM provides significant virtualization support for Linux virtual servers, including exploitation of the System z capabilities, nondisruptive dynamic addition of memory and processors, improved systems management, ease of use enhancements, performance improvements for Linux guests, and enhanced networking for guests. The virtualized Linux environment on System z can help you in building a dynamic infrastructure.

Question:

How does System z virtualization technology help your business become more efficient and responsive?

Answer:

With virtualization technology as its foundation, z/VM provides new function and technology exploitation on the mainframe that helps enable customers to virtualize processors, communications, memory, I/O, and networking resources, with the potential to help reduce the need to plan for, purchase, and install hardware to consolidate and support new workloads.

With support for System z dynamic reconfiguration capabilities, z/VM helps enable resources, such as processors and memory, to be added to an active LPAR running z/VM nondisruptively. Customers can configure their systems to help reduce the need to re-IPL z/VM. They can dynamically add processors, channels, OSA adapters, I/O, and memory to both the z/VM system itself and to individual guests.

z/VM V6.1 General Availability announcement – October 20, 2009

Question:

When is z/VM V6.1 planned to be generally available for ordering?

Answer:

October 23, 2009

Question:

Other than the general availability date, what else did IBM announce related to z/VM on October 20, 2009?

Answer:

IBM announced these additional enhancements planned for z/VM V6.1:

- Guest support for Crypto Express3
- Guest support for IBM System Storage™ DS8000® Extended Address Volumes (EAVs)

Also, in the System z Hardware Announcement 109-678 (US) on October 20, 2009, IBM announced the OSA-Express3 Integrated Console Controller (OSA-ICC) four-port exploitation on the 1000BASE-T Ethernet feature on IBM System z10™ servers, planned for first quarter 2010. z/VM plans to support OSA-ICC four-port exploitation at the availability of the hardware with no PTFs required.

For additional z/VM V6.1 enhancements announced on July 7, 2009 and July 21, 2009, refer to the z/VM V6.1 Preview section.

Question:

What is the z/VM support for Crypto Express3?

Answer:

The PTF for APAR VM64656 for z/VM V5.3 and later, targeted to be available in November, 2009, is planned to provide:

- The ability to dedicate any available domain to a guest for clear-key and secure-key cryptographic functions,
- The ability for guests to share available, non-dedicated domains for clear-key cryptographic functions,
- Enhancements to the CP QUERY CRYPTO APQS command to display user information about both shared and dedicated cryptographic domains. Prior to this enhancement, the command only displayed user information for only dedicated domains.

Each Crypto Express2 and Crypto Express3 feature contains 2 cryptographic coprocessors using 2 PCI-Express (PCI-E) adapters, each with 16 cryptographic domains and up to 256 domains can be configured for use within a single z/VM system. An option of 1 PCI-E per feature is also offered for the IBM System z10 Business Class™ (z10 BC™) server and up to 128 domains can be configured for use with this option.

The Crypto Express3 feature is exclusive to IBM System z10 Enterprise Class (z10 EC™) and z10™ BC servers. For additional information on Crypto Express3, refer to Hardware Announcement 109-678 (US), dated October 20, 2009.

Question:

What is the support for EAVs?

Answer:

The DS8000 series today supports System z CKD volumes up to 65,520 cylinders. With the Extended Address Volumes (EAV) function, this capability has been extended to support volumes that can scale up to approximately 223 GB (262,668 cylinders). This capability can help relieve address constraints to support large storage capacity needs in System z environments. Larger devices can help simplify storage management as it fosters management of fewer, large volumes as opposed to many small volumes. The HyperPAV function available today complements EAV by allowing scaling of I/O rates against a single, larger volume.

With the PTF for APAR VM64709 for z/VM V5.4 and later, z/VM plans to support up to 262,668 cylinders for:

- Devices dedicated to a guest
  - Linux on System z
    IBM is working with its Linux distribution partners to include support for this function in future Linux on System z distributions.
  - z/OS® V1.10 and later
- Full-pack minidisks for guests which support EAV volumes
- DDR
- FlashCopy® SE

As part of the z/VM support for EAV, with the PTF for APAR VM64711, CMS support has been doubled, up to 65,520 cylinders, for its own use. The z/VM Control Program (CP) continues to support 65,520 cylinders for its own use.

Both PTFs are planned to be available by year-end 2009

Question:

What is changing for the z/VM OSA-ICC support?

Answer:

z/VM plans to support the OSA-ICC four-port exploitation on the 1000BASE-T Ethernet feature on the z10 servers, planned to be available the in first quarter 2010 with no PTFs required.

Question:

Have any price changes been announced for z/VM V6?

Answer:

No. Pricing for z/VM V6 remains the same as V5 and continues to use the Engine-based Value Unit pricing metric. Pricing information is available at:
ibm.com/support/

Choose the option under "Purchase / upgrade tools" link under Electronic Services.

Question:

How long does IBM plan to support z/VM V6.1?

Answer:

IBM announced plans to support z/VM V6.1 until April 30, 2013.

Question:

Have there been any changes for IBM Business Partners to remarket S&S?

Answer:

Yes. Effective with the z/VM V6.1 availability on October 23, 2009, IBM Business Partners can now remarket the z/VM V5.4 and V6.1 S&S (5741-SNS) for up to 3 years if ordered at the same time as the associated IPLA license that is remarketed by that partner. Prior to this announcement, S&S could only be remarketed for 1 year and only by IBM Business Partners in EMEA. This is also applicable to the priced, optional features of z/VM V5.4 and V6.1.

Question:

Have there been any changes for IBM Business Partners to remarket S&S for any other IPLA products associated with z/VM?

Answer:

Yes, Effective October 23, 2009, IBM Business Partners in all geographies will now have the option to remarket the associated S&S for the products listed in the following table for up to 3 years if ordered at the same time as the associated IPLA license that is remarketed by that partner. Previous to this announcement, S&S for these products could only be remarketed for 1 year and only by IBM Business Partners in EMEA.

Program Name	Program Number	S&S Program Number
IBM Tivoli® OMEGAMON® XE on z/VM and Linux, V4.1	5698-A36	5608-S73
IBM Tivoli zSecure Manager for RACF® z/VM	5655-T13	5655-T14
IBM Tape Manager for z/VM	5697-J08	5697-J11
IBM Archive Manager for z/VM	5697-J05	5697-J12
IBM Backup and Restore Manager for z/VM	5697-J06	5697-J13
IBM Operations Manager for z/VM	5697-J10	5697-J15

Question:

Where can I find more details on this announcement?

Answer:

Refer to the IBM Business Partner attachment of the IBM Software Announcement for z/VM V6.1 209-401 (US), dated October 20, 2009.

Question:

Where can I find more question and answers regarding z/VM V6.1?

Answer:

Refer to the question and answers within the next section of this document.

Question:

Where can I find more information for the z/VM announcement on October 20, 2009?

Answer:

Refer to IBM Software Announcement 209-401 (US), dated October 20, 2009 or the z/VM Web site at:

ibm.com/vm/zvm610

Question:

Where can I find more information for the System z hardware announcement on October 20, 2009?

Answer:

Refer to IBM Hardware Announcement 109-678 (US), dated October 20, 2009.

z/VM V6.1 Preview announcement – July 7, 2009

Question:

What did IBM announce on July 7, 2009 with regards to z/VM?

Answer:

IBM announced a preview of a new version of z/VM, Version 6 Release 1 (V6.1).

Question:

Why did IBM announce a new version for z/VM rather than a new release of version 5?

Answer:

z/VM V6 requires a new architectural level available only on the IBM System z10 Enterprise Class (z10 EC) server and IBM System z10 Business Class (z10 BC) server and future generations of System z servers.

Question:

What will be the effect of the new version on support for z/VM 5.4?

Answer:

Because z/VM 5.4 is the last release to support the IBM System z9®, IBM eServer™ zSeries® 990 (z990), 900 (z900), 890 (z890), and 800 (z800) servers, its Withdrawal from Marketing date has not been announced.

IBM announced its intention to discontinue service support for z/VM V5.4 to be effective September 30, 2011, in Software Announcement 208-249, dated August 5, 2008. In IBM Software Announcement 209-207, dated July 7, 2009, IBM extended the new date for discontinuing service support for z/VM V5.4 to September 30, 2013.

Question:

Can I still order z/VM V5.4?

Answer:

Yes. z/VM V5.4 is available for ordering and will continue to be orderable after the availability of z/VM V6.1. IBM will provide at least three months notification prior to any planned withdrawal date.

Question:

As an overview, what is z/VM V6.1?

Answer:

z/VM requires a new architectural level available only on IBM System z10 servers or later. More details on this architectural level can be found at:
ibm.com/vm/zvm610/architecture

z/VM V6.1 is also designed to offer:

- Guest LAN and Virtual Switch (VSWITCH) exploitation of the IBM System z10 server cache prefetch capabilities to help improve the performance of heavy guest-to-guest streaming network workloads

- Support for FICON® Express8 that is designed to provide faster access to data with a link data rate of 8 gigabits per second (Gbps)
- Closer integration with IBM Systems Director by shipping the z/VM Manageability Access Point (zMAP) Agent for z/VM to help simplify the installation of the agent
- Inclusion of post-z/VM V5.4 enhancements delivered in the IBM service stream

Question:

Why was z/VM V6.1 preview announced?

Answer:

The z/VM product is undergoing some major enhancements, as indicated by the Statements of Direction mentioned in the z/VM V6.1 announcement material and restated in this document. At the same time, it was important to deliver a new z/VM release as a mechanism to set the stage for these planned enhancements. It was also important to provide information as early as possibly regarding the requirement for a System z10 server for z/VM V6.1.

Question:

What are the Statements of Direction* for planned future support were announced on July 7, 2009?

Answer:

- **z/VM Single System Image**
  IBM intends to provide capabilities that permit multiple z/VM systems to collaborate in order to provide a single system image. This is planned to allow all z/VM member systems to be managed, serviced, and administered as one system across which workloads can be deployed. The single system image is intended to share resources among all member systems.
- **z/VM Live Guest Relocation**
  IBM intends to further strengthen single system image support by providing live guest relocation. This is planned to provide the capability to move a running Linux virtual machine from one single system image member system to another. This is intended to further enhance workload management across a set of z/VM systems and to help clients avoid planned outages for virtual servers.

*All statements regarding IBM's plans, directions, and intent are subject to change or withdrawal without notice.

Question:

Were there any other Statements of Direction* announced?

Answer:

Yes. The following Statement of Direction was also announced:

- Withdrawal of z/VM Domain Name System (DNS) Server Support
- IBM intends to withdraw support in a future z/VM release for its native DNS server (NAMESRV). IBM does not plan to provide a replacement DNS server, but will continue to support the use of DNS servers on other platforms for TCP/IP host name resolution.

*All statements regarding IBM's plans, directions, and intent are subject to change or withdrawal without notice.

Question:

Which servers are supported by z/VM V6?

Answer:

z/VM V6 supports the IBM System z10 EC and the IBM System z10 BC servers and later.

Question:

What can exploitation of the Prefetch Data instruction do for me?

Answer:

Guest LAN and Virtual Switch (VSWITCH) use of cache prefetch capabilities, exclusive to the IBM System z10 servers and later, give the hardware hints about likely memory access patterns. This enables the hardware to prefetch data into the processor cache so that the processor does not have to wait for data to be moved from main memory. Avoidance of a "cache miss" may help improve the performance of guest-to-guest streaming workloads.

Question:

What is FICON Express8 and how does z/VM support it?

Answer:

FICON Express8 supports a link data rate of 8 gigabits per second (Gbps) and autonegotiation to 2, 4, or 8 Gbps for synergy with existing switches, directors, and storage devices. With support for native FICON, High Performance FICON for System z (zHPF), and Fibre Channel Protocol (FCP), the System z10 servers enable you to position your SAN for even higher performance - helping you to prepare for an end-to-end 8 Gbps infrastructure to meet the increased bandwidth demands of your applications.

FICON Express8 may also allow for the consolidation of existing FICON Express, FICON Express2, or FICON Express4 channels onto fewer FICON Express8 channels while maintaining and enhancing performance. The FICON Express8 features are exclusive to z10 EC and z10 BC servers.

z/VM V5.3 and later support FICON Express8 for:

- Native FICON or Channel-To-Channel (CTC) use
- FCP-attached SCSI devices including z/VM install, IPL, and system usage of SCSI disks and direct attachment to z/VM guests

For additional information on FICON Express8, refer to IBM Hardware Announcement 109-417 (US) dated July 21, 2009.

Question:

How does z/VM provide closer integration with IBM Systems Director?

Answer:

z/VM V6.1 provides the IBM Systems Director V6.1.1 z/VM Manageability Access Point (zMAP) Agent including the Platform Agent on a minidisk which helps allow for a more simple installation of the agent. This eliminates the need to obtain the file from the IBM Systems Director Web site. The zMAP Agent provides high-level z/VM system management functions that exploit the basic functions of the z/VM Systems Management Application Programming Interface (SMAPI) server. As such, the zMAP Agent is used by several IBM products, including IBM Systems Director and IBM

Tivoli Provisioning Manager. Accordingly, it made sense to provide the zMAP Agent independently of any one product and facilitating its use by packaging it with the z/VM product.

Question:

What service enhancements are included with V6.1?

Answer:

The following support has been integrated into z/VM V6.1:

- Port isolation security that provides the ability to restrict guest-to-guest communications within a Virtual Switch (VSWITCH) by exploiting OSA-Express QDIO data connection isolation with required minimum MCLs
- Additional support for Linux on System z guests using Dynamic Storage Reconfiguration (DSR)
- An SSL server that operates in a CMS environment instead of requiring a Linux distribution
- Providing I/O device information from the input/output definition file (IODF) using Hardware Configuration Definition (HCD) for the World-Wide Port Name (WWPN) prediction tool
- Support for the IBM FlashCopy SE feature on the DS8000 which provides a space-efficient snapshot capability that can greatly reduce the storage capacity needed for point-in-time copies
- Support for multiple file dumps that can split a single dump into multiple files to be stored across multiple DASD devices and can allow for easier handling of the dump by the support teams
- Support for the IBM System Storage Enterprise 3592 Tape Controller Model C06 and 3592 Tape Drive Model E06, including DFSMS/VM™

Question:

What is Queued Direct Input/Output (QDIO) data connection isolation?

Answer:

With QDIO data connection isolation you:

- Can establish security zone boundaries that have been defined by your network administrators
- Have a mechanism to isolate a QDIO data connection (on an OSA port), ensuring all internal OSA routing between the isolated QDIO data connections and all other sharing QDIO data connections is disabled. In this state, only external communications to and from the isolated QDIO data connection are allowed. If you choose to deploy an external firewall to control the access between hosts on an isolated virtual switch and sharing LPARs then an external firewall needs to be configured and each individual host and or LPAR must have a route added to their TCP/IP stack to forward local traffic to the firewall.

Question:

What is the z/VM support for QDIO data connection isolation?

Answer:

Support for QDIO data connection isolation support provides the ability to restrict guest-to-guest communications within a VSWITCH and between other partitions sharing the OSA-Express adapters used by the VSWITCH. Virtual Switch port isolation and QDIO data connection isolation can help you design virtual networks that adhere to strict traffic-separation policies. Traffic isolation on shared OSA-Express adapters is available for OSA-Express2 and OSA-Express3 features on a System z10 EC server and a z10 BC server and is exclusive to CHPID type OSD.

Question:

What hardware supports QDIO data connection isolation?

Answer:

QDIO data connection isolation is available for OSA-Express2 and OSA-Express3 features on a System z10 EC and z10 BC servers with the following minimum MCLs required with Driver 76 for the System z10:

- OSA-Express2 on a System z10 server requires N10953.002
- OSA-Express3 on a System z10 server requires N10959.004 and N10967.055

This capability is also supported on z/VM V5.3 and V5.4 with the PTFs for APARs VM64463 and PK67610 on the OSA-Express2 features on a System z9 EC and z9 BC with the following minimum MCL required with Driver 67 for the System z9:

- OSA-Express2 on z9 requires G40946.008

Refer to the Preventive Service Planning (PSP) buckets for the minimum MCL levels and any required updates for the IBM System z10 EC and z10 BC servers. The PSP buckets can be found on Resource Link at:
https://techsupport.services.**ibm.com**/server/390.psp390

For the z10 EC server, select:
> Use **2097DEVICE** for Upgrade Name
> Use **2097/ZVM** for Subset Name

For the z10 BC server, select:
> Use **2098DEVICE** for Upgrade Name
> Use **2098/ZVM** for Subset Name

For the z9 EC server, select:
> Use **2094DEVICE** for Upgrade Name
> Use **2094/ZVM** for Subset Name

For the z9 BC server, select:
> Use **2096DEVICE** for Upgrade Name
> Use **2096/ZVM** for Subset Name

Question:

What is the additional support for Linux on System z guests using Dynamic Storage Reconfiguration (DSR)?

Answer:

Enhancements to z/VM storage management allow better cooperation with Linux on System z guests exploiting DSR.

z/VM support:

- Allows operation when running second level on z/VM to be more compatible with operation when running directly on an LPAR
- Displays configured, standby, and reserved values for each virtual storage element via the QUERY VIRTUAL STORAGE command
- Improves z/VM handling of unexpected DSR conditions that may occur

This support is also available for V5.3 and V5.4 with the PTF for APAR VM64495.

Question:

Why did IBM make the z/VM SSL server a CMS application?

Answer:

The maintainability and serviceability of the Linux-based SSL server has always been a challenge to keep the SSL server in synchronization with Linux distributions. In fact, the Linux-based SSL server does not operate with Novell SUSE Linux Enterprise Server (SLES) 10 or later and a major effort would have been required to correct the z/VM SSL server and then we would continue to have the maintainability problem. Having a CMS-based SSL server removes the dependencies on a Linux distribution and may enable encryption services to be deployed more quickly. It can also help make installation, service, and release-to-release migration simpler. Other enhancements to the z/VM SSL server included:

- Network-free SSL server administration
  The SSL server can be managed without requiring a network connection between the SSL server administrator and the SSL server.
- Encryption and decryption engine
  The SSL server uses z/OS V1.10 System SSL technology for encryption, decryption, and certificate management.
- Certificate-management services
  The System SSL GSKKYMAN utility is used to manage the SSL server certificate database. Services available for the SSL server include certificate renewal, certificate signing, and certificate export with or without the private key. The GSKKYMAN application also manages certificates for the z/VM LDAP server.

The CMS-based SSL server is also available for V5.4 with PTFs for APARs PK65850, PK73085, PK75268, VM64540, VM64519, and VM64570.

Question:

Is the Linux-based SSL server still available?

Answer:

No. It is not available for z/VM V5.4 or V6. It is still supported on z/VM V5.3.

Question:

What is the purpose of the WWPN prediction tool?

Answer:

The WWPN prediction tool is available from IBM Resource Link™ to assist you with preplanning of your Storage Area Network (SAN) environment prior to the installation of your System z10 server. This standalone tool is designed to allow you to set up your SAN in advance, so that you can be up and running much faster once the server is installed. The tool assigns WWPNs to each virtual Fibre Channel Protocol (FCP) channel/port using the same WWPN assignment algorithms a system uses when assigning WWPNs for channels utilizing N_Port Identifier Virtualization (NPIV).

The Hardware Configuration Definition (HCD) component of z/VM provides I/O device information from the input/output definition file (IODF) for the WWPN prediction tool. This support requires the PTF for APAR VM64579 and has been applied to the RSU supplied with V6.1. This support is also available for z/VM V5.3 and V5.4.

Question:

Where can I get more information on the WWPN prediction tool?

Answer:

For more information on setting up a SAN using the WWPN prediction tool, refer to the IBM Hardware Announcement 109-230 (US), dated April 28, 2009.

Question:

What is the z/VM support for IBM FlashCopy SE?

Answer:

z/VM is designed to provide support for the IBM FlashCopy SE feature on the DS8000 providing an instantaneous space-efficient snapshot capability that can greatly reduce the storage capacity needed for point-in-time copies. With a FlashCopy SE relationship, disk space will only be consumed for the target copy when data is written to the source volume or when a write is directed to the target. For a source volume without much write activity, the target volume can consume significantly less physical space than the source. In addition to the benefit of more efficient storage utilization, less capacity can mean fewer disk drives and lower power and cooling requirements. FlashCopy SE may be especially useful in the creation of temporary copies for tape backup, online application checkpoints, or copies for pre-production or disaster recovery testing.

The PTFs for APARs VM64605 and VM64684 are required and have been pre-applied to the Recommended Service Update (RSU) supplied with z/VM V6.1. This support is also available for z/VM V5.4 with the PTFs for APARs VM64449, VM64605, and VM64684.

Question:

Why would I want a single dump split into multiple files?

Answer:

Dumps which have been split into many smaller files can be stored across multiple DASD devices instead of requiring a single, larger disk. Segmenting a large dump into multiple files allows for easier handling of the dump by the support teams. It also makes it easier to send large dumps to IBM in smaller segments.

VMDUMPTL has also been enhanced to work with dumps that have been loaded to multiple files. All files must be available to view the entire dump, but may span multiple file modes. This support is also available for V5.3 and V5.4 with the PTF for APAR VM64495.

Question:

Does z/VM support the IBM System Storage Enterprise 3592 Tape Controller Model C06 and 3592 Tape Drive Model E06?

Answer:

- Yes. This support is also available for z/VM V5.2, V5.4, and V5.4, including DFSMS/VM, with PTFs for APARs VM64458 and VM64459.

Question:

Does z/VM provide support for disk encryption?

Answer:

Yes. z/VM V6.1 provides support for IBM Full Disk Encryption feature of the IBM System Storage DS8000. The QUERY DASD DETAILS command indicates when a DASD volume is encrypted.

Question:

How does DFSMS/VM support 3592 tape drives in z/VM V6.1?

Answer:

DFSMS/VM FL221 supports 3592 tape drives and volumes when installed within an Enterprise Automated Tape Library. This includes support for Write Once Read Many (WORM) data cartridges and the IBM System Storage Enterprise 3592 Tape Controller Model C06 and 3592 Tape Drive Model.

Question:

Does z/VM provide support for tape encryption?

Answer:

Yes. z/VM V6.1 is designed to support drive-based data encryption with the IBM System Storage TS1130 Tape Drive (machine type 3592, model E06) to help protect data on tape in a cost-effective way. Guest operating systems running under z/VM can take advantage of these encryption features through z/VM, even if the guest does not exploit them itself for reading and writing tapes. In addition, this tape drive can be used for native z/VM tape functions, such as SPXTAPE, DDR, and CMS TAPE.

DFSMS/VM FL221 supports locating encryption-capable 3592 tape drives in an Enterprise Automated Tape Library. This DFSMS/VM support provides an environment for a z/VSE™ guest running on z/VM to exploit tape encryption.

Question:

Does DFSMS/VM provide support for a disk-only tape environment?

Answer:

Yes. DFSMS/VM provides services that enable a z/VSE guest to manage resources of the IBM Virtualization Engine™ for the TS7720 configured without a physical tape library.

Question:

What support has or is planned to be delivered in the service stream for z/VM V6.1 and what other z/VM releases or supported with this service?

Answer:

Yes. This table describes the enhancements available in the service stream for supported releases:

Function	APAR Number	Releases Supported
QDIO Data Connection Isolation	VM64463 and PK67610	V5.3. V5.4
Dynamic Storage Reconfiguration (DSR)	VM64524	V5.4
z/VM SSL server	PK65850, PK73085, PK75268, VM64540, VM64569, and VM64570	V5.4
World-Wide Port Name (WWPN) prediction tool	VM64579	V5.3. V5.4
IBM FlashCopy SE	VM64449. VM64605, VM64684	V5.4 V5.4, V6.1
Multiple File Dumps	VM64495	V5.3. V5.4
IBM System Storage Enterprise 3592 Tape Drive Model E06	VM64459 (CP) and VM64458 (DFSMS/VM)	V5.2, V5.3, V5.4
DFSMS™/VM Disk-only tape environment	VM64657	V5.3. V5.4
IBM Full Disk Encryption feature	VM64650	V5.4
Crypto Express3 [1]	VM64656	V5.3, V5.4, V6.1,
IBM System Storage Extended Address Volumes [2]	VM64709 (CP) VM64711 (CMS)	V5.4, V6.1

Note 1: The PTF for APAR VM64656 is planned to be available in November, 2009.

Note 2: The PTFs for APARs VM64709 and VM64711 are planned to be available by year-end 2009.

Question

Is the any other additional support provided by z/VM V5.4 and V6.1 that was not available at the general availability of z/VM V5.4 on September 12, 2009?

Answer:

Yes, there is hardware support that did not require any changes to z/VM. This includes:

- HMC and Support Element (SE) 2.10.1 exploiting the z/VM Systems Management APIs to allow selected virtual resources to be both defined and managed
- OSA-Express3 support for:
  - Four ports on the 1000BASE-T Ethernet
  - Two ports on the GbE and 1000BASE-T 2P features on the System z10 BC server
  - OSA-Integrated Console Controller (OSC-ICC) on the 1000BASE-T feature four-port exploitation is planned to be available in the first quarter 2010
  - Open Systems Adapter for NCP (OSN)

z/VM V5.4 also supports these additional hardware features.

Question:

Can you tell me more about the HMC exploitation of the z/VM Systems Management APIs?

Answer:

Yes. The HMC and SE 2.10.1 for the z10 EC and z10 BC servers exploit the z/VM Systems Management APIs for z/VM V5.4 and V6.1 to allow selected virtual resources to be defined and managed:

- Define and maintain
  - z/VM profiles
  - z/VM prototypes
  - z/VM virtual machines
  - z/VM volume space
- View the VMRM measurement data
- Edit the VMRM active configuration file
  - Edit the VMRM active configuration file and maintain z/VM profile

Question:

What is the OSA-Integrated Console Controller (OSA-ICC) on the 1000BASE-T Ethernet feature?

Answer:

The Open Systems Adapter Express Integrated Console Controller (OSA-ICC) function supports TN3270E (RFC 2355) and non-SNA DFT 3270 emulation. 3270 emulation for console session connections is integrated in the System z10 server via a port on the OSA-Express3 1000BASE-T Ethernet feature. This can help eliminate the requirement for external console controllers (2074, 3174), helping to reduce cost and complexity. Each port can support up to 120 console session connections. OSA-Express3 1000BASE-T Ethernet (CHPID types OSC, OSD, OSE) can be defined as a spanned channel and can be shared among LPARs within and across LCSSs.

OSA-ICC four-port exploitation on the 1000BASE-T Ethernet feature on the z10 servers planned for the first quarter 2010. z/VM plans to support OSA-ICC four-port exploitation with no z/VM PTFs required. OSA-ICC two-port exploitation was previously supported by z/VM.

Question:

What is the Open Systems Adapter for NCP (OSN)?

Answer:

OSA-Express for Network Control Program (NCP), channel path identifier (CHPID) type OSN, is now available for use with the OSA-Express3 GbE features as well as the OSA-Express3 1000BASE-T Ethernet feature. This was previously available for the OSA-Express2 feature;

OSA-Express for NCP, supporting the channel data link control (CDLC) protocol, delivers connectivity between System z operating systems and IBM Communication Controller for Linux (CCL). CCL allows you to keep your business data and applications on the mainframe operating systems while moving NCP functions to Linux on System z.

CCL delivers a foundation to help enterprises simplify their network infrastructure while supporting traditional Systems Network Architecture (SNA) functions such as SNA Network Interconnect (SNI).

Communication Controller for Linux on System z (Program Number 5724-J38) is the solution for companies that want to help improve network availability by replacing Token-Ring networks and ESCON® channels with an Ethernet network and integrated LAN adapters on System z10,

OSA-Express3, OSA-Express2 GbE, or 1000BASE-T.

Question:

Have there been any OSA-Express hardware withdrawal announcements?

Answer:

Yes, with the Hardware Withdrawal announcement 909-119 (US), dated May 26, 2009, IBM announced that effective June 30, 2009, the following features on the IBM System z10 EC and IBM System z10 BC servers will be withdrawn from marketing .

- OSA-Express2 GbE LX
- OSA-Express2 GbE SX

On or after the effective date for the withdrawal of this offering, you can no longer order these features directly from IBM.

Question:

Have there been any product and service support modifications with the V6.1 announcement?

Answer:

Yes. With the general availability of z/VM V6.1, the following changes were announced:

- Discontinuation of service support extended for V5.4 until September 30, 2013.
- Host Management Facility (HMF) V1.1 (5684-157) has been withdrawn from marketing and is not supported nor orderable on z/VM V6.1. HMF is replaced by IBM Operations Manager for z/VM V1.2.0 (5697-J10), or later. Discontinuance of service for HMF is planned to be effective April 5, 2010 as announced in Withdrawal and service discontinuance announcement 909-011 (US), dated February 3, 2009.
- VMPRF mode, which provided compatibility with the report file specifications of the VM Performance Reporting Facility (5684-073), is not supported by the Performance Toolkit for VM in V6.1.
- Withdrawal of support for the RPC-based systems management APIs in V6.1. This satisfies the statement of direction made in Software Announcement 207-019, dated February 6, 2007.
- Withdrawal of German translation files for message repositories, help files, and other panels or files in V6.1.

Question:

Are there any planned installation changes in V6.1?

Answer:

No.

Question:

Are there any planned changes to the publications with V6.1?

Answer:

Yes.

- The entire z/VM library has been refreshed with new form numbers
- The distribution of the *IBM Online Library: z/VM Collection* on CD-ROM as a no-charge deliverable was discontinued with z/VM V5.4 and is not available for V6.1. The *IBM Online Library: z/VM Collection* on CD-ROM is not available for a fee and cannot be ordered.

- The *IBM Online Library: z/VM Collection* on DVD is distributed with each z/VM V6.1 order.
- The *IBM Online Library: z/VM Collection* on DVD is also available (for a fee) from the Publications Center Web site at: **ibm.com**/shop/publications/order/

z/VM product documentation published in BookManager® and Adobe PDF format is planned to be available from the z/VM Collection, the z/VM V6.1 Information Center the z/VM Internet Library, the IBM Publications Center.

The z/VM V6.1 publications are available with the general availability of V6.1.

The following publications have been removed from the z/VM V6.1 library:

- z/VM Summary for Automated Installation and Service (DVD Installation)
- z/VM Summary for Automated Installation and Service (Tape Installation)

The following publication is available in softcopy form only:

- z/VM: Getting Started with Linux on System z, SC24-6194-00

Question:

What is an Information Center?

Answer:

IBM now publishes the z/VM documentation (information for the z/VM base and optional features) in an information center using the IBM Eclipse Help System framework. The content of the Information Center is identical to that in the traditional BookManager and Adobe PDF formats; however, the presentation might differ to some degree.

Advantages of information centers are:

- Content is indexed by Google and other Internet search engines to help locate information more easily.
- Custom searches can be created that include only the information you need for a particular task or job role.

Question:

What features are optional for z/VM V6.1?

Answer:

The priced, optional features of the z/VM V6.1 base product are the Performance Toolkit for VM™, DirMaint™, RACF Security Server and Remote Spooling Communication Subsystem (RSCS) Networking.

IBM System z server and IBM System Storage information

Question:

Which servers are supported by z/VM V6?

Answer:

z/VM V6 supports the IBM System z10 EC and the IBM System z10 BC servers.

Question:

What supported versions and releases of z/VM support the z10 EC and z10 BC servers?

Answer:

z/VM V5.3 and V5.4, with applicable PTFs, and V6.1 or later.

Question:

Where can I find out more information on the IBM System z10 EC and z10 BC servers?

Answer:

For additional information on the z10 EC server, refer to:

- IBM Hardware Announcement 109-678 dated October 20, 2009
- IBM Hardware Announcement 109-417 dated July 21, 2009
- IBM Hardware Announcement 109-230 dated April 28, 2009
- IBM Hardware Announcement 108-794, dated October 21, 2008
- IBM Hardware Announcement 108-296, dated May 6, 2008
- IBM Hardware Announcement108-154, dated February 26, 2008

For additional information on the z10 BC server, refer to:

- IBM Hardware Announcement 109-678 dated October 20, 2009
- IBM Hardware Announcement 109-417 dated July 21, 2009
- IBM Hardware Announcement 109-230 dated April 28, 2009
- IBM Hardware Announcement 108-754, dated October 21, 2008

FAQs are also available for the z10 EC and z10 BC servers at:
ibm.com/systems/z/resources/faq/index.html

Question:

Can I use the Hardware Management Console for installation?

Answer:

Yes. Using z/VM V5.4 or later and the Hardware Management Console (HMC) 2.10.0, or later, in conjunction with the Support Element (SE) 2.10.0, or later, on IBM System z10 servers, z/VM can be installed in an LPAR and both z/VM and Linux on System z can be installed in a virtual machine from the HMC DVD drive. This can eliminate requiring any external network setup and a physical connection between an LPAR and the HMC, instead using the existing communication path between the HMC and the SE and thus may make configuration easier and more secure because the HMC does not have to reside on the intranet.

Question:

Are there any performance considerations when installing Linux from the HMC?

Answer:

Yes. This support is intended for customers who have no alternative, such as a LAN-based server, for serving the DVD contents for Linux installations. The elapsed time for installation using the HMC DVD drive can be an order of magnitude, or more, longer than the elapsed time for LAN-based alternatives.

Question:

What cryptography support is provided by z/VM for the z10 EC and z10 BC servers?

Answer:

z/VM provides guest exploitation support for the CP Assist for Cryptographic Function (CPACF) and Crypto Express2 and Crypto Express3 features.

Question:

What supported versions and releases of z/VM provide exploitation support for the z9 EC, z9 BC, z990, z900, z890, and z800 servers?

Answer:

z/VM V5.3 and V5.4.

Question:

Does z/VM provide support for the DS6000™ and DS8000?

Answer:

Yes. The DS6000 is designed to deliver enterprise-class storage capabilities in a space-efficient, modular design at a low price. The DS8000 series is designed to provide unmatched functionality, flexibility, and performance for enterprise disk storage systems at new levels of cost effectiveness. In addition, z/VM V6 supports approximately 1 TB CP SCSI disks as well as:

▪ Support to automatically switch between multiple channel paths to help improve overall performance on the DS6000. Preferred paths are used for I/O operations to devices attached to a 1750 control unit. z/VM V6 can also allow the DS6000 and DS8000 series to operate in their native control unit modes. That is, the DS6000 is supported as a 1750 control unit and the DS8000 as a 2107 control unit.

▪ Support for Parallel Access Volumes (PAVs) as minidisks for guest operating systems such as z/OS that exploit the PAV architecture. In addition, the potential benefit of PAVs for I/O issued to minidisks owned or shared by guests that do not support native exploitation of PAVs, such as CMS. PAVs enable a single System z server and applicable storage controller to simultaneously process multiple I/O operations to the same logical volume, which can help to significantly improve I/O response times by reducing device queuing delays.

▪ Support for the Hyper Parallel Access Volume (HyperPAV) function optionally provided by the IBM System Storage DS8000 disk storage systems. HyperPAV support complements the existing basic PAV support in z/VM V5.2, for applicable supporting disk storage systems.

- z/VM V5.4 and V6.1 support the IBM FlashCopy SE feature on the IBM DS8000 which provides a space-efficient snapshot capability that can greatly reduce the storage capacity needed for point-in-time copies.

- Guest support for the IBM Extended Address Volumes (EAV) function of the IBM DS8000, providing for volumes that can scale up to approximately 223 GB (262,668 cylinders) with the PTF for APAR VM64709. The PTF for APAR VM64711 doubles the number of cylinders, up to 65,520, available for CMS use. Both PTFs are also planned to be available by year-end 2009. (V5.4 and later).

- Support for Dynamic Volume Expansion simplifying disk management by allowing for the dynamic increase of a DS8000 volume size in order to accommodate application data growth

Question:

What is the z/VM support for the IBM System Storage SAN Volume Controller (SVC) Storage Engine 2145?

Answer:

z/VM and its guest operating systems are designed to access SCSI FCP storage capacity from multiple vendors as a single reservoir of capacity that can be managed from a central point. z/VM supports the SVC through the z/VM generic SCSI device driver. The SVC handles the device-specific requirements for whatever collection of different storage devices a customer has attached to the SVC.

z/VM support for the SVC allows the z/VM control program (CP) and guest operating systems that use SCSI devices (such as Linux on System z and z/VSE, as well as z/VM itself) to access IBM disk subsystems, including the DS8000, DS6000, DS4000®, IBM XIV® Storage System, as well as disk subsystems from other manufacturers that are supported by the SVC.

The SVC support adds "2145" as a parameter of the EDEVICE configuration statement, as well as the SET EDEVICE and QUERY EDEVICE commands.

The SVC can be used to provide SCSI devices as emulated FBA devices for use by CP and guest operating systems.

Use of SCSI devices accessed through the SVC by dedicated FCP subchannels is available to guest operating systems.

Supported hardware list, device driver and firmware levels for the SAN Volume Controller can be found at: **ibm.com**/support/docview.wss?rs=591&uid=ssg1S1002864

Question:

Does z/VM provide support for the IBM XIV Storage System?

Answer:

Yes, XIV devices can be used for z/VM system volume usage when attached to a SAN Volume Controller (SVC). For additional information on the IBM XIV Storage System, refer to: **ibm.com**/systems/storage/disk/xiv/index.html

z/VM General

Question:

What architecture mode is supported for guests operating on z/VM V6, running in 64-bit mode?

Answer:

z/VM V6 exploits and supports the z/Architecture®, enabling you to run 64-bit capable operating systems (Linux on System z, z/OS, z/VSE V4, and z/TPF) as guests of z/VM V5 when z/VM V5 is running on a System z platform in 64-bit mode. z/VM V6 also supports guest operating systems running in ESA/390 mode such as z/VSE V3, TPF, OS/390®, Linux on S/390®, or VM/ESA® when z/VM V6 is operating in 64-bit mode. In order for z/OS to operate as a guest of z/VM on the System z platform, both z/VM V6 and z/OS must be operating in 64-bit mode.

Question:

What operating systems can z/VM host?

Answer:

z/VM V6 is a System z operating system designed to host guest operating systems including Linux on System z, z/OS, OS/390, z/VSE, VSE/ESA, z/TPF, TPF, z/VM, and VM/ESA. When z/VM V6 is installed on Integrated Facility for Linux (IFL) processors, Linux, OpenSolaris, z/VM V4, V5, and V6 can be hosted as guest operating systems.

Question:

Can z/VSE run as a guest of z/VM V6?

Answer:

Yes. z/VM V6 supports z/VSE V3 in ESA/390 (31-bit) mode only and z/VSE V4 in z/Architecture (64-bit) mode only.

Question:

What software is available for z/VM from other Independent Software Vendors (ISVs)?

Answer:

IBM maintains a list of software vendor products that can be found at the following link:
ibm.com/vm/vendor/

Please note: This vendor product information is provided by the ISVs without independent evaluation or validation by IBM. IBM makes no claim as to the completeness of the information provided.

Question:

What software is available for z/VM from IBM?

Answer:

A list of IBM Licensed Programs available for z/VM can be found at the following link:
ibm.com/vm/related/

z/VM Marketing

Question:

Who do I contact if I am interested in z/VM V6.1?

Answer:

You may contact:

- IBM Marketing Representatives
- IBM Business Partners (BPs)

Question:

What customers should be interested in z/VM V6.1?

Answer:

The virtualization technology provided by z/VM and the System z platform is a cornerstone and a key enabler for building a dynamic infrastructure and may help clients achieve operational goals of high availability, business resilience, improved speed-to-market, better resource control and reporting, and the flexibility to expand and contract system resources (and the expense thereof) with business demands.

Clients wanting an IBM System z10 server configured with only SCSI disks can do so with z/VM V6.1. A mix of ECKD™ devices and SCSI disks in a Linux-on-z/VM environment helps enable clients to exploit the advantages of both of these storage technologies where appropriate. This facilitates the deployment of Linux-on-the-mainframe systems in open systems environments.

z/VM V6.1 and the IBM Integrated Facility for Linux (IFL) should be marketed to clients who want to run Linux on System z applications on System z10 servers. This includes clients who want to:

- Operate on the latest IBM System z10 server technology: Consolidate on highly secure and faster, less expensive hardware servers.
- Run multiple Linux server images: Such images can be hosted by z/VM V6.1 on IFL processors without necessarily increasing the IBM software charges for z/OS, TPF, z/TPF, z/VSE, or other IBM applications running on System z standard processors (CPs). The optional RACF Security Server provides additional security services to such a Linux environment.
- Access other System z data and applications from Linux applications: Operating efficiencies may be gained by running Linux applications as guests of z/VM on the same server where other System z applications and data reside.
- Run more Linux logical servers than can be provided currently by LPARs: System z logical partitioning supports up to 60 LPARs on z10 EC and z10 BC servers. z/VM V6.1 supports a much larger number of Linux server images that can take advantage of the resource-sharing capabilities z/VM provides.
- Use additional System z10 hardware: Running Linux on System z images as z/VM guests allows better usage of available hardware facilities, such as:
  - Exploitation of large real multiprocessor configurations (for example, 32-way) for Linux application workloads that "scale out" on multiple relatively small n-way virtual machines
  - Exploitation of large real memory for 64-bit Linux systems
  - Exploitation of expanded storage across a set of Linux server images
  - Dynamic I/O configuration

z/VM & Linux

Question:

What IBM tools are available to help manage multiple images of Linux, analyze performance, and act upon results?

Answer:

The following tools are designed to assist the system programmer with managing images, analyzing performance and adjusting the system for optimal resource utilization:

- Systems Management API – The Systems Management API provide a basic set of functions that may be called by applications to allocate and manage resources for guests running in z/VM virtual machines (virtual images). Use of the API through an application provided by a customer or solution provider are designed so that such applications can allow administrators who lack in-depth VM knowledge to manage large numbers of virtual images running in a single z/VM system.
- HMC and SE 2.10.1 for the z10 EC and z10 BC servers – Exploits the z/VM Systems Management APIs for z/VM V5.4 and V6.1 to allow selected virtual resources to be defined and managed
- IBM Systems Director - Delivers a simplified platform management solution that streamlines the way physical and virtual systems are managed across a multisystem environment. Leveraging industry standards, IBM Systems Director supports multiple operating systems and virtualization technologies across IBM and non-IBM platforms. Through an easy-to-use, point-and-click, single user interface, IBM Systems Director provides consistent views for visualizing managed systems and determining how these systems relate to one another while identifying their individual status, thus helping to correlate technical resources with business needs. The z/VM Manageability Access Point (zMAP) Agent is provided for IBM Systems Director to communicate with z/VM. This Agent, now supplied with z/VM V6.1, allows IBM Systems Director to obtain information about guest virtual machines as well as take action on behalf of these virtual machines such as create, manage, and delete. This Agent runs in a Linux guest on z/VM.
- IBM Systems Director VMControl Image Manager for Linux on System z - IBM Systems Director VMControl Image Manager for Linux on System z, V2.1 is designed to simplify the management of virtual environments across multiple virtualization technologies and physical platforms to support the growing requirements of a dynamic infrastructure. IBM Systems Director VMControl Image Manager V2.1 is a plug-in to IBM Systems Director V6.1, providing support to manage and automate the deployment of virtual appliances (images) from a centralized location. For additional information on IBM Systems Director VMControl Image Manager for Linux on System z refer to IBM Software Announcement 209-095 (US), dated July 21, 2009.
- HCM/HCD – The HCM and HCD components are designed to reduce the amount of system administration input required to complete a z/VM installation and provide a comprehensive, easy-to-use I/O-configuration-management environment similar to that available with the z/OS operating system. The HCM and HCD programs work together to help you easily create and manage the hardware and software aspects of your z/VM system I/O configuration.
- Performance Toolkit for VM – The Performance Toolkit for VM provides enhanced capabilities for a z/VM systems programmer, operator or analyst to monitor and report performance data.
- Tivoli OMEGAMON XE on z/VM and Linux - Provides a wide range of information about the z/VM and Linux on System z operating systems, including information about your Linux instances running as z/VM guests and the Linux workloads, revealing how they are performing and affecting z/VM and each other.

- Virtual Machine Resource Manager (VMRM) – The Virtual Machine Resource Manager is a service that dynamically tunes the z/VM system. Virtual machines can be grouped into workloads by specifying workload and goal definitions and associations between them, and then adjusts virtual machine CPU and I/O and memory (Linux guests only) performance controls based on actual performance data to attempt to achieve the goals associated with each workload.
- Gigabit Ethernet OSA-Express2 and OSA-Express3 – Offer high-speed TCP/IP connections through Gigabit Ethernet (GbE) and 10 GbE (OSA-Express2 and OSA-Express3) adapters. This capability is a natural evolution of Ethernet and Fast Ethernet support that is needed to support data intensive TCP/IP applications and to help relieve traffic bottlenecks. z/VM enables guests, including z/OS and Linux, to use the OSA-Express2 and OSA-Express3 GbE adapter.
- Virtual IP Addressing (VIPA) – VIPA increases the reliability and stability of TCP/IP in the event of a network or interface failure. With VIPA, hardware link fault tolerance is supplied for both inbound and outbound TCP/IP communications on z/VM, which can provide automatic recovery of hard link failures and network traffic splitting.
- DirMaint – IBM Directory Maintenance (DirMaint) Facility provides efficient and security-rich interactive facilities for maintenance of your z/VM system directory.

Question:

What features for z/VM enhance the Linux guest environment?

Answer:

The capability is provided to account for the use of system resources by virtual machines, including those running Linux. An accounting record is produced that tracks a virtual machine's use of virtual network resources, including virtual channel-to-channel adapters (CTCAs), inter-user communication vehicle (IUCV) or advanced program-to-program (APPC) connections, and virtual (Guest LAN) network interface cards (NICs).

z/ VM Guest RSA-Assist Support for Linux, Fast Channel Command Word (CCW) Translation Extensions, Enhanced Page Fault Handling and Observer support.

Question:

What function did z/VM Guest RSA-Assist Support for Linux provide?

Answer:

With corresponding RSA-Assist Support function available from Linux on System z, the VM Guest RSA-Assist support enables Linux guest virtual machines to exploit the IBM CryptoExpress2 and Crypto Express3. This support provides clear-key RSA support for a large number of Linux guests enabling hardware Secure Socket Layer (SSL) acceleration on the z10 EC and z10 BC servers.

Question:

What is the support for Linux on System z guests using DSR?

Answer:

z/VM storage management allows better cooperation with Linux on System z guests exploiting DSR. z/VM support:

- Allows operation when running second level on z/VM to be more compatible with operation when running directly on an LPAR

- Displays configured, standby, and reserved values for each virtual storage element via the QUERY VIRTUAL STORAGE command
- Improves z/VM handling of unexpected DSR conditions that may occur

Question:

How do Fast Channel Command Word Translation Extensions benefit my Linux environment?

Answer:

Fast Channel Command Word (CCW) Translation Extensions help improve the performance of traditional I/O (Start Subchannel (SSCH)) to network and DASD devices. The z/VM Control Program (CP) provides a fast CCW translator to translate a wide range of channel programs that perform I/O to network adapters. This fast translator for network devices includes support for 64-bit indirect data address words (IDAWs), which allows guest machines to read and write data above the 2 GB limit using 64-bit I/O addressing. 64-bit IDAW support was further extended to the existing DASD fast CCW translator. This is also designed to include 64-bit IDAW support for DASD channel programs that are simulated via the minidisk cache (MDC). Although the fast CCW translation extensions are based on analysis of Linux guest channel programs, any VM guest that does qualifying I/Os can benefit from this new function.

Question:

How is page fault handling enhanced in the z/VM?

Answer:

The current page fault handling support within CP is designed to allow Linux on System z guests to take full advantage of page fault notifications. With corresponding function available with Linux on System z, the Linux guest continues to process while the page fault is handled by CP

Question:

What is the Integrated Facility for Linux (IFL)?

Answer:

The Integrated Facility for Linux is a dedicated Linux on System z processor. It is an optional feature, designed to add additional processing capacity, exclusively for Linux workload, with no effect on the existing model designation.

Question:

What benefits does z/VM provide for my Linux guest environment?

Answer:

z/VM enables you to run a large number of Linux server images on a single System z platform. It is ideal for integrating applications and data and consolidating select UNIX®, and Linux workloads deployed on multiple servers onto a single physical System z server, while maintaining the same number of distinct server images. These Linux images can be deployed on standard processor or IFL processors. Server consolidation may result in cost savings realized by managing large server farms deployed on virtual servers instead of multiple hardware servers.

Question:

What are the specific value propositions of the IBM System z virtual Linux server environments for a dynamic infrastructure?

Answer:

A dynamic infrastructure helps allow for improved service, reduced costs, and reduced risk.

These aspects are very well supported by the IBM System z virtual Linux server environments:

- Improved service is not only provided by the high availability of the environment. Major elements are likewise the high flexibility, the dynamic access to resources and services, and the very fast provisioning.
- Cost reduction can be achieved through the outstanding virtualization capabilities, allowing for higher resource utilization, less energy consumption, and less management effort.
- Risk reduction can be provided through the manifold security and resiliency features, that address today's and new risks that may come with a more connected and collaborative world.

Question:

What support is provided for Linux on System z running on z/VM?

Answer:

Support for Linux is provided by each distributor and through support providers such as your local System z IBM Business Partner and IBM Global Services. Please contact the distributors, your IBM Business Partner or IBM Global Services for specific support information.

Question:

Can I buy a server that has IFL processors without including a standard processor?

Answer:

Yes. You can order/configure IFL-only processor models with the z10 EC and z10 BC servers.

Question:

Can I run z/VM V6 in an LPAR which has a mix of standard and IFL processors?

Answer:

Yes. The IBM System z10 introduced z/VM-mode logical partitions (LPARs), which allow multiple types of System z processors to be defined in the same z/VM LPAR, including:

- Central Processors (CPs)
- Integrated Facility for Linux Processors (IFLs)
- IBM System z10 Integrated Information Processors (zIIPs)
- IBM System z10 Application Assist Processors (zAAPs)
- Internal Coupling Facility Processors (ICFs)

z/VM V6 exploits this capability by expanding its guest support for specialty processors to allow these processor types to be defined as virtual CPUs. This capability increases flexibility and simplifies systems management by allowing a single z/VM V6 system to:

- Operate z/TPF, z/VSE, and z/OS guests on CPs
- Operate Linux on System z as guests on IFLs and optionally on CPs
- Offload z/OS system software process requirements, such as DB2® workloads, on zIIPs
- Provide an economical Java execution environment under z/OS on zAAPs
- Operate coupling facility virtual machines in support of a Parallel Sysplex® test environment on ICFs and optionally on CPs

This support is exclusive to the IBM System z10 servers.

Question:

Can I control access to my Linux guests with RACF on z/VM?

Answer:

Yes. When the RACF Security Server feature is ordered, it is licensed under IPLA and is supported on both standard and IFL processors. It is supported on both standard and IFL processors. The RACF Security Server feature FL610 is designed to operate with z/VM V6.1.

Question:

Can I run High Level Assembler (HLASM) to reassemble CP or CMS source modules?

Answer:

Yes. HLASM is available for licensing on standard processors. The High Level Assembler is required for z/VM to:

- Apply corrective service to RACF associated CP parts
- Change exit routines or perform local modifications for any IBM VM product or vendor product

Question:

Can I license HLASM on IFL processors?

Answer:

No. The High Level Assembler is available for use with Linux on System z on IFL processors as a Programming Request for Price Quote (PRPQ). A PRPQ must be submitted to purchase the High Level Assembler for Linux on System z (5799-TCQ) and for its annual Subscription & Support (5799-TCR).

For pricing, terms and conditions, and special bid requests, contact your IBM representative or your IBM Business Partner.

Question:

Can I license ISPF/VM on IFL processors?

Answer:

No. However, ISPF/VM is available on a special bid basis for licensing on IFL processors.

For pricing, terms and conditions, and special bid requests, contact your IBM representative or your IBM Business Partner.

Question:

How does Linux perform under z/VM?

Answer:

System performance depends on the hardware resources allocated to z/VM V5 and V6 and on the level of activity within each Linux image. For assistance in understanding the performance implications for a particular situation, contact your IBM representative or your IBM Business Partner. You can also refer to the z/VM Performance Reports on the z/VM Web site at: **ibm.com**/vm/perf/docs/

Question:

How many Linux servers can I consolidate to run under VM?

Answer:

Our experience with server consolidations show that the number of servers depends on the types of the workload, the technology level of consolidated servers, the utilization factor, and other implementation requirements. Therefore the answer varies by client and workloads.

IBM has a great experience with consolidation projects and customers can get sizings done through their IBM representative or an IBM Business Partner. Both channels have access to SIZE390 which is used for this purpose. More detailed performance information is available at: **ibm.com**/vm/perf/tips/linuxper.html

Question:

Will IBM maintain a list of Independent Software Vendor (ISV) products that are being offered for Linux?

Answer:

Yes. IBM maintains a list of Independent Software Developer products available for Linux on

System z at:

ibm.com/systems/z/solutions/isv/linuxproduct.html

You can also access a list of the IBM products available for Linux at the following URL:
ibm.com/software/os/linux/software

*Note: This information is provided by the ISVs without independent evaluation or validation by IBM. IBM makes no claim as to the completeness of the information provided.

Question:

Where can I find more information about running Linux in a VM environment?

Answer:

You can visit z/VM and Linux on System z Resources at:
ibm.com/vm/linux

or the Linux on System z Web page at:
ibm.com/systems/z/os/linux

In addition, there is a wealth of information including white papers, Redbooks® and Redpapers and porting information, and as well as Linux customer stories located on the Linux on System z – Library and Technical support/documentation pages and at URL:
ibm.com/os/linux/support_resources.html

Pricing, Licensing, & Ordering

Question:

What is IPLA?

Answer:

IPLA stands for IBM International Program License Agreement. There is a one-time license charge for use of the program, which includes defect support via e-mail, fax or postal service and no-charge upgrades for new releases and versions when a current S&S license is in effect. A separate Subscription and Support offering is available with an ongoing recurring charge (4-year OTC in AP - China) for enhanced support, which includes telephone support.

Question:

Will z/VM V6 continue to be offered as an IPLA product?

Answer:

Yes. IPLA offerings enable pricing on IBM Integrated Facility for Linux (IFL) processors.

Question:

Have any price changes been announced for z/VM V6?

Answer:

No. Pricing for z/VM V6 remain the same as V5 and continues to use the Engine-based Value Unit pricing metric. Pricing information is available at: **ibm.com**/support/

Choose the option under "Purchase / upgrade tools" link under Electronic Services.

Question:

How can z/VM be ordered?

Answer:

There is no change to the ordering process for z/VM V6.1. Refer to IBM Software Announcement 209-401 (US), dated October 20, 2009 for ordering information.

Question:

How is the tiered Value Unit concept different than a flat price per processor?

Answer:

With the release of z/VM V5.1, IBM introduced Engine-based Value unit pricing. Unlike z/VM V4, which requires you to pay the same per-processor price for each licensed processor, z/VM V6 has a declining per-processor price, on a tiered basis, as more processors are licensed across the enterprise. Tiered value unit pricing will provide a lower price per processor, on a tiered basis, as the number of standard and IFL processors licensed are increased within the enterprise. Engine-based Value Unit pricing of z/VM V6 is different than MSU-based Value Unit pricing, which is available on other IBM software products.

Processors	Value Units Per Processor		Processors	Value Units Per Processor
1-3	10		13-16	6
4-6	9		17-20	5
7-9	8		21-25	4
10-12	7		26 or more	3

The current price per value unit is $2,250*. As such, the entry OTC price per processor will be $22,500 for z/VM V6 base function. For example, if a customer were to license z/VM V6 for 10 processors, the total OTC price would be $198,000:
{3*(2,250*10)}+{3*(2,250*9)}+{3*(2,250*8)}+{1*(2,250*7)}

*Price quoted in US currency and is subject to change

Question:

How can a customer benefit from enterprise aggregation with Engine-based Value Unit pricing?

Answer:

Engine-based Value Unit pricing may give customers a price benefit as they grow their capacity across their businesses. Customers may aggregate the capacity for all the processors that the product is operated on to achieve a more economic price. In other words, additional capacity will not be priced starting at the base with a higher price per unit, but on the capacity (processors) where z/VM V6 has already been installed. Enterprise aggregation is only available within the same country.

Question:

z/VM V6 is priced per processor. Do I have to license it on each processor on the system, both standard and the IFL?

Answer:

Yes. The following conditions apply:

- Your entitlement is for only the quantity of engine-based Value Units licensed. These engine-based Value Units can be for either standard or IFL processors.

- z/VM may run on IFL processors only if, on the IFL processors, z/VM is being used exclusively to run (1) Linux or OpenSolaris workloads and, (2) if required, z/VM applications in support of those Linux or OpenSolaris workloads.

- When ordering z/VM V6.1 to operate on any of the standard processors (CPs), Licensee must specify Value Units equal to the Value Units to cover the number of standard processors (CPs) on Licensee's z10 EC and z10 BC server.

- For a single server in an enterprise, the number of Value Units ordered for any optional feature to operate on standard processors must be equal to the number of Value Units ordered for the base z/VM V6 product operating on standard processors.

- When ordering z/VM V6.1 to operate on IFL processors, Licensee must specify Value Units equal to the Value Units to cover the number of IFL processors on Licensee 's z10 EC and z10 BC server.

- For a single server in an enterprise, the number of Value Units ordered for any optional feature to operate on IFL processors must be equal to the number of Value Units ordered for the base z/VM V6 product operating on IFL processors.

- If Licensee is running z/VM V6.1 on a System z10 server in an LPAR specified as "z/VM-mode" that is configured with both IFL processors and standard processors (CPs) and Licensee intends to run software licensed under the IBM Customer Agreement (ICA) in a virtual machine in that LPAR, that virtual machine must be configured to execute only on standard processors (CPs).

- Within the scope of an enterprise aggregation, the number of Value Units ordered for the S&S license must equal the number of Value Units ordered for the OTC license(s).

Question:

What were the memory pricing actions or announcements made as part of the July 21, 2009 System z10 announcement?

Answer:

IBM announced a 62% reduction in memory prices for all new workloads running on System z10 servers when purchased with a new System z10 IFL, zIIP or zAAP. The price of $2250 per GB USD. There is a 16 GB limit per engine. The above prices are stated in US currency and may vary in other countries. New workloads defined consistent with zNALC terms and conditions and also include all Linux workloads. Limited to 16 GB per qualifying processor.

Question:

What were the IFL pricing actions or announcements made for the z10 EC as part of the July 21, 2009 System z10 EC announcement?

Answer:

On July 21, 2009, IBM announced a pricing action on the z10 EC IFLs, to $75,000 USD per engine. The price per IFL on the System z9 is still $125,000 USD per engine. On a price performance basis this represents a 60% total price performance improvement from System z9 to System z10 EC for IFLs.

Question:

What IFL and memory pricing was previously announced for the z10 BC?

Answer:

On October 21, 2008, IBM made the following pricing announcements related to the z10 BC:

50% price reduction on IFL, IBM System z Application Assist Processors (zAAP) and IBM System z Integrated Information Processors (zIIP) Specialty Engines for System z10 BC, now $47,500. Prices are stated in USD currency for the US and may vary by country.

62% price reduction on memory for System z10 BC or z10 EC when purchased after October 21, 2008 and with an IFL, zAAP or zIIP Specialty Engine for new workloads, now $2,250 per GB, limited to 16 GB per Specialty Engine. (Note: prices in USD and may vary by country)

Question:

What is the cost of migrating from VM/ESA or z/VM V3.1 to z/VM V6?

Answer:

The z/VM V6 base product is priced at a one time charge of $22,500* per processor for the first three processors with a decreasing price for additional processor as outlined in the Engine-based Value Unit table above. Optional features and support charges are priced separately.

*Price quoted in US currency and is subject to change

Question:
What is the cost of migrating from z/VM V4 or V5?

Answer:
There will be no cost to migrate from z/VM V4 or V5 to z/VM V6 if the customer has a current Subscription and Support (S&S) license for V4 or V5 and is not increasing the number of processors licensed. Customers without current S&S licenses will pay $2,250* per Value Unit for the number of Value Units required per processor for the base. Optional features and S&S are priced separately. Customers can increase the numbers of processors for the same charges or lower if they qualify for the higher tier price based on the number of processors in their enterprise.

*Price quoted in US currency and is subject to change

Question:
Do I get any credit for the MLC I have paid on prior VM or z/VM products?

Answer:
No. z/VM V5 is a new product, and charged as such.

Question:
Will IBM continue with model group pricing for other IBM z/VM related products when running on standard processors or will they be offered under IPLA?

Answer:
IBM currently offers certain software products that enhance the Linux environment under the International Program License Agreement (IPLA) with one-time charge (OTC) pricing. In addition to z/VM V6, the products currently offered as priced, optional features of z/VM V6 under the IPLA are:

- Directory Maintenance Facility (DirMaint)
- Performance Toolkit for VM
- RSCS Networking
- RACF Security Server

Additional systems management products available from IBM and offered under the IPLA using the same pricing model as z/VM for operating on IFL processors are:

- IBM Tivoli zSecure manager for z/VM RACF (5655-T13)
- IBM Tivoli OMEGAMON XE on z/VM and Linux (5698-A36)
- IBM Tape Manager for z/ VM (5697-J08)
- IBM Backup and Restore Manager for z/VM (5697-J06)
- IBM Operations Manager for z/VM (5697-J10)
- IBM Archive Manager for z/VM (5697-J05)

Tivoli provides a host of systems management products for managing Linux on System z. For specific products and releases, refer to the Tivoli platform support matrix at:
ibm.com/software/sysmgmt/products/support/Tivoli_Supported_Platforms.html

Question:

Can I transfer a z/VM V6 license?

Answer:

Yes, however with Software Announcement 205-274 (US), dated November 1, 2005 and effective with the availability of z/VM V5.2, the terms and conditions regarding program transfer have been revised. IBM introduced the Limited Transfer term which stated:

"You may only transfer z/VM V5.2 to another party, in connection with Your transfer of the machine on which You are entitled to operate z/VM V5.2 (referred to as a "Limited Transfer"), provided that any such Limited Transfer of z/VM V5.2 requires You to transfer Your rights and obligations under the Agreement to the transferee and therefore terminates Your authorization to continue to use z/VM V5.2. When the machine and z/VM V5.2 are transferred, You must either provide a printed copy of the Agreement or, if electronic licensing is used for z/VM V5.2 , take the necessary actions that will require electronic acceptance of the Agreement by the transferee prior to the transferee's first use of z/VM V5.2."

These terms and conditions are also applicable to z/VM V5.3, V5.4, and V6.

Question:

Is a license required in order to use the Internet print features of the RSCS product?

Answer:

No. use of RSCS support for LPR, LPD, TN3270E and UFT protocols does not require a license. However, a license is required in order to use any other functions of the RSCS product. To receive the full function of RSCS, it is offered as an optional, priced IPLA feature.

Question:

When ordering z/VM, do I get a money-back guarantee?

Answer:

Yes. Any new licenses generated for z/VM will have a 30-day money-back guarantee. This is for programs licensed under the IPLA and the IBM International License Agreement for Non-Warranted Programs. For the latest information please refer to the following agreements:

- IBM International Program License Agreement (z125-3301) — applies to warranted software
- IBM International License Agreement for Non-Warranted Programs (z125-5589) — applies to non-warranted ("as-is") software
- IBM International License Agreement for Evaluation of Programs (z125-5543) — applies to evaluation (try and buy) software
- IBM International License Agreement for Early Release of Programs (z125-5544) — applies to early release (beta) software

The latest versions of these agreements can be found at the IPLA License Agreements and License Information (LI) Documents Repository Web site at: **ibm.com**/software/sla.

Question:

Can customers finance (or obtain financing for) their purchase of a z/VM software license?

Answer:

Yes, IBM Global Financing offers competitive financing to credit-qualified customers to assist them in acquiring IT solutions. Offerings include financing for IT acquisition, including hardware, software, and services, from both IBM and other manufacturers or vendors. Offerings (for all customer segments: small, medium, and large enterprise), rates, terms, and availability can vary by country. Contact your local IBM Global Financing organization or visit http://www.ibm.com/financing

IBM Global Financing offerings are provided through IBM Credit LLC in the United States, and other IBM subsidiaries and divisions worldwide to qualified commercial and government customers. Rates are based on a customer's credit rating, financing terms, offering type, equipment type, and options, and may vary by country. Other restrictions may apply. Rates and offerings are subject to change, extension, or withdrawal without notice.

Question:

Is the education allowance available for z/VM V6?

Answer:

Yes. The 15% Education Allowance (EA) applies toward both the IPLA purchase price and the Software Subscription and Support license for z/VM V6.

Question:

Does z/VM V6 have any software prerequisites?

Answer:

Yes. The prerequisite no-charge products EREP VM V3.5.0 (5654-260) and ICKDSF VM V1.17.0 (5684-042) are required. Both of these products are no-charge and are pre-installed on the base product System DDRs. If you are not already licensed for these products you will need to place a separate order for both products to establish a license.

Question:

Can I order z/VM on ShopzSeries?

Answer:

Yes. You can use ShopzSeries to order the operating system and software products for z/VM operating environments. Using ShopzSeries, customers can quickly generate orders for the base operating system and software products with the z/VM SDO electronically. The z/VM base operating system can be ordered using Internet delivery of ShopzSeries. In the case of fully-entitled upgrades, it offers a fully-automated process so no IBM intervention required. Additionally, ShopzSeries will help to determine if your order is technically correct (i.e. to determine any co-req or pre-req or incompatibility conditions are resolved for timely order placement and processing). ShopzSeries is available in all countries.

Question:

What additional information is available on generating and receiving software products for z/VM electronically?

Answer:

z/VM SDO Internet Delivery is available for generating and receiving software products.

- Customers can specify Internet as a delivery option for the program products contained in the z/VM SDO.
- Customers place orders via ShopzSeries specifying Internet as a delivery option.
- Customers can track the status of their orders in ShopzSeries
- Customers will receive an e-mail notification when their order is ready to download.
- Customers then download the order to their workstation.

z/VM customers can order preventive service by RSU and corrective service (by PTF number, APAR number or ESO) through ShopzSeries. z/VM Version 6 customers can also use the new installed inventory report generated by the VMFBTMAP command to tailor your ShopzSeries service order and avoid receiving service you already have installed. If Internet delivery is supported in your geography, ShopzSeries displays "Internet" as a delivery option.

Question:

Are V5.1, V5.2, V5.3, and V5.4 available for ordering?

Answer:

Only z/VM V5.4 is still available for ordering. V5.1 and V5.2 were withdrawn from marketing effective June 15, 2007. V5.3 was withdrawn from marketing effective September 8, 2008.

Question:

Is IBM planning to change the ordering process for z/VM V6?

Answer:

No. z/VM V6.1 can only be ordered using the System Delivery Offering (SDO) which includes a single deliverable containing z/VM V6.1 and a group of fully-serviced IBM Licensed Program Products. The z/VM SDO package contains:
- z/VM V6.1 System DDR (DASD Dump Restore) or a binary system image (DVD)
- z/VM SDO licensed products

Question:

What benefits does the z/VM SDO provide me?

Answer:

The key benefit of the z/VM SDO is the ability to update dynamically the SDO with new program products (versions and releases), to apply service when available, or to delete withdrawn products. This capability makes the SDO a more effective solution for the z/VM customer.

For additional information on the z/VM SDO, refer to the z/VM SDO Web site at: **ibm.com**/vm/sdo/.

Question:

Is DFSMS/VM provided as standard with z/VM V6?

Answer:

No. DFSMS/VM, is orderable as a no-charge feature with z/VM System Delivery Option (SDO).

Question:

Are there any plans to add additional products to the z/VM V6 SDO?

Answer:

No. However, IBM continues to evaluate additional products for inclusion into the z/VM SDO.

Service & Support

Question:

What type of support is planned to be provided for z/VM V6?

Answer:

Defect support provided under the terms of the IPLA license is provided only via e-mail, fax or postal service. Optional Subscription and Support (S&S) is available for z/VM V6.1. This optional support includes telephone assistance (voice support for defects during normal business hours) and access to updates, releases, and new versions of the program for as long as support is in effect. Please reference the IPLA Terms and Conditions for more information on the defect support provided with the basic license.

Question:

Is this also true for DirMaint, RSCS, RACF and Performance Toolkit for VM?

Answer:

Yes. If you would like enhanced support for these priced optional features, you must purchase the S&S for each feature.

Please note: Within the scope of an enterprise aggregation, the number of Value Units ordered for the S&S license must equal the number of Value Units ordered for the OTC license(s).

Question:

Is the S&S optional?

Answer:

Yes, however it is automatically added when you order z/VM V6 or any of the optional features of z/VM V6. If you do not desire S&S, you must decline this support when the order is placed.

Please note: S&S for z/VM not only provides defect support but also provides you with access to updates, releases and new versions of the program for as long as the support is in effect.

Question:

If I have purchased S&S on a previous version of z/VM, will I be charged for ordering z/VM V6.1?

Answer:

No. If you have a current S&S for z/VM V4 or z/VM V5, you are entitled to receive a no-charge upgrade to z/VM V6.1. This is also true for the priced, optional features of z/VM V6.1. If you have a current S&S for the any of the priced, optional features of z/VM V4 or z/VM V5 you are entitled to receive a no-charge upgrade to that particular z/VM V6.1 priced, optional feature for which you have purchased and S&S license. .

Question:

Is the z/VM S&S agreement separate from my Linux S&S agreement?

Answer:

Yes.

Question:

What type of support will be provided for z/VM V6 if I don't order the S&S feature?

Answer:

Without ordering the S&S feature, you are limited to central service provided by e-mail, fax, or postal service. You also have access to IBM databases containing information for known program defects, defect corrections, restrictions, and bypasses at no additional charge.

Question:

When I buy S&S, how will I be billed?

Answer:

You will be invoiced for one year (12 months) of support in advance. It will be automatically renewed at the end of the support period unless IBM is notified in writing to terminate the support charges.

Question:

What will I be charged if I do not buy S&S when I originally license z/VM V5 or V6, but decide to purchase S&S later?

Answer:

You will be charged a payment equal to the total of all S&S charges that you would have paid during the lapsed interval had you not declined Support at the time it was offered to you, or terminated and subsequently resumed support, plus one year of support charges.

Question:

Do I receive any credit if I terminate the S&S during the contract period?

Answer:

No.

Question:

Have there been any changes for IBM Business Partners to remarket S&S?

Answer:

Yes. Effective with the z/VM V6.1 availability on October 23, 2009, IBM Business Partners can now remarket the z/VM V5.4 and V6.1 S&S (5741-SNS) for up to 3 years if ordered at the same time as the associated IPLA license that is remarketed by that partner. Prior to this announcement, S&S could only be remarketed for 1 year and only by IBM Business Partners in EMEA. This is also applicable to the priced, optional features of z/VM V5.4 and V6.1.

Question:

Have there been any changes for IBM Business Partners to remarket S&S for any other IPLA products associated with z/VM?

Answer:

Yes, Effective October 23, 2009, IBM Business Partners in all geographies will now have the option to remarket the associated S&S for the products listed in the following table for up to 3 years if ordered at the same time as the associated IPLA license that is remarketed by that partner. Previous to this announcement, S&S for these products could only be remarketed for 1 year and only by IBM Business Partners in EMEA.

Program Name	Program Number	S&S Program Number
IBM Tivoli OMEGAMON XE on z/VM and Linux, V4.1	5698-A36	5608-S73
IBM Tivoli zSecure Manager for RACF z/VM	5655-T13	5655-T14
IBM Tape Manager for z/VM	5697-J08	5697-J11
IBM Archive Manager for z/VM	5697-J05	5697-J12
IBM Backup and Restore Manager for z/VM	5697-J06	5697-J13
IBM Operations Manager for z/VM	5697-J10	5697-J15

Question:

Where can I find more details on this announcement?

Answer:

Refer to the IBM Business Partner attachment of the IBM Software Announcement for z/VM V6.1 209-401 (US), dated October 20, 2009.

Question:

Whom can I contact for installation support?

Answer:

Installation and technical support is provided by your IBM System z Business Partner, local Field Technical Support Specialists (FTSS) and Advanced Technical Support (ATS) zSeries and S/390 Systems Support, Gaithersburg, Maryland. Support Line also provides installation support on a fee basis.

Question:

What if I need additional services for z/VM?

Answer:

IBM Global Technology Services (GTS) and IBM System z Business Partners can provide additional on-site services and support. GTS offers a comprehensive selection of services to address your individual service and support requirements. For more information call the IBM Information Center at 1-800-IBM-4YOU (1-800-426-4968) or reference the Internet at the following URL: **ibm.com/**services/.

Question:

What service offerings are available to assist me with the installation and implementation of Linux?

Answer:

Contact IBM Global Technology Services (GTS) for assistance with the planning, installation and implementation of Linux on your System z platforms. GTS provides a full range of services in support of Linux for System z, for example: "Linux Rapid Deployment Service" which will install z/VM, Linux for System z and either Apache or Samba; "Linux Solution for e-business" which can be customized to build quickly an e-business environment on your Linux for zSeries system; "IBM Migration Services – Consolidates file/print and Web Serving Workloads to Linux for System z9 and Linux for zSeries" to help consolidate workloads from distributed server farms by providing an assessment of which workloads can be consolidated onto Linux on System z, and then completing the consolidation for them; "IBM Installation Services for DB2 Universal Database™ Enterprise Extended Edition" to install DB2 Universal Database (UDB) on your Linux for System z and migrate data from existing database servers. For more information, call the IBM Information Center at 1-800-IBM-4YOU (1-800-426-4968) or reference the Internet at: ibm.com/services/

Education

Question

What public education courses does IBM provide for VM and Linux?

Answer:

IBM IT Education Services currently offers the following courses:

- The z/VM and Linux course catalog includes:
  - ZV020 - z/VM Introduction and Concepts (3 days)
  - ZV100 - z/VM and Linux Connectivity and Management (3.5 days)
  - ZV060 - Installing, Configuring and Servicing z/VM for Linux Guests (5 days)
  - MZ062 - Installing, Configuring and Servicing z/VM for Linux Guests (ILO -5 days)
  - ZV200 - z/VM RACF and DirMaint Implementation (4.5 days)

- The Linux course catalog includes:
  - ZL120 - Linux Basics - A zSeries Perspective (2 days)
  - ZL100 - Linux Implementation for zSeries (3 days)
  - ZL150- Advanced Solutions for Linux on zSeries (4 days)
  - ZL180 - Automated Deployment of Linux Images under z/VM (4.0 days)

Private offerings of these classes and customized education may also be requested from IBM. For more information on educational opportunities, contact your local IBM IT Education Services (ITES) or call IBM Training at 800-IBM-TEACH (426-8322) for catalogs, schedules, and enrollments or visit the IBM Training Web site at: **ibm.com**/training/.

Courses listed may not be available in all countries. Please check with your local office to learn about offerings for your country.

Question:

Do IBM technical conferences offer tracks for z/VM and Linux on System z?

Answer:

Yes. IBM Training offers public and private z/VM classes and annual Technical Conferences in Europe (in the first half of the year) and in the United States (in the second half of the year).

The following System z technical conferences featuring z/OS, z/VM, z/VSE and Linux on System z are being planned for 2010:

- IBM System z Technical Conference featuring z/OS, z/VM, z/VSE and Linux on System z – April/May 2010 timeframe in Europe
- IBM System z Expo featuring z/OS, z/VM, z/VSE and Linux on System z – October 4 - 8, 2010 in Boston, Massachusetts

For more information about IBM Technical Conferences, visit:
ibm.com/services/learning/conf/

Additional z/VM Educational resources can be found on the z/VM Web site at:
ibm.com/vm/education/

Related Information

Question:

Where can I go for more detailed information about z/VM V5.4 or V6.1 and Linux and System z technology?

Answer:

See the following links for additional information:

General z/VM information:

- z/VM V5.4 resources: **ibm.com**/vm/zvm540
- z/VM V6.1 resources: **ibm.com**/vm/zvm610

z/VM education:

ibm.com/vm/education

z/VM publications:

- Two basic z/VM publications are planned to be shipped in printed format automatically when you order the z/VM V6.1 base product including the License Information Document. Publications are also available as Adobe PDF or IBM BookManager® files and are provided in the IBM Information Center, on the IBM Online Library: z/VM Collection on DVD (supplied with z/VM V6 at no additional charge) and on the IBM z/VM Web site at:
  ibm.com/vm/library

  or from the Publication Center at:
  ibm.com/shop/publications/order

FAQs:

- System z and z/VM
  ibm.com/systems/z/resources/faq/index.html

Programs and Products for z/VM:

- IBM Licensed Programs available for z/VM:
  ibm.com/vm/related
- Independent Software Vendor products available for z/VM:
  ibm.com/vm/vendor/

Programs and products for Linux:

- Linux program requirements:
  ibm.com/systems/z/os/linux/dist.html

- Independent Software Developer Products for Linux on System z:
  ibm.com/os/linux/apps/all.html

Redbook/Redpapers:

- IBM Redbooks/Redpapers are developed and published by the IBM International Technical Support Organization (ITSO). They are intended to develop and deliver skills, technical know-how, and materials to technical professionals of IBM, Business Partners, and customers. For access to the latest Redbooks and Redpapers see the following URLs:
  ibm.com/redbooks/

Linux Distributions:

- Novell SUSE Linux:
  novell.com/linux/
- Red Hat:
  redhat.com

IBM Global Services Solutions:

- IGS Linux Solutions:
  ibm.com/services/

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