



IBM z/VM V6.1 - Enhancements for zEnterprise virtualization

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At a glance

New features in IBM® z/VM® V6.1 are designed to provide:

- Enhanced systems management by enabling lifecycle management of virtual servers through support of the IBM zEnterprise™ Unified Resource Manager
- Increased guest and system throughput with enhancements to z/VM memory management scalability
- Security enhancements that enable guests to further exploit the unique System z® security capabilities

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Overview

Today IBM announces enhancements to z/VM that are intended to strengthen System z virtualization technology and enable clients to take advantage of the new function, performance, reliability, availability, and serviceability improvements delivered by the IBM zEnterprise System. System z is taking a bold step that introduces ensembles, a whole new computing paradigm for optimizing multiplatform application environments. z/VM V6.1 support for the IBM zEnterprise 196 (z196) exploits select new processor capabilities, improves z/VM internal functionality, and supports new devices. Select new function is also provided for z/VM V5.4.

End-to-end management of the heterogeneous environment of a zEnterprise System is provided by the IBM zEnterprise Unified Resource Manager. The resources of a zEnterprise System ensemble are managed and virtualized as a single pool of resources. Virtual server lifecycle management enables directed and dynamic virtual server provisioning from a single, uniform point of control. Virtual server management functions permit virtual servers to be created and deleted, and allow real and virtual networking resources to be managed by the Unified Resource Manager. Enhancements to z/VM allow full participation for life cycle management from the Unified Resource Manager.

IBM System z has a rich heritage of virtualization innovation that enables exceptional qualities of service. Building on that heritage, z/VM V6 is optimized for consolidating workloads on the zEnterprise 196 and System z10® servers, helping clients build an ever more cost-effective dynamic infrastructure with exceptional

levels of business resilience and speed-to-market, while providing the flexibility to expand and contract system resources to match business needs.

These enhancements to z/VM are designed to provide:

- Full participation in the creation, deletion, and management of virtual server resources from the Unified Resource Manager
- Direct and secure access to the zEnterprise intranode management network (INMN) and intraensemble data network (IEDN)
- Support for the IBM zEnterprise 196
- Improved security with support for secure-key encryption capabilities of the CP Assist for Cryptographic Functions (CPACF), and support for the Federal Information Protection Standard (FIPS) 140-2
- Improved resiliency through z/VM Extended Remote Copy (XRC) time stamping which allows z/VM to participate in long-distance environments that require synchronized I/O such as GDPS®
- Increased guest and system throughput with improvements to z/VM memory management scalability

The advanced virtualization technologies available with z/VM, combined with the highly attractive economics, security, and reliability of System z servers, help clients extend the business value of the mainframe by integrating applications and data while providing exceptional levels of scalability, availability, security, and operational ease. Scalability support added in z/VM reduces system overhead and increases systems and guest throughput. Clients can now exploit enhanced security for transaction processing with protected key cryptography. The IBM zEnterprise System allows the definition of z/VM V6.1 guests as virtual servers within a tightly integrated and centrally managed enterprise computing environment. The Unified Resource Manager provides end-to-end management of a heterogeneous environment that includes z/VM.

Many IBM System z clients have found that the combination of Linux® on System z and z/VM offers server consolidation savings, and also enables the flexible deployment of business-critical enterprise solutions on System z servers configured with Integrated Facility for Linux (IFL) specialty engines. z/VM is designed to provide the capability for clients to run more virtual Linux servers than any other platform in a single mainframe footprint. In that same environment, z/VM can continue to host non-Linux workloads such as z/OS®, z/VSE™, and z/TPF. For the most current information on z/VM, refer to the z/VM Web site at

<http://www.ibm.com/vm>

Key prerequisites

Refer to the [Hardware requirements](#) and [Software requirements](#) sections for details.

Planned availability date

- September 2010
 - Support for the IBM zEnterprise 196
 - Scalability enhancements
 - FIPS SSL support
- November 2010
 - Support for the IBM zEnterprise Unified Resource Manager
 - Support for the zEnterprise 196 INMN and IEDN
- December 2010
 - XRC time stamping support

Description

Technology exploitation

z/VM provides support for the newest IBM System z hardware technologies.

IBM zEnterprise 196

New z/VM support enables guests of z/VM V5.4 and z/VM V6.1 to exploit selected new features provided by the zEnterprise family of processors, which is described by Hardware Announcement [110-170](#), dated July 22, 2010. In addition, z/VM will recognize and report processing capability reduction due to customer-initiated power-saving mode or an autonomic response to environmental conditions, and reflect the change and its cause in monitor and accounting data streams. Supporting guests will also be notified of capability changes. The output of the QUERY CAPABILITY command has also been enhanced to include information about such machine capacity changes.

This support is delivered by the PTF for APAR VM64798, which has a planned availability date of September 10, 2010.

In addition, PTFs for the following APARs, which also have a planned availability of September 10, 2010, are required for z/VM V5.4 and z/VM V6.1 to support the z196:

- VM64672 for VMHCD support
- VM64747 for VMHCM support
- VM64807 for EREP support
- VM64820 for Performance Toolkit support
- VM64799 for IOCP support
- PK97799 for HLASM

OSX and OSM channel path identifiers

Support for two new System z channel path identifiers (CHPIDs) has been added to enable access to the zEnterprise networks that interconnect the zEnterprise, zBX, and the Hardware Management Console (HMC). These new CHPIDs are based on the existing OSA-Express3 OSD channel path identifier:

- OSA-Express for zBX provides connectivity and access control to the intraensemble data network (IEDN) from the z196 to Unified Resource Manager functions using an OSA-Express3 10 Gigabit Ethernet feature configured as CHPID type OSX for application workloads.
- OSA-Express for Unified Resource Manager provides connectivity to intranode management network (INMN) from z196 to the Unified Resource Manager functions using an OSA-Express3 1000BASE-T Ethernet feature configured as CHPID type OSM for management related functions.

Support for these two new channel path identifiers in z/VM V5.4 prevents the subchannels from being used by ensuring that the associated devices cannot be varied online. However, in z/VM V6.1 these subchannels can be brought online and exploited when the z/VM image is managed by the Unified Resource Manager.

Dynamic I/O support via CP commands or HCD (when z/VM is the controlling LPAR) and CP QUERY capabilities are provided for these two new channel path identifiers with the PTF for APAR VM64794 for z/VM V5.4 and the PTF for APAR VM64822 for z/VM V6.1, both of which have a planned availability date of November 19, 2010.

XRC time stamping support

z/VM now exploits the Server Time Protocol (STP) facility to generate time stamps for guest and system DASD write I/O operations, allowing these I/O operations to

be synchronized with those of other systems. This support allows data used by z/VM and its guests to be replicated asynchronously over long distances by IBM System Storage® z/OS Global Mirror (formerly known as Extended Remote Copy, or XRC). For example, this allows z/VM to participate in a Geographically Dispersed Parallel Sysplex™ Metro/z/OS Global Mirror (GDPS/MzGM) environment.

This satisfies the statement of direction in the XRC Services Announcement [610-018](#), dated March 23, 2010.

XRC time stamping support is provided with the PTFs for APAR VM64814 and VM64816 for z/VM V5.4 and z/VM V6.1, all of which have a planned availability date of December 31, 2010.

HyperSwap™ improvements

The z/VM HyperSwap capability has been updated to provide higher Reliability, Availability, and Serviceability (RAS). The majority of this support is internal to the z/VM hypervisor. However, a noteworthy external change is the addition of INCLUDE and EXCLUDE options to the HYPERSWAP command to provide finer control over the z/VM missing-interrupt automatic quiesce trigger. For example, devices can be excluded from the trigger or the trigger for a device can be made a multiple of the current z/VM MITIME setting.

This support can improve the robustness of environments that have deployed z/VM with GDPS, such as with GDPS/PPRC or GDPS/MzGM. The support will be provided with the PTFs for APAR VM64815 for z/VM V5.4 and V6.1, which have a planned availability date of December 31, 2010.

Systems management

Support for the IBM zEnterprise Unified Resource Manager

The IBM zEnterprise System (zEnterprise) is a workload-optimized multiplatform computing environment that spans and tightly integrates mainframe and distributed technologies. The zEnterprise system consists of an IBM zEnterprise 196, the IBM zEnterprise BladeCenter® Extension (zBX) Model 002, and the IBM zEnterprise Unified Resource Manager. The Unified Resource Manager, running in a Hardware Management Console (HMC), controls virtual server lifecycle management, which enables attached blades to help deliver end-to-end virtualization and supports directed and dynamic virtual server provisioning across all hypervisors (PR/SM™, z/VM, and Power® VM) from a single, uniform point of control. Augmenting the existing z/VM virtual server management functions available on System z9® and z10™, this support now also permits virtual servers to be created and deleted, and allows real and virtual networking resources to be managed by the Unified Resource Manager.

Within a zEnterprise, a single z196 and an optional attached zBX are called a node. An ensemble is a collection of one or more zEnterprise nodes that are managed as a single logical virtualized system by the Unified Resource Manager. An ensemble can consist of a single z196 with no zBX attached, using an OSA loopback cable, or 2 to 8 CPCs where at least one of the z196s has a zBX attached. The intranode management network (INMN) is a private 1000BASE-T Ethernet network that allows the Unified Resource Manager to manage resources within a zEnterprise node. The intraensemble data network (IEDN) is a private 10 Gigabit Ethernet network for application data communications within an ensemble. Data communications for workloads can flow over the IEDN within and between nodes of an ensemble. All of the physical and logical resources of the IEDN are configured, provisioned, and managed by the Unified Resource Manager.

The z/VM System Management Application Programming Interface (SMAPI) and the z/VM Directory Maintenance Facility (DirMaint™) have been enhanced to enable the IBM zEnterprise Unified Resource Manager to manage the z/VM hypervisor and the virtual servers it supports. The SMAPI enhancements provide new and updated APIs and function in the following functional areas:

- System configuration file management
- User Directory management
- Disk management
- Network management
- Discontiguous saved segment (DCSS) management
- Guest facilities management
- Directory parsing
- API function level interrogation

z/VM SMAPI, Performance Toolkit, and DirMaint support for the Unified Resource Manager will be provided in z/VM V6.1 with the PTF for APAR VM64822, which has a planned availability date of November 19, 2010.

Network virtualization

Support for the zEnterprise INMN and IEDN networks and Unified Resource Manager

z/VM enables access to the zEnterprise INMN and the IEDN through both its real and virtual networking capabilities. As a result, the deployment and management of z/VM network topology is integrated into the zEnterprise environment and can be managed by the Unified Resource Manager. Once connected to a System z196 through the INMN, the resources of the zBX are viewed as a logical extension of the System z196. These resources are then controlled and managed through the Hardware Management Console (HMC) and Support Element (SE) of the System z196. The INMN requires OSA-Express3 1000BaseT while the IEDN requires a port on two separate OSA-Express3 10 GbE features.

z/VM Networking and Performance Toolkit support for the zEnterprise INMN and IEDN networks is provided by the PTF for APAR VM64822 for z/VM V6.1, which has a planned availability date of November 19, 2010.

Scalability

Disabling the guest page reordering process

The SET REORDER command has been added to allow the guest page reordering process to be disabled for the entire z/VM system or for specific virtual machines, helping improve performance for guests with large memory footprints. The SET REORDER and corresponding QUERY REORDER commands are provided with the PTFs for APAR VM64774 for z/VM V5.4 and z/VM V6.1, which have a planned availability date of September 30, 2010.

Improved page release serialization

The page release serialization process has been improved to help reduce system overhead and increase guest throughput. The improvements are provided with the PTFs for APAR VM64715 for z/VM V5.4 and z/VM V6.1, which have a planned availability date of September 30, 2010.

Enhanced contiguous frame coalescing

Contiguous frame coalescing algorithms have been enhanced to increase the probability of z/VM finding multiple adjacent frames of real memory when necessary, helping to increase system throughput. This improvement is provided with the PTFs for APAR VM64795 for z/VM V5.4 and z/VM V6.1, which have a planned availability date of September 30, 2010.

Protected key CPACF

The existing CP Assist for Cryptographic Functions (CPACF) hardware feature supports high-performance bulk encryption using clear cryptographic keys, as announced in the System z10 Hardware Announcement [109-678](#), dated October 20, 2009. On the zEnterprise and System z10, CPACF also supports encrypted keys, which are enabled for guest use. z/VM supports machine-generated cryptographic wrapping keys and generates unique wrapping-key masks for each guest virtual machine. This ensures that the encrypted keys can be used only by the guest for which they are intended.

New hardware function is also implemented for the Crypto Express3 Coprocessor, providing a method for encrypting user keys for use with the new CPACF functions as announced with Hardware Announcement [109-678](#), dated October 20, 2009. z/VM support enables guest use of protected key CPACF, improving guest security without the need for a cryptographic card. User keys can also be imported from master keys using new functions of the Crypto Express3 card.

The available PTFs for APAR VM64793 provide protected key support for z/VM V5.4 and z/VM V6.1.

Security

z/VM SSL server enhancements

The z/VM V6.1 SSL server is CMS-based that can enable encryption services to be deployed more quickly and can help make installation, service, and release-to-release migration simpler. Functionality provided by the CMS-based SSL server includes:

- 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 technology.
 - 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 exportation with or without a private key. The GSKKYMAN application also manages certificates for the z/VM LDAP server.

Additional enhancements have been made to the z/VM SSL server that improve the ability to provide concurrent secure connectivity by increasing its overall capacity while decreasing the amount of system resources it requires. These enhancements provide:

- A new threading model to improve the handling of multiple worker threads.
- Support for multiple SSL servers, allowing a pool of servers to work in conjunction with a single TCP/IP stack.

The SSL server enhancements are available with the PTFs for APARs PK75662, PK97437, PK97438, PM06244, VM64313, and VM64740 for z/VM V5.4 and z/VM V6.1.

The z/VM V6.1 SSL server has been upgraded to use z/OS V1.11 System SSL technology. The SSL server has been further enhanced with support for the Federal Information Protection Standard (FIPS) 140-2. FIPS is a government-required procedure for authenticating the security of a certificate database that requires

signing of the database and using separate cipher suites for traffic encryption and decryption.

Support for the upgraded SSL server and FIPS is provided with the PTFs for APARs PM06244, PM08418, VM64751, and PM10616 for z/VM V6.1, all of which have a planned availability date of September 30, 2010.

Packaging

Closer integration with IBM Systems Director

The z/VM Manageability Access Point (zMAP) Agent, including the Platform Agent, previously shipped with IBM Systems Director, is now available on z/VM V6.1. This helps simplify installation of the zMAP Agent and eliminates the need to obtain the files from the IBM Systems Director Web site.

- The PTF for APAR VM64704 provides the zMAP agent for the IBM Systems Director Server V6.1.1 for Linux on System z.
- The PTF for APAR VM64838 provides the zMAP agent for the IBM Systems Director Server V6.2 for Linux on System z.

The APARs must be used with the level of the IBM Systems Director Server for which the APAR is intended. Also, VM64838 should be applied only if your installation intends to use IBM Systems Director V6.2 and migrate off V6.1.1.

Miscellaneous

Withdrawal from marketing and service for Integrated Removable Media Manager (IRMM)

Integrated Removable Media Manager for the Enterprise on System z (IRMM) Version 1.1 (5655-S57) has been removed from marketing effective March 1, 2010. Refer to Withdrawal Announcement [909-291](#), dated December 01, 2009.

IRMM provides a command line interface (CLI) for z/OS that is shipped with the IBM Ported Tools for z/OS: Supplementary Toolkit. The CLI has been withdrawn from marketing effective March 1, 2010. IRMM (5655-S57) and the CLI shipped with the IBM Ported Tools for z/OS will be withdrawn from service effective October 1, 2011.

Accessibility by people with disabilities

The following features support use by people with disabilities:

- Operation by keyboard alone
- Optional font enlargement and high-contrast display settings
- Screen readers and screen magnifiers tested for use by people with visual impairment

Engine-based Value Unit pricing

Engine-based Value Unit pricing for z/VM V6 is designed to provide a decreasing price as hardware capacities and workload grow, which may help improve price/performance. When you grow your capacity, additional capacity is not priced starting at the base with a flat price per unit. Instead, it is priced starting at the capacity (number of processors) on which z/VM V6 has already been installed, which may result in a lower unit price.

Note: Value Units of one product cannot be exchanged, interchanged, or aggregated with Value Units of another product.

A no-charge Subscription and Support registration record will be established for each designated machine where z/VM V6.1 and the priced, optional features of DirMaint, RSCS, RACF® Security Server, and the Performance Toolkit for VM are running. These no-charge Subscription and Support registration records will be linked to the

billable Subscription and Support and all billable Subscription and Support within the scope of the engine-based Value Units aggregation will be linked together.

Subscription and Support (S&S) is an annual charge and should be kept at an annual term.

Product positioning

The Information Technology industry has recognized the business value of exploiting virtualization technologies. IBM mainframe products have pioneered high levels of server virtualization technology for many years. z/VM V6.1 is the latest offering of the industry-acclaimed server-virtualization support available with IBM System z. Building on a 40-year history of innovation, z/VM is becoming an even more popular component of a System z computing solution.

The success of Linux on System z can be attributed in part to the business value that Linux-based solutions derived from the IBM mainframe virtualization technology provided by z/VM running on IBM System z servers. z/VM technology offers clients the ability to host a large number of Linux servers on a single mainframe while also providing a highly flexible, adaptable, and efficient operational environment that is well-suited for a dynamic infrastructure.

z/VM V6.1 operates only on IBM System z10 EC, z10 BC, and zEnterprise servers. Like z/VM V5, z/VM V6.1 requires z/Architecture® (64 bit) for execution and can host 31-bit (ESA/390) guest operating systems and z/Architecture (64-bit) guest operating systems.

z/VM V6.1 offers new levels of price/performance, functional capabilities, and hardware exploitation that may increase the attractiveness of deploying Linux solutions on the mainframe. Clients can add capacity to IBM mainframe servers for hosting Linux-on-z/VM workloads by configuring their servers with Integrated Facility for Linux (IFL) processors.

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.

z/VM V6.1 is intended to address the following situations:

- **Running more Linux server images on a single System z server:** Considerably more images than are currently supported by the LPAR mode of operation (up to 60 on z10 EC and z10 BC) may be supported with z/VM guest support. These Linux on System z server images can be deployed on standard processors (CPs) or IFL processors. Running multiple Linux images on an IFL-configured z/VM system may not increase the IBM software charges of your existing System z environment. Clients running z/OS, z/VM, TPF, z/TPF, z/VSE, or Linux on System z can add z/VM V6.1 on IFL processors to their environments without increasing IBM software costs on the standard processors (CPs).
- **Moving selected Linux and UNIX® workloads to a single System z server:** Moving workloads while maintaining distinct server images and current LAN topology can help reduce systems-management complexity. By managing large server farms deployed on virtual servers instead of using multiple hardware servers, the number of real hardware servers and associated physical LANs may be reduced, which may lead to cost savings. Deploying Linux workloads on z/VM V6.1 may be particularly attractive if they interact with applications or data located on the same System z server.
- **Exploiting the zEnterprise Unified Resource Manager:** The Unified Resource Manager manages System z ensembles. Ensembles are collections of one or more zEnterprise nodes in which each node is comprised of a z196 and its optionally attached IBM zEnterprise BladeCenter Extension (zBX) Model 002. An ensemble can consist of a single z196 with no zBX attached, using an OSA loopback cable, or 2 to 8 CPCs where at least one of the z196s has a zBX attached. The resources of a zEnterprise ensemble are managed and virtualized

as a single pool of resources, integrating system and workload management across the multisystem, multitier, multiarchitecture environment.

- **Enhancing virtual networking:** z/VM virtual switch support provides external connectivity for guest LANs through an OSA-Express adapter without requiring a VM or Linux router virtual machine, which may increase the efficiency and reliability of network communication.
- **Consolidating operating systems on the System z platform:** z/VM V6.1 offers extensive scalability support for CPUs, memory, I/O, and networking, making it easier to consolidate workloads on a single z/VM image. This support is provided for both ESA/390 and z/Architecture guest operating systems such as Linux on System z, TPF, z/TPF, z/OS, and z/VSE.
- **Migrating to newer releases of z/OS:** This may provide added flexibility for migration and testing, as well as for production.
- **Enhancing guest Parallel Sysplex® support:** The exploitation of z/Architecture may enable addressability to larger amounts of real and virtual memory, allowing the development and testing of 64-bit Parallel Sysplex applications in a guest environment.

Statement of direction

- **z/VM Single System Image with Live Guest Relocation**

IBM intends to provide capabilities that permit multiple z/VM systems to collaborate in a manner that presents a single system image to virtual servers. An integrated set of functions will enable multiple z/VM systems to share system resources across the single system image cluster. Among those functions will be Live Guest Relocation, the ability to move a running Linux virtual machine from one member of the cluster to another. This virtual server mobility technology is intended to enhance workload balancing across a set of z/VM systems and to help clients avoid planned outages for virtual servers when performing z/VM or hardware maintenance.

- **EAL4 Certification for z/VM V6.1**

IBM intends to evaluate z/VM V6.1 with the RACF Security Server optional feature, including labeled security, for conformance to the Operating System Protection Profile (OSPP) of the Common Criteria standard for IT security, ISO/IEC 15408, at Evaluation Assurance Level 4 (EAL4+).

- **Elimination of the RESOURCE Function from VMFINS**

IBM intends to withdraw support for the RESOURCE function of the VMSES/E VMFINS command in a future z/VM release.

- **Withdrawal of z/VM Domain Name System (DNS) Server Support**

IBM intends to withdraw support in a future z/VM release for its native Domain Name Server (NAMESRV). IBM does not plan to provide a replacement DNS, but will continue to support the use of Domain Name 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.

Reference information

For information about the IBM zEnterprise 196, refer to:

- Hardware Announcement [110-170](#), dated July 22, 2010

For information about the IBM zEnterprise BladeCenter Extension, refer to:

- Hardware Announcement [110-177](#), dated July 22, 2010

For information about the System z10 Enterprise Class, refer to:

- Hardware Announcement [109-678](#), dated October 20, 2009
- Hardware Announcement [109-417](#), dated July 21, 2009
- Hardware Announcement [109-230](#), dated April 28, 2009
- Hardware Announcement [108-794](#), dated October 21, 2008
- Hardware Announcement [108-296](#), dated May 06, 2008
- Hardware Announcement [108-154](#), dated February 26, 2008

For information about the System z10 Business Class, refer to:

- Hardware Announcement [109-678](#), dated October 20, 2009
- Hardware Announcement [109-417](#), dated July 21, 2009
- Hardware Announcement [109-230](#), dated April 28, 2009
- Hardware Announcement [108-754](#), dated October 21, 2008

For z/VM V6.1 capabilities, refer to:

- Software Announcement [209-401](#), dated October 20, 2009

For z/VM V5.4 capabilities, refer to:

- Software Announcement [208-249](#), dated August 05, 2008

For information about FICON® Express8, refer to:

- Hardware Announcement [109-417](#), dated July 21, 2009

Program number

Program name	Program number
z/VM version 6 (V6.1)	5741-A07
z/VM version 6 SDO (V6.1)	5741-A08
z/VM Subscription & Support (V1.1)	5741-SNS

Note: z/VM V6.1 and the optional features must be ordered using the z/VM V6.1 SDO packaged offering, program number 5741-A08. Program number 5741-A07 is used for pricing, billing, and central service.

Product identification number

Program PID number	Subscription and Support PID number
5741-A07	5741-SNS

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).

<https://www.ibm.com/partnerworld/mem/sla.jsp?num=210-234>

Education support

IBM Training offers classroom training, e-learning, conferences, certification, course roadmaps, and more. These publicly held or privately available courses are focused on z/VM and Linux on System z. IBM Training also provides on-site training with customized content and course materials for small or large groups.

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)
- ZV062 - **Installing, Configuring and Servicing z/VM for Linux Guests** (5 days)
- MZ062 - **Installing, Configuring and Servicing z/VM for Linux Guests** (Instructor-led Online (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)
- ZL200 - **Performance Tuning for Linux on z/VM** (4.0 days)

Private offerings of these classes and customized education may also be requested from IBM.

For information on these courses or additional z/VM education, contact your local IBM IT Education Services (ITES) or call IBM Training at 800-IBM-TEACH (426-8322) for catalogs, schedules, and enrollments.

You may also visit the IBM Training Web site at

<http://www.ibm.com/training/>

For z/VM and Linux education, select "Training Finder - US," then under "Technology area," select "Mainframe servers," then under "Mainframe servers," select "z/VM and Linux."

For Linux education, select "Training Finder - US," then under "Technology area," select "Linux," then "Linux on System z."

IBM IT Training offers various savings programs on IBM education. For more information on the savings programs available in your country, visit the IBM Training Web site at

<http://www.ibm.com/training/>

Select "Browse for training by country," select a country, then select "IBM Education Pack."

Technical Conferences

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 conference featuring z/OS, z/VM, z/VSE, and Linux on System z is planned for 2010:

- IBM System z Technical University (formerly z Expo) featuring z/OS, z/VM, z/VSE, and Linux on System z - October 4 - 8, 2010, in Boston, MA

IBM System z Technical University featuring z/OS, z/VM, z/VSE, and Linux on System z is planned for Spring 2011 in Europe.

For more information about IBM Technical Conferences, visit

<http://www.ibm.com/services/learning/conf/>

Information on live virtual classes available for z/VM, Linux, and z/VSE can be found at

<http://www.ibm.com/vm/education/lvc>

Additional z/VM educational resources can be found on the z/VM Web site at

<http://www.ibm.com/vm/education/>

Offering Information

Product information is available via the Offering Information Web site

<http://www.ibm.com/common/ssi>

Publications

Publications within the z/VM V6.1 library are available as Adobe® PDF files and IBM BookManager® files. z/VM V6.1 documentation is also available in the z/VM V6.1 Information Center.

Some publications are also available in printed format. Basic publications are automatically shipped in printed format, at no additional charge, when you order the z/VM V6.1 base product. The other publications are supplied only in PDF or BookManager format with z/VM V6.1.

All z/VM publications can also be obtained separately from IBM (printed publications require payment of a fee) using the specific publication numbers through the IBM Publications Center at

<http://www.ibm.com/shop/publications/order/>

The Publications Center is a worldwide central repository for IBM product publications and marketing material with a catalog of 70,000 items. Extensive search facilities are provided. Payment options for orders are via credit card (in the U.S.) or customer number for 20 countries. A large number of publications are available online in various file formats, and they can all be downloaded by all countries, free of charge.

News of many publications may be subscribed with "My notifications" at

<https://www.ibm.com/systems/support/myview/subscription/css.wss/>

Note: This IBM Web site requires you to register for an ID and password.

Adobe PDF files

Publications that are available in PDF format are provided on the **IBM Online Library: z/VM Collection on DVD** except for the following:

- **z/VM: Guide for Automated Installation and Service**
- **z/VM publications updated with this z/VM V6.1 enhancement**

One copy of the DVD is supplied with z/VM V6.1, at no additional charge. Additional copies of the DVD are available (for a fee) from the Publications Center Web site at

<http://www.ibm.com/shop/publications/order/>

Publications are also available from the IBM z/VM Internet Library at

<http://www.ibm.com/vm/library/>

You can view a PDF file using the Adobe Reader that is available free from the Adobe Web site at

<http://www.adobe.com>

You can also print the entire publication or just the section in which you are interested.

IBM BookManager files

Publications that are available in BookManager format are provided on the **IBM Online Library: z/VM Collection on DVD** except for the following:

- **z/VM publications updated with this z/VM V6.1 enhancement**

One copy of the DVD is supplied with z/VM V6.1, at no additional charge. Additional copies of the DVD are available (for a fee) from the Publications Center Web site at

<http://www.ibm.com/shop/publications/order/>

Publications are also available from the IBM z/VM Internet Library at

<http://www.ibm.com/vm/library/>

The BookManager files can be read by either BookManager READ for VM (a separately orderable product) or IBM Softcopy Reader (supplied on the DVD).

Note: 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 with z/VM V6. The IBM Online Library: z/VM Collection on CD-ROM is not available for a fee and cannot be ordered.

z/VM V6.1 Information Center

IBM also publishes the z/VM V6.1 documentation (information for the z/VM base and optional features) in an information center using the IBM Eclipse Help System framework.

The z/VM V6.1 Information Center is planned to be available:

- On an IBM Web site at
<http://publib.boulder.ibm.com/infocenter/zvm/v6r1/index.jsp>
z/VM publications updated with this z/VM V6.1 enhancement are included in the z/VM V6.1 Information Center on the Web.
- On a DVD, which allows you to install the z/VM Information Center on a workstation or intranet. The DVD is orderable (for a fee) using form number SK5T-7098 from the Publications Center Web site at
<http://www.ibm.com/shop/publications/order/>
z/VM publications updated with this z/VM V6.1 enhancement are not included on the z/VM V6.1 Information Center DVD.

Printed books

All z/VM V6.1 basic publications are available as printed books and are orderable from the Publications Center.

One copy of the basic z/VM V6.1 printed publications, and one copy of the z/VM V6.1 online publications on DVD, are supplied automatically with the basic machine-readable material.

z/VM V6.1 publications

Publications changed for this announcement of enhancements for z/VM V6.1 are listed below. The **z/VM: General Information** manual and **z/VM: License Information** document are planned to be available on July 22, 2010. All other changed publications are planned to be available from the z/VM Information Center, IBM Publications Center, and z/VM Internet Library on November 19, 2010.

Basic z/VM V6.1 - New Editions

Publications updated for this z/VM V6.1 enhancement:

Title	Order number	Format		
		PDF	BKM	Print
z/VM: License Information	GC24-6200	X		X

BKM = BookManager

Basic z/VM V6.1 - Unchanged Editions

Publications not updated for this z/VM V6.1 enhancement:

Title	Order number	Format		
		PDF	BKM	Print
z/VM: Guide for Automated Installation and Service	GC24-6197	X		X

BKM = BookManager

Note: An "X" in one of the columns indicates available formats.

z/VM V6.1 Base - New Editions

Publications updated for this z/VM V6.1 enhancement:

Title	Order number	Format	
		PDF	BKM
z/VM: CMS Commands and Utilities Reference	SC24-6166	X	X
z/VM: Connectivity	SC24-6174	X	X
z/VM: CP Commands and Utilities Reference	SC24-6175	X	X
z/VM: CP Messages and Codes	GC24-6177	X	X
z/VM: CP Planning and Administration	SC24-6178	X	X
z/VM: CP Programming Services	SC24-6179	X	X
z/VM: General Information	GC24-6193	X	X
z/VM: Glossary	GC24-6195	X	X
z/VM: I/O Configuration	SC24-6198	X	X
z/VM: Migration Guide	GC24-6201	X	X
z/VM: Performance	SC24-6208	X	X
z/VM: Program Management Binder for CMS	SC24-6211	X	X
z/VM: Running Guest Operating Systems	SC24-6228	X	X
z/VM: System Operation	SC24-6233	X	X
z/VM: Systems Management Application Programming	SC24-6234	X	X
z/VM: TCP/IP Diagnosis Guide	GC24-6235	X	X
z/VM: TCP/IP Messages and Codes	GC24-6237	X	X
z/VM: TCP/IP Planning and Customization	SC24-6238	X	X
z/VM: TCP/IP Programmer's Reference	SC24-6239	X	X
z/VM: TCP/IP User's Guide	SC24-6240	X	X

BKM = BookManager

Note: An "X" in one of the columns indicates available formats.

z/VM V6.1 Base - Unchanged Editions

Publications not updated for this z/VM V6.1 enhancement:

Title	Order number	Format	
		PDF	BKM
z/VM: CMS and REXX/VM Messages and Codes	GC24-6161	X	X
z/VM: CMS Application Development Guide	SC24-6162	X	X
z/VM: CMS Application Development Guide for Assembler	SC24-6163	X	X
z/VM: CMS Application Multitasking	SC24-6164	X	X
z/VM: CMS Callable Services Reference	SC24-6165	X	X
z/VM: CMS File Pool Planning, Administration, and Operation	SC24-6167	X	X
z/VM: CMS Macros and Functions Reference	SC24-6168	X	X
z/VM: CMS Pipelines Reference	SC24-6169	X	X
z/VM: CMS Pipelines User's Guide	SC24-6170	X	X
z/VM: CMS Planning and Administration	SC24-6171	X	X
z/VM: CMS Primer	SC24-6172	X	X
z/VM: CMS User's Guide	SC24-6173	X	X
z/VM: CP Exit Customization	SC24-6176	X	X
z/VM: CPI Communications User's Guide	SC24-6180	X	X
z/VM: Diagnosis Guide	GC24-6187	X	X
z/VM: Dump Viewing Facility	GC24-6191	X	X
z/VM: Enterprise Systems Architecture/Extended Configuration Principles of Operation	SC24-6192	X	X
z/VM: Getting Started with Linux on System z	SC24-6194	X	X
z/VM: Group Control System	SC24-6196	X	X
z/VM: Language Environment® User's	SC24-6199	X	X
z/VM: OpenExtensions Advanced Application Programming Tools	SC24-6202	X	X
z/VM: OpenExtensions Callable Services Reference	SC24-6203	X	X
z/VM: OpenExtensions Commands Reference	SC24-6204	X	X
z/VM: OpenExtensions POSIX Conformance Document	GC24-6205	X	X
z/VM: OpenExtensions User's Guide	SC24-6206	X	X
z/VM: Other Components Messages and Codes	GC24-6207	X	X
z/VM: Reusable Server Kernel Programmer's Guide and Reference	SC24-6220	X	X
z/VM: REXX/VM Reference	SC24-6221	X	X
z/VM: REXX/VM User's Guide	SC24-6222	X	X
z/VM: Saved Segments Planning and Administration	SC24-6229	X	X
z/VM: Secure Configuration Guide	GC24-6230	X	X
z/VM: Service Guide	GC24-6232	X	X
z/VM: TCP/IP LDAP Administration Guide	SC24-6236	X	X
z/VM: Virtual Machine Operation	SC24-6241	X	X
z/VM: VM Dump Tool	GC24-6242	X	X
z/VM: VMSES/E Introduction and Reference	GC24-6243	X	X
z/VM: XEDIT Commands and Macros Reference	SC24-6244	X	X
z/VM: XEDIT User's Guide	SC24-6245	X	X

BKM = BookManager

Note: An "X" in one of the columns indicates available formats.

Optional RACF Security Server Feature - Unchanged Editions

Publications not updated for this z/VM V6.1 enhancement:

Title	Order number	Format	
		PDF	BKM
z/VM: RACF Security Server Auditor's Guide	SC24-6212	X	X
z/VM: RACF Security Server Command Language Reference	SC24-6213	X	X
z/VM: RACF Security Server Diagnosis Guide	GC24-6214	X	X
z/VM: RACF Security Server General User's Guide	SC24-6215	X	X
z/VM: RACF Security Server Macros and Interfaces	SC24-6216	X	X
z/VM: RACF Security Server Messages and Codes	GC24-6217	X	X
z/VM: RACF Security Server Security Administrator's Guide	SC24-6218	X	X
z/VM: RACF Security Server System Programmer's Guide	SC24-6219	X	X
z/VM: Security Server RACROUTE Macro Reference	SC24-6231	X	X

BKM = BookManager

Note: An "X" in one of the columns indicates available formats.

Optional RSCS Feature - Unchanged Editions

Publications not updated for this z/VM V6.1 enhancement:

Title	Order number	Format	
		PDF	BKM
z/VM: RSCS Networking Diagnosis	GC24-6223	X	X
z/VM: RSCS Networking Exit Customization	SC24-6224	X	X
z/VM: RSCS Networking Messages and Codes	GC24-6225	X	X
z/VM: RSCS Networking Operation and Use	SC24-6226	X	X
z/VM: RSCS Networking Planning and Configuration	SC24-6227	X	X

BKM = BookManager

Note: An "X" in one of the columns indicates available formats.

Optional Directory Maintenance Facility Feature - New Editions

Publications updated for this z/VM V6.1 enhancement:

Title	Order number	Format	
		PDF	BKM
z/VM: Directory Maintenance Facility Commands Reference	SC24-6188	X	X
z/VM: Directory Maintenance Facility Tailoring and Administration Guide	SC24-6190	X	X

BKM = BookManager

Note: An "X" in one of the columns indicates available formats.

Optional Directory Maintenance Facility Feature - Unchanged Editions

Publications not updated for this z/VM V6.1 enhancement:

Title	Order number	Format	
		PDF	BKM
z/VM: Directory Maintenance Facility Messages	GC24-6189	X	X

BKM = BookManager

Note: An "X" in one of the columns indicates available formats.

Optional Performance Toolkit for VM Feature - New Editions

Publications updated for this z/VM V6.1 enhancement:

Title	Order number	Format	
		PDF	BKM
z/VM: Performance Toolkit Guide	SC24-6209	X	X
z/VM: Performance Toolkit Reference	SC24-6210	X	X

BKM = BookManager

Note: An "X" in one of the columns indicates available formats.

Optional DFSMS/VM™ Feature - Unchanged Editions

Publications not updated for this z/VM V6.1 enhancement:

Title	Order number	Format	
		PDF	BKM
z/VM: DFSMS/VM Customization	SC24-6181	X	X
z/VM: DFSMS/VM Diagnosis Guide	GC24-6182	X	X
z/VM: DFSMS/VM Messages and Codes	GC24-6183	X	X
z/VM: DFSMS/VM Planning Guide	SC24-6184	X	X
z/VM: DFSMS/VM Removable Media Services	SC24-6185	X	X
z/VM: DFSMS/VM Storage Administration	SC24-6186	X	X

BKM = BookManager

Note: An "X" in one of the columns indicates available formats.

Other Publications - New Editions

Publications updated or new with this z/VM V6.1 enhancement:

Title	Order number	Format		
		PDF	BKM	Print
z/OS MVS™ Program Management: Advanced Facilities	SA22-7644	X	X	
z/OS MVS Program Management: User's Guide and Reference	SA22-7643	X	X	
zEnterprise, System z10, System z9, and eServer™ zSeries Open Systems Adapter-Express Customer's Guide and Reference	SA22-7935	X	X	
CMS/TSO Pipelines: Author's Edition	SL26-0018	X	X	

BKM = BookManager

Note: An "X" in one of the columns indicates available formats.

Note: The updates in these new editions may not contain any new z/VM information.

Other Publications - Unchanged Editions

Publications not updated for this z/VM V6.1 enhancement:

Title	Order number	Format		
		PDF	BKM	Print
Device Support Facilities: User's Guide and Reference	GC35-0033	X	X	
EREP: Reference Guide	GC35-0152	X	X	
EREP: User's Guide	GC35-0151	X	X	
z/OS and z/VM: Hardware Configuration Definition Messages	SC33-7986	X	X	
z/OS and z/VM: Hardware Configuration Manager User's Guide	SC33-7989	X	X	

Common Programming Interface Communications Reference	SC26-4399	X	X
Common Programming Interface Resource Recovery Reference	SC31-6821	X	X
System z Open Systems Adapter-Express Integrated Console Controller 3215 Support	SA23-2247	X	X
Network Job Entry: Formats and Protocols	SA22-7539	X	X
System z9™ and eServer zSeries 890 and 990 Systems Adapter-Express Integrated Console Controller User's Guide	SA22-7990	X	X
z/OS: IBM Tivoli® Directory Server Plug-in Reference for z/OS	SA76-0148	X	X
z/OS: Language Environment Concepts Guide	SA22-7567	X	X
z/OS: Language Environment Debugging Guide	GA22-7560	X	X
z/OS: Language Environment Programming Guide	SA22-7561	X	X
z/OS: Language Environment Programming Reference	SA22-7562	X	X
z/OS: Language Environment Run-Time Messages	SA22-7566	X	X
z/OS: Language Environment Writing ILC Applications	SA22-7563	X	X

BKM = BookManager

Note: An "X" in one of the columns indicates available formats.

Redbooks and Redpapers

IBM Redbooks® and 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, IBM Business Partners, and customers.

For the most current Redbooks or Redpapers, visit the IBM Redbooks Web site at

<http://www.ibm.com/redbooks/>

Technical information

Specified operating environment

Hardware requirements

z/VM V6.1 requires a new Architecture Level Set (ALS) that is available on the:

- IBM zEnterprise 196
Refer to the 2817DEVICE Preventive Service Planning (PSP) bucket for the minimum MCL level and any required updates.
- IBM System z10 Enterprise Class
Refer to the 2097DEVICE Preventive Service Planning (PSP) bucket for the minimum MCL level and any required updates.
- IBM System z10 Business Class
Refer to the 2098DEVICE Preventive Service Planning (PSP) bucket for the minimum MCL level and any required updates.

Specific processor facilities required by z/VM V6.1 can be found on the z/VM Web site at

<http://www.ibm.com/vm/zvm610/architecture/>

Refer to the appendix of the *z/VM General Information* manual for more information.

Software requirements

Prerequisite requirements

- EREP VM (5654-260) V3.5.0.
 - PTF for APAR VM64807 provides support for the IBM zEnterprise 196.
 - The following PTFs have been applied to the z/VM V6.1 system DDRs.
 - PTF for APAR VM63624 provides the necessary function to support the DS6000™ and DS8000™.
 - PTF for APAR VM64367 provides the necessary support for the System z10.
- Device Support Facilities - ICKDSF VM (5684-042) V1.17.0. Any fixes requested for ICKDSF should specify the PTF number of the VMSES/E formatted update. VMSES/E installable PTFs have the release number G14. 'G' indicates Release 17 of ICKDSF and '14' indicates VMSES/E format. The following PTFs have been applied to the z/VM V6.1 system DDRs:
 - PTF for APAR PQ84848 provides the necessary function for ICKDSF to support large FBA devices.
 - PTFs for APARs PQ96706 and PQ95319 provide the necessary function for ICKDSF to support the DS8000 and DS6000 storage devices, respectively.
 - PTF for APAR PM11220 provides the necessary support for direct attachment of XIV® SCSI DASD.

The prerequisite no-charge products, **EREP** and **ICKDSF**, are preinstalled on the base product system DDRs.

When ordering z/VM V6.1, you must already be licensed for EREP (5654-260) and ICKDSF (5684-042) or a separate order must be placed for each of these products to establish a license.

Refer to the [Preinstalled products and features](#) section for additional information on ordering EREP and ICKDSF.

Optional product/feature requirements

- DFSMS/VM requirements
 - ISPF V3.2.0 (5684-043) or a subsequent release for DFSMS/VM use. ISPF is not required if you are using only the 3495 Tape Library Dataserver support of DFSMS™.
 - DirMaint Facility optional feature of z/VM V6.1 if the minidisk management function is needed.
 - RACF Security Server for z/VM optional feature of z/VM V6.1 or its equivalent if a security product is needed for authorization.
 - Tivoli Storage Manager Extended Edition for z/OS and z/VM V5.2 (5698-A11), Tivoli Storage Manager for z/OS and z/VM V5.2 (5698-A13), or Tivoli Storage Manager for VM (5697-TS9) and Language Environment component supplied with z/VM if Migration Level 2 (ML2) function of DFSMS/VM is used.

Note: Program numbers 5698-A11 and 5698-A13 were withdrawn from marketing on January 21, 2005, and service support was discontinued on April 30, 2007.

For current information regarding the discontinuance of service, refer to the z/VM Licensed Program (LP) Migration Matrix at

<http://www.ibm.com/vm/techinfo/lpmigr/>

Note: Program number 5697-TS9 was withdrawn from marketing on March 7, 2005, and service was discontinued on March 31, 2006.

- TCP/IP for z/VM V6.1 to access the IBM 3495 Tape Library Dataserver for processors capable of 3490/3490E tape I/O, but incapable of 3495 Tape Library Data Server control.
- RSCS FL610 feature for remote operations.

- IBM Compiler for REXX/370 (5695-013) and IBM Library for REXX/370 (5695-014), if the compiled REXX™ installation-wide exit or a compiled ACS REXX exit is desired.
- The PTF for APAR VM63746 to allow DFSMS/VM RMS on z/VM V6.1, and later to share tape drive devices using the multi-access tape feature of the CP ATTACH command. This allows, for example, z/VM 3590 install media to be inserted, and z/VM V6.1 to be installed from an Automated Tape Library (ATL).
 - The PTF for APAR VM64062 to support locating encryption-capable 3592 tape drives in an Enterprise Automated Tape Library. The DFSMS/VM support provides tape-encryption capabilities for a z/VSE guest running on z/VM.
- Hardware Configuration Definition (HCD) and Hardware Configuration Manager (HCM) requirements
 - The required support for the System z10 has been applied to HCD/HCM supplied with z/VM V6.1.
 - The PTF for APAR VM64672 for HCD and the PTF for APAR VM64747 for HCM provide support for the IBM zEnterprise 196.
- IBM High Level Assembler (5696-234) requirements
 - High Level Assembler V1.5.0, or later, is required to:
 - Create a new DMSTRT for system languages (NLS)
 - Create image libraries for system printers (FCBs)
 - Create GCS application segments (CONTENTS macro)
 - Access major CMS application interfaces (CMSCALL)
 - Access most CP application interfaces (DIAGNOSE)
 - Use the AVS tuning control module (AGWTUN)
 - Use RAS tools (such as MDCHECK, FS2SFSE, AFTCHAIN, PRINTBLK, and PRINTFST)
 - Use the API for data compression
 - Use the CMS Pipelines Assemble macros interface
 - Assemble exit routines for DirMaint and RSCS
 - Customize Language Environment or compile Assembler routines used in mixed-language user applications
 - Assemble applications that exploit the IEEE Floating Point hardware facility
 - Add devices that cannot be sensed (updating HCPRIO ASSEMBLE)
 - Apply local modifications to modules written in Assembler
 - Assemble any CP modules
 - Assemble exit routines for CP
 - Reassemble CP replacement parts for the RACF Security Server optional feature
 - The PTF for APAR PK58463 is required for High Level Assembler V1.5 to support the new instructions provided with the System z10 server.
 - The High Level Assembler V1.6 contains the support for the System z10 instruction set and was made available on July 11, 2008. For additional information about the High Level Assembler V1.6, refer to Software Announcement [208-145](#), dated June 24, 2008.
 - The PTF for APAR PK97799 is required for High Level Assembler V1.6 to support the new instructions provided with the zEnterprise server.

Note: An equivalent product may be used in place of the High Level Assembler.
- Language Environment
 - Requires High Level Assembler V1.5.0, or later to customize Language Environment options
- Online displayable publications requirements
 - BookManager files can be read by either BookManager READ for VM (a separately orderable product) or IBM Softcopy Reader (supplied on DVD). APAR GC05366 for BookManager/VM READ is required for READ/VM V1.3

Public Library to run in a non-370 mode. BookManager products also have prerequisite product requirements. Specific details are available in the BookManager announcement documentation.

- POSIX requirements
 - Developing POSIX applications requires C/C++ for z/VM V1.1 or XL C/C++ for z/VM V1.2 (5654-A22).
- RSCS Networking FL610 requirements
 - To communicate with users in an SNA network requires ACF/VTAM for VM/ESA®, V4.2 (5654-010).
 - To communicate within an IP network requires TCP/IP for z/VM FL610.
 - Group Control Subsystem (GCS) must be configured and activated.
- Shared-DASD Complex and CSE Cluster Program requirements

In a shared-DASD complex, a single Directory Maintenance Facility (DirMaint) server with a single source directory can manage the object directory on up to 16 z/VM systems, if the DirMaint executable code disks and source directory disk are shared among all the systems. The following are required to support the shared-DASD complex:

- DirMaint, Function Level 610 (FL610)
Within the shared-DASD complex, all z/VM systems must be running the same DirMaint FL610 service level. Therefore, you must be licensed for the DirMaint FL610 feature on any z/VM V6.1 system in the complex.

A CSE cluster consists of two, three, or four z/VM systems. The following are required to support the CSE function:

- The same DirMaint requirements as for the shared-DASD complex described above.
- For shared spool and cross-system messaging:
 - VM/Pass-Through Facility, V2.1.1, or later (5684-100)

OSA and Open Systems Adapter/Support Facility (OSA/SF) program requirements

OSA/SF 4.4.0 is provided with and supported on z/VM and can be accessed by a CMS user ID, a REXX EXEC, or a Java-based Graphical User Interface (GUI). The GUI needs access to the Java™ 1.4 runtime and help on the workstation.

Access at the OSA/SF GUI requires the following communications protocols:

- For TCP/IP communication:
 - TCP/IP for z/VM on the host
 - TCP/IP on the workstation

To support an OSA in TCP/IP Passthru mode in a z/VM V6.1 environment, OSA/SF requires TCP/IP for z/VM V6.1. OSA/SF support is required in this mode only if access to one of the OSA's ports is being shared by more than one host program.

The following PTFs have been applied to the z/VM V6.1 system DDRs:

- The PTF for APAR OA15170 provides the necessary function to display information for OSN features on the z10 and support for Layer 2.
- The PTF for APAR OA23824 is required for OSA/SF to support the OSA-Express3 enhancements on the System z10.

For additional information about OSA/SF, refer to Hardware Announcement [103-142](#), dated May 13, 2003.

TCP/IP for z/VM V6.1 program requirements

TCP/IP for z/VM V6.1 has the following additional program requirements:

- If a primary or secondary domain name server (not a caching-only name server) or the network database server is to be run:
 - IBM DB2® Server for VSE & VM V7.1 (5697-F42), or later
- If programs are developed in C:
 - IBM C for VM/ESA V3.1 (5654-033), C/C++ for z/VM V1.1, or XL C/C++ for z/VM V1.2 (5654-A22)
- If programs are developed in Pascal:
 - IBM VS Pascal V1.2 (5668-767) Compiler and Library
- PTFs for APARs PK75662, PK97437, PK97438, PM06244, VM64313, and VM64740 provide SSL server enhancements for z/VM V5.4 and z/VM V6.1.
- PTFs for APARs PM06244, PM08418, VM64751, and PM10616 provide FIPS support for z/VM V6.1.

Linux program requirements

Linux on System z is not provided with z/VM V6. In order to operate Linux as a guest of z/VM, Linux must be obtained from a Linux distribution partner.

For specific function and for the most current information on Linux distributions, refer to

<http://www.ibm.com/systems/z/os/linux/dist.html>

For current promotional pricing for Linux distributions, refer to

http://www.ibm.com/systems/z/os/linux/about/about_gettingstarted.html

The program's specifications and specified operating environment information may be found in documentation accompanying the program, if available, such as a README file, or other information published by IBM, such as an announcement letter. Documentation and other program content may be supplied only in the English language.

Limitations

- z/VM V6 will operate on IBM zEnterprise System and System z10 servers.
- Linux and OpenSolaris are the only guest operating systems z/VM will support on IFL processors (other than z/VM V4, V5, or V6 themselves).
- z/VM V6 does not provide support for V=R or V=F guests. Customers using basic mode to run V=R and V=F guests should consider this when migrating to z/VM V6. The increase in processor requirements to run a V=V guest that was previously run as V=R may be significant due to the loss of various hardware assists.

Performance considerations

System performance depends on the hardware resources allocated to z/VM V6.1 and on the level of activity within each Linux image.

z/VM performance information is available on the z/VM Web site at

<http://www.ibm.com/vm/perf/tips/>

For assistance in understanding the performance implications for a particular situation, contact your IBM representative or your IBM Business Partner.

User group requirements

This announcement satisfies or partially satisfies requirements from customer suggestions or one or more of the worldwide user group communities. Groups include COMMON, COMMON Europe, Guide Share Europe (GSE), InterAction (Australia/New Zealand), Japan Guide Share (JGS), World Alliance of VSE, VM and Linux (WAVV), and SHARE Inc.

User group requirements satisfied with this announcement:

Requirement number	Requirement description
MR0809051758	Restrict guest-to-guest communications within a VSWITCH

Planning information

Customer responsibilities

z/VM V6.1 Subscription and Support (S&S)

To order z/VM V6.1, you must use the SDO, program number 5741-A08. The z/VM base system, any ordered optional z/VM features, and any ordered SDO licensed products will be delivered as part of the z/VM SDO.

If you desire the level of service provided under the IBM ICA license agreement with S/390® and z/VM licensed products, you are strongly encouraged to order the program number for z/VM S&S (5741-SNS). This program number provides enhanced support that includes telephone assistance (voice support for defects during normal business hours) and access to updates, releases, and versions of the program for as long as support is in effect. z/VM S&S will be automatically added to your order. If you do not desire the S&S license for z/VM and/or the optional features of DirMaint, RSCS, RACF Security Server, or the Performance Toolkit for VM, you must take specific action to decline this support.

To host Linux guests of z/VM V6, you must also obtain a Linux on System z distribution. Information on those Linux distributor partners that have a marketing relationship with IBM can be found at

<http://www.ibm.com/systems/z/os/linux/dist.html>

Licensed products packaged with z/VM V6.1

With the availability of z/VM V6, the following priced, optional products or features are automatically shipped and preinstalled on the z/VM V6 base product media:

- **DirMaint FL610 feature**
- **RSCS FL610 feature**
- **RACF Security Server FL610 feature**
- **Performance Toolkit for VM FL610 feature**

For more information on these products or features, refer to the [Preinstalled products and features](#) section.

These products or features must be enabled before using. If you choose to enable them, you must have a license for the product or the feature.

If you do not have a license for DirMaint, RSCS, RACF, or the Performance Toolkit for VM, you may establish one by placing an order for the optional features. You will receive the program directory for the optional feature which includes instructions for enabling its use.

For other IBM licensed products or products from Independent Software Vendors (ISVs), you should review the following support documents:

- Independent software vendor products available for z/VM can be found at

<http://www.ibm.com/vm/vendor/>

- IBM licensed programs available for z/VM can be found at

<http://www.ibm.com/vm/related/>

High Level Assembler (5696-234)

The High Level Assembler (5696-234) or an equivalent product is required for z/VM to:

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

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).

Running 370-mode applications

To simplify the migration of older applications and facilitate the running of 370-mode-only CMS applications in XA-mode, ESA-mode, or XC-mode virtual machines, IBM provides the *370 Accommodation* function. This function originally shipped with VM/ESA V1.2.1 (available July 1993). 370 Accommodation handles the vast majority of inconsistencies between 370-mode and XA-mode, ESA-mode, or XC-mode, eliminating the need to change these applications to exploit the new architectures.

z/VM V6 supports only XA-mode, ESA-mode, and XC-mode virtual machines. z/VM V6 does not support 370-mode virtual machines. 370-mode virtual machines are converted to XA mode during logon processing. The 370 Accommodation function is still supported for applications. If you find your applications cannot run under the current level of CMS, you should use the 370 Accommodation function or modify your applications, if possible. If problems persist, call IBM Service for assistance.

Direct customer support

Direct customer support is provided by IBM Operational Support Services - SoftwareXcel. This fee service enhances your productivity by providing voice and electronic access into the IBM support organization. IBM Operational Support Services - SoftwareXcel helps answer questions pertaining to use and suspected software defects for eligible products.

Installation and technical support is provided by Global Services. For more information call 800-IBM-4YOU (426-4968).

For technical support or assistance, go to

<http://www.ibm.com/support>

or contact your IBM representative for additional assistance.

Packaging

z/VM V6.1

The z/VM V6.1 product package is distributed with the following:

- International Program License Agreement (IPLA) (Z125-3301).
- License Information Document (LID) (GC24-6200).
- If ordering to install using 3590 or 3592 tape:
 - Basic machine-readable material on a 3590 or a 3592 tape cartridge for installation to a 3390 DASD.
 - Stacked RSU on a 3590 or 3592 tape cartridge containing required service.

- If ordering to install using DVD:
 - Basic machine-readable material on one DVD for installation to a SCSI disk.
 - Basic machine-readable material on one DVD for installation to a 3390 DASD.
 - RSU DVD containing required service.

Note: The DVD format is a binary image, not in z/VM DDR format.

- If ordering to install from electronic delivery:
 - Binaries from DVD for installation to a SCSI disk, provided in a ZIP file.
 - Binaries from DVD for installation to a 3390 DASD, provided in a ZIP file.
 - RSU DVD containing required service, provided in a ZIP file.

Note: Electronic delivery provided as binary images from DVD are provided as ZIP files.

- One **IBM Online Library: z/VM Collection on DVD.**
- Publications:
 - z/VM: Guide for Automated Installation and Service (GC24-6197).
- Program directories for z/VM V6.1, z/VM V6.1 SDO, the preinstalled products, and the optional features if ordered.

Restricted source and PL/X source

The restricted source and the PL/X source are not orderable or shipped with z/VM V6. Both will be available as no-charge downloads from IBM Resource Link™ at

<http://www.ibm.com/servers/resourcelink>

If you are not registered with Resource Link, you will be required to register for a user ID and password. You must also be licensed for z/VM V6.1 and entitlement will be verified when you request the source code. After approval, you will receive instructions describing how to download the code.

Security, auditability, and control

The announced program uses the security and auditability features inherent in the virtual machine and the System/370™, ESA/370, and ESA/390 architectures, and z/Architecture. The security and auditability of z/VM V6 are the same as for ESA/390 and z/Architecture. The customer is responsible for evaluation, selection, and implementation of security features, administrative procedures, and appropriate controls in application systems and communication facilities.

Software Services

IBM Software Services has the breadth, depth, and reach to manage your services needs. You can leverage the deep technical skills of our lab-based Software Services team and the business consulting, project management, and infrastructure expertise of our IBM Global Services team. Also, we extend our IBM Software Services reach through IBM Business Partners to provide an extensive portfolio of capabilities. Together, we provide the global reach, intellectual capital, industry insight, and technology leadership to support a wide range of critical business needs.

To learn more about IBM Software Services or to contact a Software Services sales specialist, visit

<http://www.ibm.com/software/sw-services/>

Ordering information

Charge metric

Pricing metric description

The products and features in this announcement have one pricing metric: Value Units based on the number of processors. Value Unit pricing with a decreasing one-time charge (OTC) price per engine, subject to the tiers as documented in Value Unit Exhibit VUE021, is available for the z/VM V6 optional features of DirMaint, RSCS, RACF, and the Performance Toolkit for VM, and for S&S entitlements at initial order of z/VM V6 or its features. Value Units of a given product cannot be exchanged, interchanged, or aggregated with Value Units of another product.

Engine-based Value Unit pricing of z/VM V6 is different than MSU-based Value Unit pricing, which is available for other IBM software products.

Program name	Program number	Pricing metric description
z/VM V6	5741-A07	Value Units
RSCS Feature	5741-A07	Value Units
RACF Security Server Feature	5741-A07	Value Units
DirMaint Feature	5741-A07	Value Units
Performance Toolkit for VM Feature	5741-A07	Value Units

Value Unit pricing for the z/VM V6 S&S and its optional, priced features provides a lower price per processor as more Value Units are licensed with z/VM V6 and the optional, priced features. You may aggregate the capacity for all the processors running z/VM V6 and the optional, priced features across your enterprise to achieve a more economical price. There may also be a price benefit when you increase your capacity. Additional capacity is not priced starting at the base with a flat price per unit. Instead, additional capacity is priced starting at the capacity for which z/VM V6 has already been licensed, which may result in a lower unit price for the z/VM V6.1 S&S and the optional, priced features.

Engine-based Value Unit pricing is designed to provide a lower entry price and a decreasing price as hardware capacities and workloads grow, which may help improve price/performance. Engine-based Value Unit pricing is different than MSU-based Value Unit pricing, which is available for other IBM software products. Value Unit pricing may help you:

- Add capacity and workload with an incremental and improved price
- Manage software costs better
- Aggregate licenses acquired across machines that are part of your enterprise

If you purchased an S&S contract for the z/VM V4 or z/VM V5 optional features of DirMaint, RACF Security Server, RACF for z/VM, RSCS, and the Performance Toolkit for VM, you are entitled to a no-charge upgrade to those same optional features on z/VM V6.1.

Translation from Processor to Value Units

The total number of engine-based Value Units is calculated according to the following example.

If the customer has installed six processors and will be operating z/VM V6 on all six processors, the applicable Value Units would be:

$$(3 * 10) + (3 * 9) = 57 \text{ value units}$$

The following z/VM V6 products and optional features and their associated Subscription and Support (S&S) are affected by "engine-based Value Units" pricing:

IPLA program number	S&S program number	Program description
5741-A07	5741-SNS	z/VM V6
5741-A07	5741-SNS	RSCS Feature

5741-A07 5741-SNS RACF Security Server Feature
5741-A07 5741-SNS DirMaint Feature
5741-A07 5741-SNS Performance Toolkit for VM Feature

The products in this announcement are available with IBM Software On/Off Capacity on Demand (On/Off CoD). If you are running On/Off CoD on your IBM servers, you can now also pay for z/VM V6 on a processor per-day basis during your peak periods. For additional information about On/Off CoD, refer to Software Announcement [203-202](#), dated August 12, 2003, and Marketing Announcement 304-004, dated January 13, 2004.

Processor Value Unit (PVU)

PVU is a unit of measure by which z/VM V6 can be licensed. PVU entitlements are based on processor technology (defined within the PVU table* by processor vendor, brand, type and model number). IBM continues to define a processor, for purposes of PVU-based licensing, to be each processor core on a chip. Each software product has a unique price per PVU. To determine the total cost of deploying an individual software product in a specific hardware environment, you must take the following steps:

1. For each processor core in the hardware environment on which the software product is to be licensed, determine the PVU requirement based on its processor technology per the PVU table*.
2. The PVU requirements for all processor cores in the hardware environment.
3. Multiply the software product's price per PVU by the total number of PVUs required as determined in step 2 above.

PVU entitlements are specific to a software product and may not be exchanged, interchanged, or aggregated with PVU entitlements of another software product.

Unless you have deployed eligible sub-capacity products according to the sub-capacity* terms, you must obtain PVU Proof of Entitlements (PoEs) for the maximum number of activated** physical processor cores in the hardware environment made available to, or managed by, the software product. This is also referred to as full capacity licensing.

* For information regarding PVU and sub-capacity licensing, including the latest PVU table, visit

http://www.ibm.com/software/lotus/passportadvantage/pvu_licensing_for_customers.html

** Activated processor cores are physical processor cores that are available for use in a server. They include processor cores:

- That are activated (available for use) when the server is shipped by the manufacturer
- That are activated subsequently through activation codes purchased from the server manufacturer by the customer
- Whose capacity can be limited by the customer through virtualization technologies, operating system commands, and BIOS settings.

The programs in this announcement have Value Unit-Based pricing.

Program number	Program name	Value Unit exhibit
5741-A07	z/VM V6	VUE021

For each System z IPLA program with Value Unit pricing, the quantity of that program needed to satisfy applicable IBM terms and conditions is referred to as the "required license capacity." Your required license capacity is based upon the following factors:

- The System z IPLA program you select

- The applicable Value Unit exhibit
- The applicable terms

Value Unit exhibit VUE021

Engine-based Value Units for a specified number of engines are determined by the following table:

Level	Engines minimum	Engines maximum	Value Units per engine
Base	1	3	10
Tier A	4	6	9
Tier B	7	9	8
Tier C	10	12	7
Tier D	13	16	6
Tier E	17	20	5
Tier F	21	25	4
Tier G	26	+	3

Order z/VM SDO through the Internet

ShopzSeries provides an easy way to plan and order System z software upgrades, including z/VM. Using ShopzSeries, customers can quickly generate orders for z/VM SDOs. Additionally, ShopzSeries will ensure your order is technically correct (that is, ensures any corequisite or prerequisite or incompatibility conditions are resolved to ensure timely order placement and processing). ShopzSeries is available in the United States and several countries in Europe. In countries where ShopzSeries is not available yet, contact your IBM representative (or IBM Business Partner) to handle your order via the traditional IBM ordering process. For more details and availability, visit the ShopzSeries Web site at

<http://www.ibm.com/software/ShopzSeries>

The z/VM V6.1 base operating system and SDO licensed products are eligible for Internet delivery using the ShopzSeries Web site and are planned to be available after the general availability of z/VM V6.1.

Basic license

Licensing for z/VM V6.1

The following z/VM V6 base and optional features and their associated Subscription and Support (S&S) are affected by "Value Units" pricing based on the number of processors with z/VM V6:

IPLA program number	SDO program number	S&S program number	Program description
5741-A07	5741-A08	5741-SNS	z/VM V6
5741-A07	5741-A08	5741-SNS	RSCS Feature
5741-A07	5741-A08	5741-SNS	RACF Security Server Feature
5741-A07	5741-A08	5741-SNS	DirMaint Feature
5741-A07	5741-A08	5741-SNS	Performance Toolkit for VM Feature

The program number 5741-A07, is used for licensing z/VM V6. You must specify the number of engine-based Value Units for the number of processors required as calculated by the Workload Pricer tool, WL Pricer.

When ordering z/VM V6.1 to operate on standard processors (CPs) for a single server within the enterprise, you must specify Value Units equal to the Value Units to cover the number of standard processors (CPs) on your 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 for a single server within the enterprise, you must specify Value Units equal to the Value Units to cover the number of IFL processors on your 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.

The quantity ordered cannot exceed the maximum number of processors per server. The number of processors for a single server to be used to calculate Value Units should not be more than:

Quantity			
IFL processors	Standard processors	Maximum processors	Processor for each server
64	64	64	System z10 EC (2097)
10	5	10	System z10 BC (2098)

The optional features DirMaint, RSCS, RACF, and the Performance Toolkit for VM are preinstalled on the base system media. Ordering these features establishes a license for entitlement purposes and you will also receive a program directory for the optional features ordered. If you intend to use DirMaint, RSCS, RACF, or the Performance Toolkit for VM, now or at a later date, you must establish a license for billing and shipment of publications.

The Performance Toolkit for VM feature is considered a program update for the RTM and PRF features as defined in the IBM International Agreement for Acquisition of Support, Z125-6011. Therefore, any existing z/VM V4 customers, with licenses for the RTM or PRF features, who have also purchased S&S for either the RTM or PRF feature, are entitled to receive a no-charge upgrade for the Performance Toolkit for VM feature when ordering z/VM V6.

z/VM V6.1 (5741-A07) Basic License

Entitlement Identifier	Description	License option/Pricing metric
S015HSV	z/VM V6	Use-based OTC, Per Value Unit
S015HST	DirMaint Feature	Use-based OTC, Per Value Unit
S015HSX	RSCS Feature	Use-based OTC, Per Value Unit
S015HSZ	RACF Feature	Use-based OTC, Per Value Unit
S015HSW	Performance Toolkit for VM Feature	Use-based OTC, Per Value Unit

z/VM V6.1 Base SDO (5741-A08) - S015HT5

Orderable supply ID	Language	Distribution medium
S015T8N	US English	3590 Tape
S015T8P	US English	3592 Tape

z/VM V6.1 Base SDO (5741-A08) - S015HTF

Orderable supply ID	Language	Distribution medium
S015T8S	US English	DVD

Optional features of z/VM V6.1 SDO (5741-A08)

DirMaint feature (5741-A08) - S015HT7

Orderable supply ID	Language	Distribution medium
S015T86	US English	3590 Tape
S015T87	US English	3592 Tape
S015T88	US English	DVD

RSCS feature (5741-A08) - S015HTD

Orderable Supply ID	Language	Distribution medium
S015T8J	US English	3590 Tape
S015T8K	US English	3592 Tape
S015T8L	US English	DVD

RACF Security Server feature (5741-A08) - S015HTC

Orderable Supply ID	Language	Distribution medium
S015T8F	US English	3590 Tape
S015T8G	US English	3592 Tape
S015T8H	US English	DVD

Performance Toolkit for VM feature (5741-A08) - S015HTB

Orderable Supply ID	Language	Distribution medium
S015T8B	US English	3590 Tape
S015T8C	US English	3592 Tape
S015T8D	US English	DVD

z/VM Subscription and Support (5741-SNS)

Entitlement Identifier	Description	License option/Pricing metric
S0111PX	z/VM	Basic ASC, per Value Unit SW S&S No charge, decline SW S&S
S0111R1	DirMaint Feature	No-charge, SW S&S Registration Basic ASC, per Value Unit SW S&S No charge, decline SW S&S
S013T6B	RSCS Feature	No-charge, SW S&S Registration Basic ASC, per Value Unit SW S&S No charge, decline SW S&S
S0111R0	RACF Feature	No-charge, SW S&S Registration Basic ASC, per Value Unit SW S&S No charge, decline SW S&S
S0111PZ	Performance Toolkit for VM Feature	No-charge, SW S&S Registration Basic ASC, per Value Unit SW S&S No charge, decline SW S&S

The features are for stand-alone products and not for ordering.

z/VM Base S&S (5741-SNS) - S0111HH

Orderable Supply ID	Language	Description
S0111HJ	US English	z/VM V6.1 3390 Sys DDR (Support for 5741-A07)

z/VM Base S&S (5741-SNS) - S0111HK

Orderable Supply ID	Language	Description
S0111HL	US English	z/VM V6.1 DVD Sys Image (Support for 5741-A07)

z/VM Base S&S (5741-SNS) - S0111H7

Orderable Supply ID	Language	Description
S0111H8	US English	DirMaint Feature (Support for 5741-A07)

z/VM Base S&S (5741-SNS) - S013T6C

Orderable Supply ID	Language	Description
S013T6D	US English	RSCS Feature (Support for 5741-A07)
z/VM Base S&S (5741-SNS) - S0111HC		

Orderable Supply ID	Language	Description
S0111HD	US English	RACF Security Server Feature (Support for 5741-A07)
z/VM Base S&S (5741-SNS) - S0111HF		

Orderable Supply ID	Language	Description
S0111HG	US English	Performance Toolkit for VM feature (Support for 5741-A07)
z/VM Base S&S (5741-SNS) - S0111H9		

Orderable Supply ID	Language	Description
S0111HB	US English	z/VM V6.1 DFSMS/VM feature (Support for 5741-A07)

Ordering z/VM V6.1 using the SDO

Orders for z/VM V6.1 and the optional features must use the z/VM V6.1 SDO packaged offering, program number 5741-A08. The z/VM base system, any ordered optional z/VM features, and any ordered SDO licensed products will be delivered as part of the z/VM SDO.

You must specify the desired distribution medium.

With the ordering of z/VM V6.1, you will receive a system DDR tape or DVD containing the program code for z/VM V6.1, an IPLA for 5741-A07, a LID, program directories, and one copy of each publication available for z/VM V6.1 as listed in the [Packaging](#) section of this announcement.

Examples

- Example 1 - You currently do not have z/VM V6 licensed on any processors on any System z10 server within your enterprise. Your engine-based Value Units for licensing (5741-A07) are 0.

If you will be licensing z/VM V6 and designating **two** IFL processors on a single System z10 server within your enterprise as running z/VM V6, you will specify the desired distribution medium. When licensing using 5741-A07, capacity to be specified in engine-based Value Units would be (2 * 10) or **20** resulting in a total of 20 Value Units.

- Example 2 - You currently are not running z/VM V6 on standard processors (CPs) but you are running z/VM V6 on **one** IFL processor (probably running Linux on System z) on a single System z10 server within your enterprise. Your engine-based Value Units for licensing (5741-A07) are 10.

If you will be licensing z/VM V6 and designating **two** additional IFL processors on a single System z10 server within your enterprise as running z/VM V6, you will specify the desired distribution medium. When licensing using 5741-A07, additional capacity to be specified in engine-based Value Units would be (2 * 10) or **20** resulting in a total of 30 Value Units.

- Example 3 - You currently are running z/VM V6 on **two** standard processors (CPs) on a single System z10 server within your enterprise. Your engine-based Value Units for 5741-A07 are 20.

If you will be licensing z/VM V6 and designating **two** additional standard processors (CPs) on a single System z10 server within your enterprise as running z/VM V6, you will specify the desired distribution medium. When licensing using 5741-A07, additional capacity to be specified in engine-based Value Units would be $(1 * 10) + (1 * 9)$ or **19** resulting in a total of 39 Value Units.

- Example 4 - You currently are running z/VM V6 on **two** standard processors and on **one** IFL processor (probably running Linux on System z) on a single System z10 server within your enterprise. Your engine-based Value Units for 5741-A07 are 30.

If you will be licensing z/VM V6 for **four** additional processors and designating **one** as a standard processor and the remaining **three** as IFL processors on a single System z10 server within your enterprise as running z/VM V6, you will specify the desired distribution medium. When licensing using 5741-A07, additional capacity to be specified in engine-based Value Units would be $(3 * 9) + (1 * 8)$ or **35** resulting in a total of 65 Value Units.

- Example 5 - You currently do not have z/VM V6 licensed on any processors on any System z10 server within your enterprise. Your engine-based Value Units are 0.

If you will be licensing z/VM V6 and designating **two** standard processors on one System z10 server and on an additional System z10 server within your enterprise, you will license z/VM V6 on **one** standard processor and on **two** IFL processors, you will specify the desired distribution medium. When licensing using 5741-A07, additional capacity to be specified in engine-based Value Units would be $(3 * 10) + (2 * 9)$ or **48** resulting in a total of 48 Value Units because of aggregating the licenses within the enterprise.

Support for z/VM V6.1

Program Name: z/VM Subscription & Support

Program Number: 5741-SNS

Support for z/VM V6 is provided and licensed under the IBM International Agreement for Acquisition of Support (Z125-6011).

This 5741-SNS order establishes entitlement records as well as support for z/VM V6.1 or the optional features. If an 5741-SNS order is declined, you will only be entitled to support under the basic warranty for z/VM V6.1 (5741-A07).

z/VM has adopted the support lifecycle extensions as announced in Software Announcement [203-204](#), dated August 12, 2003, which provide for 3 years of technical support after general availability.

Central service for z/VM V6.1 (5741-A07) is planned to be available by IBM until April 30, 2013.

IBM announced its intention to discontinue service support for z/VM V5.4 (5741-A05) to be effective September 30, 2011, in Software Announcement [208-249](#), dated August 05, 2008.

The new date planned for discontinuing service support for z/VM V5.4 has been extended to September 30, 2013.

Central service for z/VM V5.3 (5741-A05) is planned to be available by IBM until September 30, 2010.

The z/VM S&S provides:

- Corrections that fix substantial deviations of unmodified products from the then-current code, publications, and informal documentation (that is, release notes and memos).
- Software product updates that are improvements, extensions, and other changes IBM, at its discretion, deem to be reasonable.

- Recommended Service Updates (RSUs), new versions, and new releases at no additional charge.
- Technical support:
 - A reasonable amount of remote assistance via telephone, mail, facsimile (fax), or e-mail to address suspected IBM program defects, where available, during normal IBM business hours from Monday through Friday, except local holidays. Exceptions from normal IBM business hours are Severity 1 (high-impact) problems. Support for high-impact suspected IBM defects is available 24 hours a day, 7 days a week.
 - Temporary fixes for problems (where known), where they exist.

On-site (local) support, although available, is provided as part of the IBM portfolio of fee-based services.

z/VM S&S annual support charges, based on the number of Value Units specified will be automatically added to your order. If you do not desire the S&S license for z/VM and/or the optional features of DirMaint, RSCS, RACF, or the Performance Toolkit for VM, you must take specific action to decline this support.

A no-charge S&S registration record will be established on each designated machine where z/VM V6 and the priced, optional features of DirMaint, RSCS, RACF, and the Performance Toolkit for VM are running. These no-charge S&S registration records will be linked to the billable S&S and all billable S&S within the scope of the engine-based Value Units aggregation will be linked together.

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

The quantity ordered cannot exceed the maximum number of processors per server. The number of processors for a single server to be used to calculate Value Units should not be more than:

Quantity			
IFL processors	Standard processors	Maximum processors	for each server
64	64	64	System z10 EC (2097)
10	5	10	System z10 BC (2098)

National Language translation

When you order z/VM V6.1, the National Language translation files for message repositories, help files, and other panels or files are included with the system.

The following components or features are supported by z/VM V6.1 in the following languages:

- Japanese Kanji - CP, CMS (including CMS Utilities), REXX, PIPES

The DirMaint feature provides National Language translation for DirMaint messages in Kanji and is automatically included with this feature.

To receive the translated help files for DFSMS/VM in Kanji, you must order the no-charge optional DFSMS/VM feature using the z/VM V6 System Delivery Option (SDO).

z/VM V6.1 SDO optional licensed products

Program Name: z/VM V6.1 SDO

Program Number: 5741-A08

The following table provides the orderable supply features for the optional licensed products with z/VM V6.1.

Orderable supply feature numbers for 5741-A08

Orderable supply	Language	Medium	Description
S015T8N	US English	3590 Tape	5741-A07 3590 3390 Sys DDR
S015T8P	US English	3592 Tape	5741-A07 3592 3390 Sys DDR
S015T8S	US English	DVD	5741-A07 DVD System Image
S015T86	US English	3590 Tape	5741-A07 3590 DirMaint
S015T87	US English	3592 Tape	5741-A07 3592 DirMaint
S015T88	US English	DVD	5741-A07 DVD DirMaint
S015T8J	US English	3590 Tape	5741-A07 3590 RSCS
S015T8K	US English	3592 Tape	5741-A07 3592 RSCS
S015T8L	US English	DVD	5741-A07 DVD RSCS
S015T8F	US English	3590 Tape	5741-A07 3590 RACF Sec Server
S015T8G	US English	3592 Tape	5741-A07 3592 RACF Sec Server
S015T8H	US English	DVD	5741-A07 DVD RACF Sec Server
S015T8B	US English	3590 Tape	5741-A07 3590 Performance Toolkit for VM
S015T8C	US English	3592 Tape	5741-A07 3592 Performance Toolkit for VM
S015T8D	US English	DVD	5741-A07 DVD Performance Toolkit for VM
S015T89	US English	DVD	5741-A07 z/VM Collection Kit DVD
S015T72	US English	3590 Tape	5741-A07 3590 DFSMS/VM Feature
S015T73	US English	3592 Tape	5741-A07 3592 DFSMS/VM Feature
S015T8T	US English	3590 Tape	5648-063 3590 ACF/NCP
S015T8V	US English	3592 Tape	5648-063 3592 ACF/NCP
S015T8Z	US English	3590 Tape	5654-009 3590 ACF/SSP
S015T90	US English	3592 Tape	5654-009 3592 ACF/SSP
S015TCV	US English	3590 Tape	5654-010 3590 ACF/VTAM SUITE
S015TCW	US English	3592 Tape	5654-010 3592 ACF/VTAM SUITE
S015T97	US English	3590 Tape	5686-065 3590 VTAM® APPL SUITE
S015T98	US English	3592 Tape	5686-065 3592 VTAM APPL SUITE
S015TBN	US English	3590 Tape	5654-010 3590 ACF/VTAM - VM
S015TBP	US English	3592 Tape	5654-010 3592 ACF/VTAM - VM
S015TB3	US English	3590 Tape	5648-B33 3590 AFP™ Font Coll
S015TB2	US English	3592 Tape	5648-B33 3592 AFP Font Coll
S015TS9	US English	3590 Tape	5688-228 3590 APL2
S015TST	US English	3592 Tape	5688-228 3592 APL2
S015T9V	US English	3590 Tape	5697-J05 3590 Archive Manager
S015T9W	US English	3592 Tape	5697-J05 3592 Archive Manager
S015T9X	US English	3590 Tape	5697-J06 3590 Backup/Restore
S015T9Z	US English	3592 Tape	5697-J06 3592 Backup/Restore
S015TB0	US English	3590 Tape	5684-062 3590 BookMgr Read
S015TB1	US English	3592 Tape	5684-062 3592 BookMgr Read
S015TCM	US English	3590 Tape	5688-188 3590 C/370™ Unique Lib
S015TCN	US English	3592 Tape	5688-188 3592 C/370 Unique Lib
S015TCS	US English	3590 Tape	5688-188 3590 C/370 Library
S015TCT	US English	3592 Tape	5688-188 3592 C/370 Library
S015TCF	US English	3590 Tape	5648-A25 3590 COBOL
S015TCG	US English	3592 Tape	5648-A25 3592 COBOL
S015TB6	US English	3590 Tape	5697-F42 3590 DB2 Client for VM
S015TB7	US English	3592 Tape	5697-F42 3592 DB2 Client for VM
S015TCH	US English	3590 Tape	5697-F42 3590 DB2 ControlCtr
S015TCJ	US English	3592 Tape	5697-F42 3592 DB2 ControlCtr
S015TCX	US English	3590 Tape	5697-F42 3590 DB2 Data Res
S015TCZ	US English	3592 Tape	5697-F42 3592 DB2 Data Res
S015TBW	US English	3590 Tape	5697-F42 3590 DB2 RXSQL VM
S015TBX	US English	3592 Tape	5697-F42 3592 DB2 RXSQL VM
S015TD0	US English	3590 Tape	5697-F42 3590 DB2 Svr for VM
S015TD1	US English	3592 Tape	5697-F42 3592 DB2 Svr for VM
S015TD6	US English	3590 Tape	5748-XX9 3590 DCF
S015TD7	US English	3592 Tape	5748-XX9 3592 DCF
S015TD2	US English	3590 Tape	5748-XX9 3590 DCF/ODF
S015TD3	US English	3592 Tape	5748-XX9 3592 DCF/ODF
S015TD4	US English	3590 Tape	5748-XX9 3590 DCF/SMFF

S015TD5	US English	3592	Tape	5748-xx9	3592	DCF/SMFF
S015TD8	US English	3590	Tape	5654-A23	3590	Debug Tool
S015TD9	US English	3592	Tape	5654-A23	3592	Debug Tool
S015TBD	US English	3590	Tape	5648-DR1	3590	Dir 5.20 Base
S015TBF	US English	3592	Tape	5648-DR1	3592	Dir 5.20 Base
S015TF3	US English	3590	Tape	5648-DR1	3590	Dir 5.20 z/VM Ctr
S015TF4	US English	3592	Tape	5648-DR1	3592	Dir 5.20 z/VM Ctr
S015TF9	US English	3590	Tape	5648-DR1	3590	Dir 5.20 SDPE
S015TFB	US English	3592	Tape	5648-DR1	3592	Dir 5.20 SDPE
S015TG2	US English	DVD		5648-DRZ	DVD	Sys Director V6.1
S015TDD	US English	3590	Tape	5648-099	3590	DITTO-VSE&OPTVM
S015TDF	US English	3592	Tape	5648-099	3592	DITTO-VSE&OPTVM
S015TDB	US English	3590	Tape	5654-029	3590	DITTO/ESA - VM
S015TDC	US English	3592	Tape	5654-029	3592	DITTO/ESA - VM
S015TB8	US English	3590	Tape	5648-099	3590	DITTO/ESA - VSE
S015TB9	US English	3592	Tape	5648-099	3592	DITTO/ESA - VSE
S015TDG	US English	3590	Tape	5684-113	3590	DMS/CMS
S015TDH	US English	3592	Tape	5684-113	3592	DMS/CMS
S015TDJ	US English	3590	Tape	5654-260	3590	EREP
S015TDK	US English	3592	Tape	5654-260	3592	EREP
S015TDL	US English	3590	Tape	5668-801	3590	GDDM/IMD
S015TDM	US English	3592	Tape	5668-801	3592	GDDM/IMD
S015TDN	US English	3590	Tape	5668-723	3590	GDDM/IVU
S015TDP	US English	3592	Tape	5668-723	3592	GDDM/IVU
S015TDT	US English	3590	Tape	5668-812	3590	GDDM/PGF
S015TDV	US English	3592	Tape	5668-812	3592	GDDM/PGF
S015TDW	US English	3590	Tape	5684-168	3590	GDDM/VM
S015TDX	US English	3592	Tape	5684-168	3592	GDDM/VM
S015TDZ	US English	3590	Tape	5696-234	3590	HLASM V1.6
S015TF0	US English	3592	Tape	5696-234	3592	HLASM V1.6
S015TF1	US English	3590	Tape	5696-234	3590	HLASM V1.6 Toolkit
S015TF2	US English	3592	Tape	5696-234	3592	HLASM V1.6 Toolkit
S015TB4	US English	3590	Tape	5654-033	3590	IBM C - VM/ESA
S015TB5	US English	3592	Tape	5654-033	3592	IBM C - VM/ESA
S015TFL	US English	3590	Tape	5684-042	3590	ICKDSF SES/E
S015TFM	US English	3592	Tape	5684-042	3592	ICKDSF SES/E
S015TFN	US English	3590	Tape	5684-043	3590	ISPF V3 ENU
S015TFP	US English	3592	Tape	5684-043	3592	ISPF V3 ENU
S015TFW	US English	3590	Tape	5684-123	3590	ISPF/PDF V3
S015TFX	US English	3592	Tape	5684-123	3592	ISPF/PDF V3
S015TBR	US English	3590	Tape	5688-035	3590	NPSI X.25
S015TBS	US English	3592	Tape	5688-035	3592	NPSI X.25
S015TFJ	US English	3590	Tape	5698-A36	3592	OMEGAMON® XE
S015TFK	US English	3592	Tape	5698-A36	3592	OMEGAMON XE
S015TG0	US English	3590	Tape	5697-J10	3590	Operations Manager
S015TG1	US English	3592	Tape	5697-J10	3592	Operations Manager
S015TBG	US English	3590	Tape	5684-100	3590	Pass-Through
S015TBH	US English	3592	Tape	5684-100	3592	Pass-Through
S015TC3	US English	3590	Tape	5688-235	3590	PL/I
S015TC4	US English	3592	Tape	5688-235	3592	PL/I
S015TFT	US English	3590	Tape	5688-190	3590	PPFA/370
S015TFV	US English	3592	Tape	5688-190	3592	PPFA/370
S015TFC	US English	3590	Tape	5684-141	3590	PSF/VM
S015TFD	US English	3592	Tape	5684-141	3592	PSF/VM
S015TBJ	US English	3590	Tape	5697-F42	3590	QMF™ for VM
S015TBK	US English	3592	Tape	5697-F42	3592	QMF for VM
S015TBZ	US English	3590	Tape	5695-013	3590	REXX/370 Complr
S015TC0	US English	3592	Tape	5695-013	3592	REXX/370 Complr
S015TC1	US English	3590	Tape	5695-014	3590	REXX/370 Lib
S015TC2	US English	3592	Tape	5695-014	3592	REXX/370 Lib
S015TC5	US English	3590	Tape	5697-J08	3590	Tape Manager
S015TC6	US English	3592	Tape	5697-J08	3592	Tape Manager
S015TC7	US English	3590	Tape	5684-137	3590	VM Batch Facilit
S015TC8	US English	3592	Tape	5684-137	3592	VM Batch Facilit
S015TC9	US English	3590	Tape	5668-806	3590	VS FORTRAN
S015TCB	US English	3592	Tape	5668-806	3592	VS FORTRAN
S015TCC	US English	3590	Tape	5668-767	3590	VS PASCAL
S015TCD	US English	3592	Tape	5668-767	3592	VS PASCAL
S015TBL	US English	3590	Tape	5668-717	3590	VS Pascal Lib
S015TBM	US English	3592	Tape	5668-717	3592	VS Pascal Lib
S015T95	US English	3590	Tape	5686-065	3590	VSE/VTAM VM OPTIONS
S015T96	US English	3592	Tape	5686-065	3592	VSE/VTAM VM OPTIONS

S015T9P	US English	3590	Tape	5686-065	3590	VSE/VTAM	VSE	FUNCT
S015T9R	US English	3592	Tape	5686-065	3592	VSE/VTAM	VSE	FUNCT
S015TBB	US English	3590	Tape	5654-A22	3590	XL C/C++	for z/VM	
S015TBC	US English	3592	Tape	5654-A22	3592	XL C/C++	for z/VM	
S015TBT	US English	3590	Tape	5655-T13	3590	zSecure Mgr	for RACF	
S015TBV	US English	3592	Tape	5655-T13	3592	zSecure Mgr	for RACF	

Preinstalled products and features

- EREP and ICKDSF

The prerequisite no-charge products **EREP** (5654-260) and **ICKDSF** (5684-042) are preinstalled on the base product system DDRs. If you intend to use EREP or ICKDSF now or at a later date, you must establish a license for billing and shipment of publications by placing an order for each of these products. Because the product code is already preinstalled, your order should indicate that shipment of media should be suppressed for these products. This can be accomplished by including the Delivery Option feature number 3471 (Ship Documentation Only), which designates the shipment of publications only.

- Language Environment

Language Environment is integrated into the base of z/VM V6.1.

- HCD and HCM

HCD and HCM provides a comprehensive I/O configuration management environment, similar to that available with the z/OS operating system. HCD and HCM is delivered preinstalled into the base of z/VM V6.1, enabled for use, and is available at no additional charge.

- OpenExtensions Shell and Utilities

OpenExtensions Shell and Utilities is included in z/VM V6.1 with no licensing or billing requirements.

- CMS Utilities

CMS Utilities is included in z/VM V6.1 at no additional charge.

- Open Systems Adapter Support Facility (OSA/SF)

OSA/SF (V4.4.0) is a host-based tool supporting OSA-2 and OSA-Express features and is included in z/VM V6.1, with no licensing or billing requirements.

- TCP/IP for z/VM and NFS

The **TCP/IP base** and the **Network File System (NFS) feature of TCP/IP** are delivered preinstalled, enabled for use, and are available at no additional charge.

- **DirMaint, RSCS, RACF Security Server**, and the **Performance Toolkit for VM** priced optional features for z/VM V6.1

DirMaint, RSCS, RACF Security Server, and the **Performance Toolkit for VM** are preinstalled in a disabled state. Pricing is based on engine-based Value Units, and can be licensed on IFL and standard processor processors. If you intend to use any one of these features, now or at a later date, you must establish a license for billing and shipment of publications. Enablement instructions are provided in the program directory for each feature to enable the feature for use on your system. A license is established by placing an order for the feature.

On/Off CoD

z/VM V6.1 is eligible for On/Off CoD with a temporary use charge calculated based on processor-per-day use.

z/VM V6.1 (5741-A07) Temporary Use Charge

Entitlement Identifier	Description	License option/Pricing metric
------------------------	-------------	-------------------------------

S015HSV	z/VM V6	On/Off CoD, Per Processor-day TUC
S015HST	DirMaint Feature	On/Off CoD, Per Processor-day TUC
S015HSX	RSCS Feature	On/Off CoD, Per Processor-day TUC
S015HSZ	RACF Feature	On/Off CoD, Per Processor-day TUC
S015HSW	Performance Toolkit for VM Feature	On/Off CoD, Per Processor-day TUC

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These programs are licensed under the IBM Program License Agreement (IPLA) and the associated Agreement for Acquisition of Software Maintenance, which provide for support with ongoing access to releases and versions of the program. These programs have a one-time license charge for use of the program and an annual renewable charge for the enhanced support that includes telephone assistance (voice support for defects during normal business hours), as well as access to updates, releases, and versions of the program as long as support is in effect.

License Information form number

GC24-6200

On or near the planned availability date, the License Information (LI) document will be available for review on the IBM Software License Agreement Web site

<http://www.ibm.com/software/sla/sladb.nsf>

Limited warranty applies

Yes

Limited warranty

IBM warrants that when the program is used in the specified operating environment, it will conform to its specifications. The program's specifications, and specified operating environment information, can be found in documentation accompanying the program (such as a readme file) or other information published by IBM (such as an announcement letter). The licensee agrees that such documentation and other program content may be supplied only in the English language, unless otherwise required by local law without the possibility of contractual waiver or limitation.

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If for any reason you are dissatisfied with the program and you are the original licensee, you may obtain a refund of the amount you paid for it, if within 30 days of your invoice date you return the program and its PoE to the party from whom you obtained it. If you downloaded the program, you may contact the party from whom you acquired it for instructions on how to obtain the refund.

For clarification, note that for programs acquired under any of IBM's On/Off Capacity on Demand (On/Off CoD) software offerings, this term does not apply since these offerings apply to programs already acquired and in use by you.

Authorization for use on home/portable computer

You may not copy and use this program on another computer without paying additional license fees.

Volume orders (IVO)

No

Passport Advantage applies

No

Usage restriction

Yes

- z/VM version 6 release 1 operates on the IBM System z10 Enterprise Class (z10 EC), IBM System z10 Business Class (z10 BC), and zEnterprise. The Program requires hardware that implements the IBM 64-bit z/Architecture in order to execute properly and therefore Licensee is not authorized to install or use this Program on any machine that does not properly implement 64-bit z/Architecture. For information about specific z/VM machine requirements and programming requirements, see the *z/VM: General Information* manual, GC24-6193.
- Licensee's entitlement is for only the quantity of engine-based Value Units licensed. These engine-based Value Units can be for standard processors (CPs), Integrated Facility for Linux (IFL) processors, or both.
- 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 Version 6 Release 1 to operate on standard processors (CPs) for a single server within the enterprise, Licensee must specify Value Units equal to the Value Units to cover the number of standard processors (CPs) on Licensee's 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 Version 6 Release 1 to operate on IFL processors for a single server within the enterprise, Licensee must specify Value Units equal to the Value Units to cover the number of IFL processors on Licensee's 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 Version 6 Release 1 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).
- Licensee may only transfer the Program to another party, in connection with Licensee's transfer of the machine on which Licensee is entitled to operate the Program (referred to as a "Limited Transfer"), provided that any such Limited Transfer of the Program requires Licensee to transfer Licensee's rights and obligations under the Agreement to the transferee and therefore terminates Licensee's authorization to continue to use the Program. When the machine and the Program are transferred, Licensee must either provide a printed copy of the Agreement or, if electronic licensing is used for the Program, take the necessary actions that will require electronic acceptance of the Agreement by the transferee prior to the transferee's first use of the Program.

Software Subscription and Support (Software Maintenance) applies

No. For operating system software, the revised IBM Operational Support Services - SoftwareXcel offering will provide support for those operating systems and associated products that are not available with the Software Subscription and Support (Software Maintenance) offering.

This will ensure total support coverage for your enterprise needs, including IBM and selected non-IBM products. For complete lists of products supported under both the current and revised offering, visit

<http://www.ibm.com/services/sl/products>

IBM Operational Support Services - SoftwareXcel

Yes

System i Software Maintenance applies

No

Variable charges apply

No

Educational allowance available

Yes. A 15% education allowance applies to qualified education institution customers.

Products eligible for Single Version Charging

SVC is applicable only when running on standard processors and the maximum time for which it applies is 12 months.

The SVC offering is valid only while both the predecessor product and the replacement product are:

- Both running on the same CPU
- Licensed under the same IBM customer number
- In the process of being migrated from the older product to the newer one by the customer
- Providing the same function

Note: When the SVC offering meets these requirements, you must order the appropriate number of Value Units for z/VM V6.1 to be eligible.

Replaced programs		Replacement programs	
Program number	Program name	Program number	Program name
5654-A17	z/VM Version 3	5741-A07	z/VM V6.1
5654-030	VM/ESA Version 2	5741-A07	z/VM V6.1
5684-112	VM/ESA Version 1	5741-A07	z/VM V6.1
5664-167	VM/SP	5741-A07	z/VM V6.1
5664-173	VM/SP HPO	5741-A07	z/VM V6.1
5664-301	VM/IS Base (Core)	5741-A07	z/VM V6.1
5664-308	VM/XA SP™	5741-A07	z/VM V6.1
5735-FAL	TCP/IP Version 2	5741-A07	z/VM V6.1
5798-FAL	TCP/IP Version 1	5741-A07	z/VM V6.1
5796-PNA	VM Realtime Monitor	5741-A07	z/VM V6.1
5664-191	VMMAP	5741-A07	z/VM V6.1
5798-DWD	RealTime Monitor VM/ESA	5741-A07	z/VM V6.1
5684-073	VMPRF	5741-A07	z/VM V6.1
5748-XE4	DirMaint	5741-A07	z/VM V6.1
5740-XXH	RACF	5741-A07	z/VM V6.1
5664-188	RSCS V2	5741-A07	z/VM V6.1
5684-096	RSCS V3	5741-A07	z/VM V6.1
5688-198	Language Environment/370	5741-A07	z/VM V6.1
5706-116	DFSMS/VM	5741-A07	z/VM V6.1
5668-911	OS/PL/I V2 Library	5741-A07	z/VM V6.1
5734-LM4	OS PL/I Resident Library	5741-A07	z/VM V6.1
5734-LM5	OS PL/I Transient Library	5741-A07	z/VM V6.1
5688-022	VS COBOL II Library Only	5741-A07	z/VM V6.1
5668-940	VS COBOL II Library Only	5741-A07	z/VM V6.1
5740-LM1	OS/VS COBOL Library Only	5741-A07	z/VM V6.1
5688-039	C/370 Library	5741-A07	z/VM V6.1

On/Off Capacity on Demand (CoD)

To be eligible for On/Off CoD pricing, you must be enabled for temporary capacity on the corresponding hardware, and the required contract, Attachment for Customer Initiated Upgrade and IBM eServer On/Off Capacity on Demand - Software (Z125-6611), must be signed prior to use.

IBM Electronic Services

IBM has transformed its delivery of hardware and software support services to help you achieve higher system availability. Electronic Services is a Web-enabled solution that offers an exclusive, no-additional-charge enhancement to the service and support available for IBM servers. These services are designed to provide the opportunity for greater system availability with faster problem resolution and preemptive monitoring. Electronic Services comprises two separate, but complementary, elements: Electronic Services news page and Electronic Services Agent.

The Electronic Services news page is a single Internet entry point that replaces the multiple entry points traditionally used to access IBM Internet services and support. The news page enables you to gain easier access to IBM resources for assistance in resolving technical problems.

The Electronic Service Agent™ is no-additional-charge software that resides on your server. It monitors events and transmits system inventory information to IBM

on a periodic, client-defined timetable. The Electronic Service Agent automatically reports hardware problems to IBM. Early knowledge about potential problems enables IBM to deliver proactive service that may result in higher system availability and performance. In addition, information collected through the Service Agent is made available to IBM service support representatives when they help answer your questions or diagnose problems. Installation and use of IBM Electronic Service Agent for problem reporting enables IBM to provide better support and service for your IBM server.

To learn how Electronic Services can work for you, visit

<http://www.ibm.com/support/electronic>

Prices

Information on charges is available at

<http://www.ibm.com/support>

Choose the option entitled Purchase / upgrade tools.

The products and features in this announcement have one pricing metric: Value Units based on the number of processors. The charge applies only to the z/VM V6.1 base and the priced, optional features of DirMaint, RSCS, RACF, the Performance Toolkit for VM, and the S&S entitlements at the initial order.

Program Name: z/VM Version 6 Release 1

Program Number: 5741-A07

Entitlement Identifier	Description	License option / Pricing metric
S015HSV	z/VM V6	Use-based OTC, Per Value Unit On/Off CoD, Per Processor-day TUC
S015HST	DirMaint Feature	Use-based OTC, Per Value Unit On/Off CoD, Per Processor-day TUC
S015HSX	RSCS Feature	Use-based OTC, Per Value Unit On/Off CoD, Per Processor-day TUC
S015HSZ	RACF Feature	Use-based OTC, Per Value Unit On/Off CoD, Per Processor-day TUC
S015HSW	Performance Toolkit for VM Feature	Use-based OTC, Per Value Unit On/Off CoD, Per Processor-day TUC

Subscription and Support PID 5741-SNS

Entitlement Identifier	Description	License option / Pricing metric
S0111PX	z/VM V6	Basic ASC, per Value Unit SW S&S No charge, decline SW S&S No-charge, SW S&S Registration
S0111R1	DirMaint Feature	Basic ASC, per Value Unit SW S&S No charge, decline SW S&S No-charge, SW S&S Registration
S013T6B	RSCS Feature	Basic ASC, per Value Unit SW S&S No charge, decline SW S&S No-charge, SW S&S Registration
S0111R0	RACF Feature	Basic ASC, per Value Unit SW S&S No charge, decline SW S&S No-charge, SW S&S Registration
S0111PZ	Performance Toolkit for VM Feature	Basic ASC, per Value Unit SW S&S No charge, decline SW S&S No-charge, SW S&S Registration

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