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**IBM System z  
Introduction  
July 2010**

**z/VM Version 6 Release 1 Enhancements  
for IBM zEnterprise 196 and the zEnterprise  
Virtualization**

Frequently Asked Questions

Worldwide



## **z/VM Version 6 Release 1**

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### **Question:**

What did IBM announce on July 22, 2010 with regards to z/VM®?

### **Answer:**

IBM announced support of the IBM zEnterprise™ 196 (z196) family of processors for both z/VM Version 5 Release 4 (V5.4.0) and z/VM version 6 release 1 (V6.1.0). z/VM will also have full support for End-to-end management of the heterogeneous environment of a zEnterprise System provided by the IBM zEnterprise Unified Resource Manager (zManager). Along with this support will be some internal enhancements to z/VM memory management, the z/VM SSL server, Packaging and device support.

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### **Question:**

Is the support the same for both Version 5 and Version 6?

### **Answer:**

No the support is different. Both versions provide compatibility and exploitation support for the IBM zEnterprise 196 base and will have z/VM internal enhancements. Additionally z/VM 6.1.0 will provide full exploitation of the IBM zEnterprise Unified Resource Manager.

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### **Question:**

Why is the support different between Version 5 and version 6?

### **Answer:**

z/VM 6.1.0 provides additional support because it is the premier VM system that has been built to execute on IBM System z10™ and above processors. This being the newest release of z/VM will continue to be enhanced to receive the latest support for the newest of IBM System z® Processor family.

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### **Question:**

Will these enhancements require additional pricing and/or licensing agreements?

### **Answer:**

No, Pricing and licensing will remain the same with these enhancements.

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### **Question:**

Can I still order z/VM V5.4?

### **Answer:**

Yes. z/VM V5.4 is available for ordering and continues to be orderable along with z/VM V6.1. IBM will provide at least three months notification prior to any planned withdrawal date.

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**Question:**

Does this support satisfy the Statements of Direction\* for planned future support were announced on July 7, 2009?

**Answer:**

No, the statements of direction are still on target to be delivered with a future release of z/VM. The statements of direction are:

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

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**Question:**

Does this support satisfy any other Statements of Direction?

**Answer:**

Yes, 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™ (GDPS®) Metro/z/OS Global Mirror (GDPS/MzGM) environment. This satisfies the statement of direction in the XRC Services Announcement 610-018, (RFA52620) dated March 23, 2010.

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**Question:**

What is the overview of the enhancements to z/VM V5.4?

**Answer:**

New z/VM support enables guests of z/VM 5.4 to exploit the z196 family of processors and has other enhanced features.

- Guest support is provided for the following features of the CPC:
  - Enhanced Monitor Facility

- Floating-Point Extension Facility
- New general instructions
- Fast-BCR-Serialization Facility
- CMPSC Enhancement Facility
- Non-quiescing Key-Setting Facility
- Message-Security-Assist Extension 4

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.

1. Dynamic I/O and CP internal support for the Open Systems Adapter for intraensemble data network (IEDN) and Open Systems Adapter for intranode management network (INMN) along with the associated new CHPID types. z/VM 5.4 allows definition of these new interfaces but prevents their associated devices from being used by ensuring that they cannot be varied on-line.
  - z/VM internal Scalability enhancements including
  - A new SET/QUERY REORDER command that will 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.
  - Page release serialization improvement to help reduce system overhead and increase guest throughput.
2. Enhanced contiguous frame coalescing algorithms to reduce the number of situations in which z/VM is unable to find multiple adjacent frames of real memory, helping to increase system throughput
3. Enhanced support of the Crypto Express3 Coprocessor to now utilize protected key CP Assist for Cryptographic Functions (CPACF) encryption along with the existing clear key support.
4. z/VM SSL server enhancements to enhance the SSL server's capacity by implementing a new threading model to improve handling of multiple worker threads and adding support for multiple SSL servers, allowing a pool of servers to work in conjunction with a single TCP/IP stack. These enhancements increase the overall number of concurrent connections supported and decrease the system resources required. The SSL server has been further enhanced with support for the Federal Information Protection Standard (FIPS) 140-2.
5. XRC Timestamping support such that z/VM now generate timestamps for guest and system DASD write operations, allowing these I/O operations to be synchronized with those of other systems. For example, this allows z/VM to participate in a GDPS Metro/z/OS Global Mirror (GDPS/MzGM) environment.
6. z/VM has improved its HyperSwap™ capability to provide higher Reliability, Availability, and Serviceability (RAS). Along with this INCLUDE and EXCLUDE options to the HYPERSWAP command to provide finer control over the z/VM missing-interrupt automatic quiesce trigger.

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**Question:**

What is the overview of the enhancements to z/VM V6.1?

**Answer:**

New z/VM support enables guests of z/VM 6.1 to exploit the z196 family of processors [citation].

1. Guest support is provided for the following features of the CPC:
  - Enhanced Monitor Facility
  - Floating-Point Extension Facility
  - New general instructions
  - Fast-BCR-Serialization Facility
  - CMPSC Enhancement Facility
  - Non-quiescing Key-Setting Facility
  - Message-Security-Assist Extension 4
2. 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.
3. Dynamic I/O and CP internal support for the Open Systems Adapter for intraensemble data network (IEDN) and Open Systems Adapter for intranode management network (INMN) along with the associated new CHPID types. z/VM 6.1 allows for full function of these CHPID types including online and attach capabilities.
4. Systems Management Support for the IBM zEnterprise Unified Resource Manager including new DirMaint™ and SMAPI support for new and updates APIs to facilitate:
  - Disk management
  - DCSS management
  - Directory parsing
  - Network management
  - System configuration file management
  - User Directory management
  - Management Guest facilities
  - API function level interrogation
5. Network virtualization Support for the IBM zEnterprise System internal networks and Unified Resource Manager. This includes access to the IBM zEnterprise System intraensemble data network and the intranode management network through both its real and virtual networking capabilities.
6. Performance ToolKit support for the IBM zEnterprise System internal networks
7. z/VM internal Scalability enhancements including:
  - A new SET/QUERY REORDER command that will 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.
  - Page release serialization improvement to help reduce system overhead and increase guest throughput.
  - Enhanced contiguous frame coalescing algorithms to reduce the number of situations in which z/VM is unable to find multiple adjacent frames of real memory, helping to increase system throughput

8. Enhanced support of the Crypto Express3 Coprocessor to now utilize protected key CP Assist for Cryptographic Functions (CPACF) encryption along with the existing clear key support.
9. z/VM SSL server enhancements to enhance the SSL server's capacity by implementing a new threading model to improve handling of multiple worker threads and adding support for multiple SSL servers, allowing a pool of servers to work in conjunction with a single TCP/IP stack. These enhancements increase the overall number of concurrent connections supported and decrease the system resources required. The SSL server has been further enhanced with support for the Federal Information Protection Standard (FIPS) 140-2.
10. XRC Timestamping support such that z/VM now generate timestamps for guest and system DASD write operations, allowing these I/O operations to be synchronized with those of other systems. For example, this allows z/VM to participate in a GDPS Metro/z/OS Global Mirror (GDPS/MzGM) environment.
11. z/VM has improved its HyperSwap capability to provide higher Reliability, Availability, and Serviceability (RAS). Along with this INCLUDE and EXCLUDE options to the HYPERSWAP command to provide finer control over the z/VM missing-interrupt automatic quiesce trigger.
12. Closer integration with IBM Systems Director through Packaging The z/VM Manageability Access Point (zMAP) Agent, including the Platform Agent, previously shipped with IBM Systems Director V6.1.1 & V6.2, 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.

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**Question:**

What is FIPS?

**Answer:**

FIPS (Federal Information Protection Standard 140-2) 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. z/VM acquired this support for z/VM along with the upgrade of system SSL to the z/OS V1.11 level.

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**Question:**

What is the Unified Resource Manager?

**Answer:**

The IBM zEnterprise Unified Resource Manager is a systems management tool to provide a dashboard platform to monitor CPU's/system activity it also provides additional enhanced functions to monitor and manipulate various real server images , virtual server images, real resources, virtual resources and hardware functions. Specific information IBM zEnterprise Hardware Announcement 110-170 located at:

[http://www-03.ibm.com/systems/z/news/announcement/20100722\\_annnc.html?lnk=xlinksmd](http://www-03.ibm.com/systems/z/news/announcement/20100722_annnc.html?lnk=xlinksmd)

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**Question:**

When is the z/VM support going to be available to customers?

**Answer:**

Because the Hardware support is available in stages the z/VM support will also be delivered in stages.

- Currently Available – The protected key CPACF support and the packaging support for the z/VM zMAP
- September 10, 2010 - Support for the IBM zEnterprise 196 base coincident with the hardware availability
- September 30, 2010 - Scalability enhancements in z/VM and the SSL enhancements including FIPS support.
- November 19, 2010 - Support for the IBM zEnterprise Unified Resource Manager and the zEnterprise 196 networks (INMN and IEDN) and the associated CHPIDs
- December 31, 2010 - XRC time stamping support and the HyperSwap improvements

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**Question:**

Where can I find specific APAR numbers?

**Answer:**

The specific APAR numbers that will deliver this new function are all included in the July 22, 2010 Announce material for “IBM z/VM V6.1 - Enhancements for IBM zEnterprise System Virtualization” available at: <http://www.vm.ibm.com/zvm610/>

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**Question:**

As a review, what is z/VM V6.1?

**Answer:**

Version 6 Release 1 (V6.1) is the newest version of z/VM and is intended to be the base for all future z/VM enhancements. This release implements a new Architecture Level Set (ALS) available only on the IBM System z10 and zEnterprise 196 servers and future generations of System z servers.

Requiring z10™ technology or later allows z/VM to take advantage of newer hardware technology for future exploitation. More details on this architectural level can be found at:

[ibm.com/vm/zvm610/architecture](http://ibm.com/vm/zvm610/architecture)

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

- Enhanced performance of virtual networking environments running heavy guest-to-guest streaming workloads
- Faster access to data when utilizing FICON® Express8
- Closer integration with IBM Systems Director to eliminate the need to download agents and help simplify the installation of those agents
- Significantly better and more highly secure guest transactions when using Crypto Express3 as compared to Crypto Express2
- Support for IBM System Storage DS8000® Extended Address Volumes (EAVs) to help simplify storage management and relieve address constraints.

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**Question:**

Where can I get more information on the enhancements for z/VM 5.4 and z/VM V6.1?

**Answer:**

Refer to the July 22, 2010 Announce material for “IBM z/VM V6.1 - Enhancements for IBM zEnterprise System Virtualization” available at: <http://www.vm.ibm.com/zvm610/>

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**Question:**

Where can I find an electronic version (including updates) of this frequently asked questions list?

**Answer:**

Please visit: <http://www.vm.ibm.com/faq/> to view any updates to this FAQ list, as well any additional FAQ lists for z/VM

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