



# IBM System p Virtualization — The most complete virtualization offering for UNIX and Linux

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## At a glance

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IBM Advanced POWER Virtualization (APV) can boost overall system flexibility through virtualization technologies that can reallocate system resources to where they are needed and tap into additional resources on demand. System p servers and APV can help clients:

- Consolidate servers
- Reduce server sprawl
- Simplify systems management
- Improve business resiliency
- Reduce total cost of ownership (TOC)
- Enhance performance by automatically reacting to anticipated and unanticipated spikes in server demand
- Reduce energy consumption
- Increase business flexibility

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## Overview

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With the latest enhancements to System p™ Virtualization, including notable enhancements to APV, System p products once again are established as the most complete virtualization offering for UNIX® and Linux™.

Choose System p products that are designed to offer:

- Continuous application availability
- The flexibility to manage rapidly changing server capacity requirements
- Potential to reduce energy costs by consolidating multiple kinds of applications onto one server
- Top-notch CAP/EAL4+ security features
- Live Partition Mobility: This new feature of APV Enterprise Edition allows clients to move a running logical partition from one IBM POWER6™ server to another with no application downtime.

## APV

Virtualization can be found in a number of editions on System p. All System p servers can utilize standard virtualization functions or logical partitioning (LPAR) technology by using either the Hardware Management Console (HMC) or the Integrated Virtualization Manager (IVM). Logical partitions allow clients to run separate workloads in different partitions on the same server, potentially lowering costs and

improving energy efficiency. Partitions on POWER™ servers are designed to be shielded from each other to provide a high level of data security and increased application availability. Dynamic LPAR allows clients to dynamically allocate many system resources to application partitions without rebooting, simplifying overall systems administration and workload balancing and enhancing availability.

In addition to the base virtualization function that comes with every System p server, two optional virtualization editions will be available on System p: APV Standard Edition and APV Enterprise Edition.

#### APV Standard Edition

For users ready to get the full value out of their server, IBM offers Advanced POWER virtualization, which provides the most complete virtualization functionality for UNIX and Linux in the industry. APV includes IBM Micro-Partitioning™ and Virtual I/O Server (VIOS) capabilities, which are designed to allow businesses to increase system utilization, while helping to ensure applications continue to get the resources they need. Micro-Partitioning technology can help lower costs by allowing the system to be finely tuned to consolidate multiple independent workloads. Micro-partitions can be defined as small as 1/10th of a processor and be changed in increments as small as 1/100th of a processor. Up to 10 micro-partitions may be created per core on a System p server. VIOS allows for the sharing of expensive disk and optical devices and communications and Fibre Channel adapters to help drive down complexity and systems/administrative expenses. Also included is support for Multiple Shared Processor Pools, which allows for automatic nondisruptive balancing of processing power between partitions assigned to the shared pools, resulting in increased throughput and the potential to reduce processor-based software licensing costs and Shared Dedicated Capacity, which helps optimize use of processor cycles.

#### APV Enterprise Edition

APV Enterprise Edition is offered exclusively on POWER6 servers and includes all the features of APV Standard plus an exciting new capability called Live Partition Mobility. Live Partition Mobility allows for the movement of a running partition from one POWER6 server to another with no application downtime, resulting in better system utilization, improved application availability, and energy savings. With Live Partition Mobility, planned application downtime due to regular server maintenance can be a thing of the past.

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### Key prerequisites

APV requires a System p server with POWER5™ or POWER6 processor as well as AIX® V5.3, or later, or Linux on POWER.

APV is also supported on the BladeCenter® JS21 and JS22.

Live Partition Mobility requires a System p server with a POWER6 processor.

### Planned availability date

November 9, 2007

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### Description

APV Standard Edition and APV Enterprise Edition are both optional System p hardware features that deliver:

- Micro-Partitioning support for a single processor being shared by up to 10 logical partitions.
- VIOS V1.5, a single-function appliance that resides in a POWER5, POWER6, or IBM BladeCenter JS21 or JS22 partition. It facilitates the sharing of JS21 or of physical I/O resources between client partitions within the server. VIOS provides virtual SCSI targets and Shared Ethernet Adapter virtual I/O to client LPARs.
  - Virtual SCSI: Enables the sharing of physical storage adapters and storage devices (disk and optical) between LPARs.
  - Virtual networking: A shared Ethernet Adapter enables connectivity between physical and virtual networks.
  - File-backed virtual SCSI devices: Provides additional flexibility for virtual SCSI device provisioning and management. In addition to "backing" a Virtual SCSI device (disk or optical) by physical storage, a virtual SCSI device can now be backed by a file. File-backed

- virtual SCSI devices continue to be accessed as standard SCSI-compliant LUNs.
- Virtual SCSI Optical device.
- Virtual SCSI Disk device.
- VIOS Expansion Pack: VIOS install media will include an Expansion pack that delivers additional VIOS security functionality. These include Kerberos and Secure SNMP, and Secure LDAP.
- POWER 5 and 6: VIOS enablement for POWER6 processor in System p.
- System planning and deployment tool: Helps simplify the process of planning and deploying System p servers and virtual I/O; the tool also provides additional support for the planning and deployment of the virtual I/O partitions.
- IBM Tivoli® Storage Manager client: Automated backup/restore of VIOS customized data.
- ITUAM agent (IBM Tivoli Usage and Accounting Management): Accounting/usage metric collection/analysis.
- Monitoring solutions: Additional monitoring solutions to help manage and monitor the VIOS and shared resources. New commands and views provide additional metrics for memory, paging, processes, Fibre Channel host bus adapter (HBA) statistics, and virtualization.
- Integrated Virtualization Manager, a browser-based system management interface for certain models that can manage a partitioned system without an HMC. With IVM, clients can cost-effectively consolidate multiple partitions onto a single server. With its intuitive interface, the IVM is easy to use and is designed to significantly reduce the time and effort required to manage virtual devices and partitions. Specific tasks that clients can perform using IVM include:
  - Creating LPARs on a single managed system
  - Managing the virtual storage and virtual Ethernet on the managed system
  - Viewing service information related to the managed system
- Automated CPU reconfiguration
- Support for dedicated and shared processor LPARs

## **New in this release of APV: Enhancements to VIOS**

### **IVM V1.5 content**

IVM adds support for new POWER6 functions and provides significant enhancements to existing functions.

POWER6 feature support:

- Live Partition Mobility support: IVM has full support for migrating an active partition between two physical IVM managed systems with no application downtime. The partition must be using shared SAN storage or be running in diskless / dataless mode. Live Partition Mobility is licensed via APV Enterprise Edition.
- Integrated Virtual Ethernet (also known as Host Ethernet Adapter), allows multiple partitions to share a single physical Ethernet port without the need for the Shared Ethernet Adapter bridge.
- Support for Dedicated I/O: IVM now offers support for both shared and dedicated I/O, thus offering clients a choice when configuring their system.
- Shared Dedicated Capacity allows for the donation of unused dedicated CPU cycles to the shared processor pool, thus increasing overall system performance.
- Partition recovery priorities manages a processor failure, designed so that the partitions with the highest priority continue running.
- Processor compatibility mode allows the operating system to run in POWER5, POWER6, or POWER6 enhanced mode.

Existing feature enhancements:

- IVM now supports assigning any number of virtual Ethernet adapters to partitions, assigning virtual Ethernet IDs, and full support for IEEE 802.1Q adapters. Virtual optical support has been extended to support loading and unloading of optical media files to a virtual optical

device in the partition. Read-only support enables multiple partitions to access the same ISO image simultaneously. Read-write support allows partitions to treat the device as a DVD-RAM drive. In addition to the optical support, files may now be used for virtual disk in addition to physical and logical volumes.

- The terminal or console of a partition may now be accessed via a secure encrypted (SSH) connection directly from the Web browser.
- User interface enhancements include items such as a more intuitive tasks layout and improved virtual Ethernet management.

## **VIOS**

VIOS V1.5 new content:

- Support for Live Partition Mobility on APV Enterprise Edition
- Support for file-backed virtual SCSI devices
- Virtual I/O Server Expansion Pack
- Support for BladeCenter JS22
- Monitoring solutions: Additional monitoring solutions to help manage and monitor the VIOS and shared resources. New commands and views provide additional metrics for memory, paging, processes, Fibre Channel HBA statistics, and virtualization.
- IBM Tivoli Application Dependency Discovery Manager (TADDM) enables System p users to:
  - Discover their System p server environment along with the rest of their IT infrastructure
  - Learn how their System p servers are configured (and changing over time)
  - Determine if their System p servers are compliant with their configuration policies

TADDM provides deep-dive discovery for the System p servers (POWER5, or later), including its dependencies on the network and applications, along with its configuration data, subsystems, and virtualized LPARs.

The discovery includes the HMC, VIOS, IVM, System p servers, and each of the LPARs.

For more information, visit

<http://www.ibm.com/software/tivoli/products/taddm/>

System p and VIOS resource discovery

## **Systems management enhancements**

IBM has made significant strides in managing a virtualized System p environment. Key areas of innovation include a dramatically redesigned HMC interface; new monitoring and management tools from IBM Tivoli; IBM System Director Console; and the System Plan deployment capability on the HMC and IVM.

**Partition Mobility:** Partition Mobility, licensed via the optional APV Enterprise Edition, enables System p and System i™ users to move partitions easily from one POWER6 server to another.

**Live Partition Mobility:**

- Move a running LPAR and all of its running applications from one server to another with no application downtime.
- Avoid application and partition downtime by moving running AIX and Linux partitions to other systems prior to upgrades/maintenance.
- Balance resource utilization across multiple servers.
- Limit the impact of planned server outages.

**Inactive Partition Mobility:**

- Move a powered-off LPAR from one system to another.
- Move a partition and all virtual devices to the destination server, ready for activation.

Partition Mobility requirements:

- POWER6 servers and APV Enterprise Edition.
- VIOS for virtualizing resources and providing mobility infrastructure on source and destination servers.
- AIX/Linux partitions with OS levels supporting Partition Mobility.
- HMC managing both source and destination servers or IVM-managed to IVM-managed server migrations supported.
- Partitions can be diskless, dataless, or use SAN-attached storage via the VIOS. Any virtual disks must be SAN-attached and accessed through VIOS.

Partition Mobility minimum requirements:

- HMC V7R3.2.0, or later
- Ccc FW EM320\_XXX, or later
- AIX V5.3 TL7, or later, or AIX V6.1, or later
- VIOS V1.5, or later
- Red Hat Enterprise Linux (RHEL) 5.1, or later
- SUSE Linux Enterprise Server (SLES) 10 SP1

### **Other virtualization enhancements**

In addition to the enhancements to APV, several other enhancements have been made to IBM System p virtualization and management. Examples include expanded support for the System Planning and Deployment Tool, enhanced System p support from IBM Tivoli, and increased function in IBM Systems Director.

The following describes the features of each element by product area.

### **IBM Systems Director and IBM Tivoli Management Tools**

IBM Systems and Technology Group recently unveiled a comprehensive strategy to systems management for both virtualized and nonvirtualized environments. This framework includes IBM Systems Director as the base platform enablement and management and IBM Tivoli as the tool of choice for enterprise clients.

#### **IBM Systems Director**

The IBM Systems Director Family is a suite of products consisting of a no-charge base (IBM Director) and for-a-fee extensions. Software support is optionally available for a fee. Using IBM Director and IVM, System p clients can perform basic monitoring and management of their System p (as well as cross-platform) virtualized and nonvirtualized environments from a single console view. Using these tools, clients can view and perform base management across IBM Systems in their enterprise. More information about IBM Systems Director can be found at

<http://www.ibm.com/systems/virtualization/systemsdirector/>

#### **IBM Tivoli Management Tools**

For clients desiring complete and comprehensive management of their enterprise environment, System p recommends IBM Tivoli. As part of a System p / IBM Tivoli collaboration effort, a number of core IBM Tivoli management tool products have been enhanced to provide leading-edge virtualization monitoring capabilities for System p Virtualization. A summary of these new tools and offerings is listed.

#### **IBM Tivoli Monitoring**

IBM Tivoli Monitoring V6.1 now includes new System p agents, including an enhanced AIX monitoring agent, as well as new monitoring agents for the System p Central Electronics Complex, VIOS, and HMC. These agents provide improved monitoring of System p performance, throughput, health, and availability, for both physical and LPARs. Monitoring of virtual environments on System p servers is greatly enhanced with this release. Best practices are built into these monitors to provide quicker time to value and improved manageability of System p servers. These enhancements deliver additional performance and throughput monitoring for AIX and the VIOS beyond that previously provided by the IBM Tivoli Monitoring

System Edition for System p V6.1 product, which is available at no charge to System p clients. Also, because these agents are part of the IBM Tivoli Monitoring V6.1 product, clients can take advantage of the additional features of this product not available in IBM Tivoli Monitoring SE for System p V6.1 such as:

- Log file monitoring
- Historical data collection beyond 24 hours
- End-to-end management of heterogeneous resources in the IT environment from a single interface, the IBM Tivoli Enterprise™ Portal Workflows
- Tivoli Enterprise Portal logical views
- Universal Agent for customized monitoring

Clients interested in adding these capabilities may purchase IBM Tivoli Monitoring V6.1 and, because both products use the same infrastructure, can upgrade from IBM Tivoli Monitoring System Edition for System p V6.1 with minimal effort.

For further information visit

<http://www.ibm.com/software/tivoli/products/monitor-systemp/>

Tivoli Identity Manager (TIM):

- VIOS is enabled for user administration from TIM.
- When user administration is being managed in the enterprise using TIM, the client can use the VIOS-specific TIM adapter (part of TIM software packages) to manage VIOS-related users, allowing clients to manage VIOS users centrally and apply enterprise-specific security policies to the VIOS administrators and users. For more information refer to the TIM documentation.

TIM home page

<http://www.ibm.com/software/sysmgmt/products/support/IBMTivoliIdentityManager.html>

TIM 4.6 adapters

[http://www.ibm.com/support/docview.wss?rs=644&context=SSTFWV&uid=swg21246156&loc=en\\_US&cs=utf-8&lang=en](http://www.ibm.com/support/docview.wss?rs=644&context=SSTFWV&uid=swg21246156&loc=en_US&cs=utf-8&lang=en)

The System Planning Tool (SPT) and the Workload Estimator are designed to ease the deployment of a virtualized infrastructure.

The SPT consists of tools to assist clients with deploying a virtualized environment and is available as a no-charge download from

<http://www.ibm.com/systems/support/tools/systemplanningtool/>

Use the SPT for designing System p and System i servers and partitions. The resulting design, represented by a System Plan, can then be imported onto HMC V5.2, or later, and the IVM, where via the new System Plan feature, clients can automate configuration of the partitions designed via the SPT. The System Plan feature of the HMC also allows generation of system plans via the mksysplan command.

A major new feature in this version of the SPT is support for VIOS resource planning, allowing clients to seamlessly size, plan, and deploy their VIOS partitions.

Highlights of SPT include:

- Export system configuration to IBM for order processing via the IBM Sales Configurator (eConfig)
- Export system configuration to HMC or IVM for support of Power Architecture™-based systems configuration
- Workload Estimator (WLE) integration to aid in sizing workloads

- Performance Monitor and WLE integration to aid in sizing workloads
- Interactive report
- Help system
- Conversion of HMC-generated system plans to obtain partition configuration, system units, and expansion units within SPT

Support for System p:

- VIOS Resource Planning based on Performance Analysis and Workload Sizing Tool
- SPT integration with Performance Analysis and Sizing (PTX®/WLE), which allows VIO simulation and adds validation of resulting configuration
- VIOS LPAR Deployment, which automates deployment in a seamless manner via predefined, validated plan (SPT)
- Complex configurations that can be planned and deployed, including Redundancy, Shared Ethernet, SAN connections and Internal Storage, and MPIO attachments
- Make system plan, which can capture VIO configuration, enabling configuration recovery
- Deployment Planning and Configuration of IVM-managed partitions
- Automated configuration of partitions from SPT system plan via deployment wizard on the IVM partition

System Plan Viewer:

- Allows viewing and printing of the System Plan, which contains the hardware inventory and partition profile attributes for the system
- Allows viewing of sysplan report generated by mksysplan on HMC or IVM
- Provides reporting enhancements; report shows both HTML and text view, system diagram

SPT usability improvements: The SPT has added a number of user interface improvements based on direct client feedback to support greater productivity and ease of planning for systems deployments.

#### **WLE sizing and capacity planning highlights**

- Free Web-based sizing and capacity planning tool available at [www.ibm.com/systems/support/tools/estimator](http://www.ibm.com/systems/support/tools/estimator)
- Recommendations for new systems, upgrades, and consolidations, focusing on processor, memory, and disk requirements
- Measured input allowed via Performance Management for System p (PM) or PTX for capacity planning analysis and trending data considered for growth planning
- Dozens of built-in or ISV-based workloads allowed to be used for sizing input
- Client solution optimized by exploiting virtualization, including dedicated LPAR, shared LPAR, VIOS, and redundant VIOS
- Integration with SPT for planning a virtualized solution in more detail

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## **Reference information**

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For additional information, refer to:

Software Announcement [207-273](#), dated November 6, 2007 (Update to Passport Advantage® Sub-Capacity Licensing Offering).

Software Announcement [207-272](#), dated November 6, 2007 (Workload Partitions Manager for AIX).

Software Announcement [207-270](#), dated November 6, 2007 (IBM Usage and Accounting Manager Virtualization Edition for System p).

Software Announcement [207-271](#), dated November 6, 2007 (IBM AIX Version 6.1 provides leadership virtualization, security features, availability, and management capabilities).

For additional information about VIOS, refer to:

Software Announcement [206-026](#), dated February 9, 2006

Software Announcement [205-250](#), dated October 4, 2005

#### Trademarks

System p, POWER6, POWER, Micro-Partitioning, POWER5, System i, Tivoli Enterprise, and Power Architecture are trademarks of International Business Machines Corporation in the United States or other countries or both.

AIX, BladeCenter, Tivoli, PTX, and Passport Advantage are registered trademarks of International Business Machines Corporation in the United States or other countries or both.

UNIX is a registered trademark of the Open Company in the United States and other countries.

Linux is a trademark of Linus Torvalds in the United States, other countries or both.

Other company, product, and service names may be trademarks or service marks of others.

#### Statement of support of Open Shell and Open Secure Socket Layer

This section is intended to clear up client confusion regarding VIOS support for Open Secure Shell (OpenSSH) and Open Secure Socket Layer (OpenSSL).

Open source software is provided as a convenience to VIOS users on an "as-is" basis. These open source programs are shipped under an International License Agreement for Non-warranted code (ILAN). These programs are not designed by or owned by IBM.

IBM intends to provide limited how-to and usage support for these programs as part of VIOS Software Maintenance (SWMA) for subscribers of VIOS SWMA. The limited support provided for these products is described below.

IBM takes security vulnerability seriously and will make every reasonable effort to address security issues that arise and intends to provide fixes or work-around for these issues as per VIOS's vulnerability security process.

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

IBM intends to work with clients to investigate potential defects and resolutions/fixes to get the client up and running again, but IBM will have no obligation to provide a fix. Fixes for important security issues will be available through the VIOS notification process. If the defect is in the open source area of the code and no fix is available yet from the open source community, the client may need to wait on a fix. The client should work with the open source community to submit any requests for changes in function.

These open source programs also have extensive end-user community support available via electronic forums (not associated with IBM). Clients are encouraged to continue to use those sources of information.

Examples of potential support for OpenSSH:

- Installation, configuration, and setup-related queries
- Using OpenSSH to encrypt telnet, FTP, and remote copy between machines
- Minor fixes, if the issue is well-known in the Open Source Organization and the fix is available

Examples of potential support for OpenSSL:

- Installation, configuration, and setup-related queries
- Known security vulnerabilities related fixes
- Minor functional fixes, if the issue is well-known in the Open Source Organization and the fix is available

IBM is announcing end of support for the following releases of VIOS:

Program number	Program release name	Withdrawal from support date
5765-G34	Virtual I/O Server V1.1	September 30, 2008
5765-G34	Virtual I/O Server V1.2	September 30, 2008
5765-G34	Virtual I/O Server V1.3	September 30, 2009
5765-G34	Virtual I/O Server V1.4	September 30, 2010

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## Offering Information

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Product information is available via the Offering Information Web site

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

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## Publications

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No publications are shipped with this program.

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## Technical information

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### Specified operating environment

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**Hardware requirements:** IBM systems that run on the POWER5™ or POWER6™ processors, including the System p™, System p5™, eServer® p5, and eServer pSeries® server product lines.

Live Partition Mobility requires a System p server with an IBM POWER6 processor.

**Software requirements:** Partition Mobility minimum requirements

- HMC V7R3.2.0, or later
- CEC FW EM320\_XXX, or later
- AIX® 5.3 TL7, or later or AIX V6.1
- VIOS 1.5, or later
- RHEL 5.1, or later
- SLES 10 SP1

### Companion products

### Ordering information

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IBM announces VIOS V1.5 features to support the new APV Enterprise Edition.

Description	Program number	Processor group	OTC(1) Feature number
Per processor Enterprise Edition	5765-G34	C5	0037
Per processor Enterprise Edition	5765-G34	D5	0038
Per processor Enterprise Edition	5765-G34	E5	0039
Per processor Enterprise Edition	5765-G34	F5	0040
Per processor Enterprise Edition	5765-G34	G5	0041
Per processor Enterprise Edition	5765-G34	H5	0042
Per processor 00CoD EE	5765-G34	C5	0043
Per 250 processor 00CoD EE	5765-G34	C5	0044
Per processor 00CoD EE	5765-G34	D5	0045
Per 250 processor 00CoD EE	5765-G34	D5	0046
Per processor 00CoD EE	5765-G34	E5	0047
Per 250 processor 00CoD EE	5765-G34	E5	0048

Per processor 00CoD EE	5765- G34	F5	0049
Per 250 processor 00CoD EE	5765- G34	F5	0050
Per processor 00CoD EE	5765- G34	G5	0051
Per 250 processor 00CoD EE	5765- G34	G5	0052
Per processor 00CoD EE	5765- G34	H5	0053
Per 250 processor 00CoD EE	5765- G34	H5	0054

(1) One-time charge

5771-VIO Software Maintenance 1 yr registration and 7x24 Support offering:

Description	Program number	Processor group	OTC Feature number
Per processor EE SWMA 1yr reg	5771- VIO	C5	1137
Per processor EE SWMA 1yr 7x24	5771- VIO	C5	1138
Per processor EE SWMA 1yr reg	5771- VIO	D5	1139
Per processor EE SWMA 1yr 7x24	5771- VIO	D5	1140
Per processor EE SWMA 1yr reg	5771- VIO	E5	1141
Per processor EE SWMA 1yr 7x24	5771- VIO	E5	1142
Per processor EE SWMA 1yr reg	5771- VIO	F5	1143
Per processor EE SWMA 1yr 7x24	5771- VIO	F5	1144
Per processor EE SWMA 1yr reg	5771- VIO	G5	1145
Per processor EE SWMA 1yr 7x24	5771- VIO	G5	1146
Per processor EE SWMA 1yr reg	5771- VIO	H5	1147
Per processor EE SWMA 1yr 7x24	5771- VIO	H5	1148

5773-VIO Software Maintenance 3 yr registration and 7x24 Support offering:

Description	Program number	Processor group	OTC Feature number
Per processor EE SWMA 3yr reg	5773- VIO	C5	0955
Per processor EE SWMA 3yr 7x24	5773- VIO	C5	0956
Per processor EE SWMA 3yr reg	5773- VIO	D5	0957
Per processor EE SWMA 3yr 7x24	5773- VIO	D5	0958
Per processor EE SWMA 3yr reg	5773- VIO	E5	0959
Per processor EE SWMA 3yr 7x24	5773- VIO	E5	0960
Per processor EE SWMA 3yr reg	5773- VIO	F5	0961
Per processor EE SWMA 3yr 7x24	5773- VIO	F5	0962

5773-VI3 3yr Software Maintenance registration and 7x24 support:

Description	Program number	Processor group	OTC Feature number
Per processor SWMA 3yr Reg	5773- VI3	G5	0965
Per processor SWMA 3yr 7x24	5773- VI3	G5	0966
Per processor SWMA 3yr Reg	5773- VI3	H5	0967
Per processor SWMA 3yr 7x24	5773- VI3	H5	0968

IBM announces VIOS V1.5 and Expansion package features under 5692-A6P and 5692-A5L SPO offerings. These features will be announced in Software Announcement [207-271](#), dated November 6, 2007.

Program number	Program name	Feature number
5692- A6P	5765- G34 VIOS Expansion Pack	1404
5692- A5L	5765- G34 VIOS Expansion Pack	1404
5692- A6P	5765- G34 VIOS V1.5	2201
5692- A5L	5765- G34 VIOS V1.5	2201

## Planning information

**Packaging:** Program packages

**Security, auditability, and control**

VIOS V1.5 uses the security and auditability features of the host hardware or software. 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

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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 unmatched portfolio of capabilities. Together, we provide the global reach, intellectual capital, industry insight, and technology leadership to support any critical business need.

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

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

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## Ordering information

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### Charge metric

Program name	Part number or PID number	Charge metric
VIOS V1.5	5765-G34	Per processor (already announced)

This software license includes Software Maintenance, previously referred to as Software Subscription and Technical Support.

Extending coverage for a total of three years from the date of acquisition may be elected. Order the program number, feature number, and quantity to extend coverage for your software licenses. If maintenance has expired, specify the after-license feature number.

Software license includes 1 year Software Maintenance 5765-G34 — VIOS V1.5

5771-VI0 1 year registration or 1 year renewal

5773-V13 Maintenance 3 year registration (2 year uplift)

5773-VI0 Maintenance 3 year renewal

5771-VAL After License Charge

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## Terms and conditions

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The information provided in this announcement letter is for reference and convenience purposes only. The terms and conditions that govern any transaction with IBM are contained in the applicable contract documents such as the IBM International Program License Agreement (IPLA), IBM International Passport Advantage® Agreement, and the IBM Agreement for Acquisition of Software Maintenance.

**Licensing:** IPLA including the license information (LI) document and proof of entitlement (PoE) govern your use of the program. PoEs are required for all authorized use.

This software license includes Software Maintenance, previously referred to as Software Subscription and Technical Support.

**Agreement for Acquisition of Software Maintenance:** The IBM Agreement for Acquisition of Software Maintenance (Z125-6011) agreement applies for maintenance and does not require customer signatures.

**Limited warranty applies:** Yes

**Money-back guarantee:** 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:** The program may be stored on the primary machine and another machine, provided that the program is not in active use on both machines at the same time.

**Volume orders (IVO):** Yes. Contact your IBM representative.

**Passport Advantage applies:** No

**Software Maintenance applies:** Yes. All distributed software licenses for VIOS V1.5 include Software Maintenance (Software Subscription and Technical Support) for a period of 12 months from the date of acquisition, providing a streamlined way to acquire IBM software and assure technical support coverage for all licenses. Extending coverage for a total of three years from date of acquisition may be elected.

While your Software Maintenance is in effect, IBM provides you assistance for your routine, short duration installation and usage (how-to) questions, and code-related questions. IBM provides assistance via telephone and, if available, electronic access, only to your information systems (IS) technical support personnel during the normal business hours (published prime shift hours) of your IBM support center. (This assistance is not available to your end users.) IBM provides Severity 1 assistance 24 hours a day, every day of the year. For additional details, consult your IBM Software Support Guide at

<http://techsupport.services.ibm.com/guides/handbook.html>

Software Maintenance does not include assistance for the design and development of applications, your use of programs in other than their specified operating environment, or failures caused by products for which IBM is not responsible under this agreement.

**System i™ Software Maintenance applies:** Yes

**Variable charges apply:** Yes

**Educational allowance available:** Yes. A 15% education allowance applies to qualified education institution customers.

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## Prices

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This product is already announced under 5765-G34 and prices will remain the same for the VIOS V1.5.

IBM announces VIOS V1.5 features to support the new APV Enterprise Edition.

**Variable charges:** The applicable processor-based one-time charge will be based on the group of the designated machine on which the program is licensed for use. If the program is designated to a processor in a group for which no charge is listed, the charge of the next higher group listed applies. For movement to a machine in a higher group, an upgrade charge equal to the difference in the then-current charges between the two groups will apply. For movement to a machine in a lower group, there will be no adjustment or refund of charges paid.

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