IBM Spectrum Virtualize Software V7.6 delivers a flexible, responsive, available, scalable, and efficient storage environment

At a glance

Are your storage requirements growing too fast? Are the costs of managing this growth taking more and more of your IT budget? IBM Spectrum Virtualize™ Software V7.6 can help solve these problems, delivering a more flexible, responsive, available, scalable, and efficient storage environment.

IBM Spectrum Virtualize software capabilities are offered across a variety of platforms, including SAN Volume Controller (SVC), Storwize® V7000 (Unified), Storwize V5000, Storwize V3700, Storwize V3500, and FlashSystem™ V9000. IBM Spectrum Virtualize products are designed to deliver the benefits of storage virtualization and advanced storage capabilities in environments from large enterprises to small businesses and midmarket companies.

- Real-time Compression™ for in-line, real-time compression
- Stretched Cluster and HyperSwap® for a high-availability solution
- Easy Tier® for automatic and dynamic data tiering
- Distributed RAID for better availability and faster rebuild times
- Encryption for internal and external virtualized capacities
- FlashCopy® snapshots
- Remote data replication

Order now

For ordering, contact your IBM® representative or an IBM Business Partner. For more information, contact the Americas Call Centers at: 800-IBM-CALL (426-2255).

Reference: YE001

Overview

IBM Spectrum Virtualize software delivers a powerful solution for storage efficiency in environments where IBM is the primary storage. When used in combination with SVC, Storwize V7000 (Unified), Storwize V5000, Storwize V3700, and Storwize V3500, IBM Spectrum Virtualize provides the benefits of storage virtualization and
advanced storage capabilities, including HyperSwap, Virtual Volume (VVol) support, FlashCopy, replication, Real-time Compression, Easy Tier, and Encryption.

Version 7.6 of Spectrum Virtualize includes the following new functionalities:

**Encryption:** For improved data security and confidentiality, encryption is now available for both internal capacities of SVC, Storwize V7000 and FlashSystems V9000 and externally virtualized capacities of Storwize V7000, SVC, and FlashSystems V9000. Encryption can be applied to virtualized storage arrays, even if the virtualized array doesn't have encryption capabilities. Encrypted volumes are transparent to applications, easing implementation and operation.

For supported externally virtualized storage configurations, data encryption can be enabled by the Storwize V7000 or SVC controllers. The data is encrypted and sent over the storage network to the virtualized storage device(s). Encryption by Spectrum Virtualize is transparent to hosts and applications, and the data is encrypted and protected across the network between the Storwize and SVC controllers and the storage device(s).

**Distributed RAID:** For higher availability, Distributed RAID is now available for internal capacities, offering up to 10 times faster RAID array rebuild times. As drives grow in capacity, rebuild times increase, increasing the possibility of a second drive failure and resulting in a loss of data. Distributed RAID addresses this issue by distributing the data across a higher amount of physical drives, reducing the load on each individual drive from rebuild activity. Additionally, Distributed RAID can also deliver increased performance because data can be read from/written to more drives for a given I/O. Distributed RAID volumes are transparent to applications for simplified implementation and operation.

**IP quorum base support:** Current Stretched Cluster (SVC) and HyperSwap (SVC, Storwize V7000 and Storwize V5000) implementations require Fibre Channel storage on a third site to cope with tie-break situations in the event of the inter-site link failing. IP quorum base support will enable the use of a lower cost IP network-attached host as quorum disk for simplified implementation and operation.

**HyperSwap GUI support:** Current local HyperSwap is functionally complete, but requires complex configuration through the existing command-line interface. This new release of HyperSwap offers a new command-line interface which greatly simplifies the setup process to a handful of commands, and also adds the ability to configure and manage local HyperSwap through the GUI.

**VMware VVol integration:** Migration of space efficient volumes between storage containers will maintain the space efficiency of volumes and deliver resiliency for VMs in case the volumes start running out of space. Cloning a virtual machine will achieve a full independent set of virtual volumes.

**Increase maximum quantity of iSCSI hosts:** For more scalable iSCSI host support, version 7.6 will increase the maximum number of iSCSI host sessions from 256 to 1024 per node, offering more fanout for each SVC I/O group.

**Integrated Comprestimator:** Real-time Compression is a key differentiator of the Storwize Family, and the Comprestimator is its key sizing tool to estimate how much capacity savings the customer can expect. The Comprestimator can analyze the patterns of the actual customer data, and estimate the compressibility of data per volume. Currently, storage administrators have to get server administrator collaboration and authorization to install Comprestimator on servers, potentially on hundreds of servers. The integration of Comprestimator within Spectrum Virtualize will ease the process of estimating capacity savings by having this sizing tool natively in SVC, Storwize V7000, and FlashSystems V9000, avoiding the need to install Comprestimator on hundreds of servers and enabling estimates of Real-time Compression effectiveness from a central console.

**Improvement in the worldwide support processes, 24 hours a day, seven days a week:** Enhanced support includes the addition of 24-hour support response to severity 2 calls, seven days a week, for SVC, V7000, V7K Unified, and V9000.
customers on November 27, 2015. For additional details, consult your IBM Software Support Handbook at

http://www.ibm.com/support/handbook

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**Key prerequisites**

**Software requirements**

IBM SAN Volume Controller V7.6 (5641-VC7, 5641-CP7, 5725-M19, and 5725-H04) has the same software prerequisites as IBM SAN Volume Controller V7.5.

IBM Spectrum Virtualize Software for SAN Volume Controller Encryption Software V7.6 (5641-B01 and 5725-Y35) requires PID 5641-VC7.

IBM Storwize V7000 V7.6 (5339-CB7, 5639-XB7, 5639-EB7, 5639-VM7, 5639-EV7, 5639-RM7, and 5639-CP7) has the same software prerequisites as IBM Storwize V7000 V7.5.

IBM Spectrum Virtualize Software V7.6 is not available for IBM Flex System® V7000. IBM Flex System V7000 V7.2 (5639-NZ7, 5639-EX7, 5639-RE7, and 5639-CM7) has the same software prerequisites as IBM Flex System V7000 V7.1.

IBM Storwize V5000 V7.6 (5639-CT7, 5639-XT7, and 5639-ET7) has the same software prerequisites as IBM Storwize V5000 V7.5.

For all current storage systems and host environments supported with the IBM FlashSystem® V840, refer to the support website


For all current storage systems and host environments supported with the IBM FlashSystem V9000, refer to the support website


Refer to the Description section and the announcements listed in the Reference information section for more information about these products and their software requirements.

**Hardware requirements**

IBM Spectrum Virtualize Software for SAN Volume Controller requires at least one pair of IBM System Storage® SAN Volume Controller (2145-DH8) storage engines with integrated battery backup units.

IBM Spectrum Virtualize Software for SAN Volume Controller Encryption Software V7.6 (5641-B01 and 5725-Y35) requires the Encryption Enablement Feature ACE2.

IBM Spectrum Virtualize Software for Storwize V7000 requires at least one IBM Storwize V7000 Control Enclosure (2076-524, 2076-112, 2076-124, 2076-312, or 2076-324) for installation.

Spectrum Virtualize Software V7.6 is not available for the IBM Flex System V7000. IBM Storwize Family Software for Flex System V7000 V7.2 requires at least one IBM Flex System V7000 (4939-A49, 4939-H49, or 4939-X49) Control Enclosure for installation.
IBM Spectrum Virtualize Software for Storwize V5000 requires at least one IBM Storwize V5000 control enclosure (2077-12C, 2077-24C, 2078-12C, or 2078-24C) for installation.

IBM FlashSystem V840 Software V7.6 (5639-FS7) requires an IBM FlashSystem V840 Storage System (9846-AC1 and 9846-AE1, or 9848-AC1 and 9848-AE1) for installation.

IBM FlashSystem V9000 Software V7.6 (5639-RB7) requires at least two IBM FlashSystem V9000 Control Enclosures (9846-AC2 or 9848-AC2) and at least one IBM FlashSystem V9000 Storage Enclosure (9846-AE2 or 9848-AE2).

Current support summaries, including specific software, hardware, and firmware levels supported, are maintained at their respective support websites.

- For SAN Volume Controller
- For Storwize V7000
- For Storwize V5000
- For Storwize V3700
- For Storwize V3500
- For IBM FlashSystem V840
- For IBM FlashSystem V9000

For information about IBM Spectrum Virtualize hardware platforms, refer to the announcements listed in the Reference information section.

**Planned availability date**

November 27, 2015

Encryption Enablement product (PID 5641-B01 or 5725-Y35 for Passport Advantage®) is not available in the following countries:

- Belarus
- Kazakhstan
- People's Republic of China
- Russia

**Description**

IBM Spectrum Virtualize Software is designed for customers looking to reduce complexities, improve availability, and lower the cost of managing their SAN-based storage. These customers typically manage entry to high-end storage
networks where their data is distributed across disparate disk storage arrays. They need to improve the flexibility, responsiveness, and availability of their IT infrastructure, while also controlling costs. They may have already implemented server virtualization through offerings such as IBM PowerVM or VMware vSphere, and aim to complete virtualization of their infrastructure to enhance the benefits of server virtualization.

Virtualization can help customers wanting to simplify their data centers by hiding the differences among heterogeneous storage systems and enabling pooling of storage for centralized, consistent management. These customers are also concerned about the availability of applications and simplifying deployment or growth of new applications. Storage virtualization with Spectrum Virtualize Software helps enable rapid changes to the infrastructure, while making data migration and physical infrastructure changes possible without application disruption.

IBM Spectrum Virtualize Software is the software-defined storage layer designed to virtualize storage within the data center and deliver advanced capabilities for managing storage. IBM Spectrum Virtualize Software can virtualize more than 330 different brands and models of storage, including storage from competitors. It also complements other IBM virtualization offerings, such as IBM System p and IBM System z logical partitions (LPARs), and VMware vSphere.

When used in combination with SVC, Storwize V7000 (Unified), Storwize V5000, Storwize V3700, and Storwize V3500, IBM Spectrum Virtualize delivers competitive and attractive offerings that meet a wide range of storage needs.

SVC is designed to:

- Virtualize block storage arrays to centralize management of storage volumes for management from a single point
- Improve utilization of storage capacity so that businesses can tap into previously unused disk capacity
- Deliver breakthrough ease of use and management
- Avoid downtime for backups, maintenance, and upgrades
- Support data migration without disruption to applications
- Enable virtualized storage volumes to be managed as a single pool of storage
- Enable advanced functionalities to be used across multiple virtualized storage array, even if the virtualized Storage array does not have these advanced functionalities natively, including Real-time Compression, encryption of external virtualized capacities, FlashCopy, and remote data replication
- Enable a high-availability storage infrastructure through Stretched Cluster or HyperSwap
- Improve the efficiency of the virtualized block storage infrastructure with advanced technologies such as Real-time Compression for up to 80% data compression rates without performance impact, and high-performance thin provisioning with zero detection
- Move the most accessed data automatically to higher performance tiers through Easy Tier

IBM Storwize V7000 and IBM Storwize V5000 are for customers requiring:

- Rack-mounted midrange storage with sophisticated software functions
- Breakthrough ease of use and management
- Nondisruptive migration from, or virtualization of, existing disk
- The ability to start small and pay as you grow for performance or capacity - scale up and scale out
- Advanced functionalities to be used across multiple virtualized storage arrays, even if the virtualized storage array does not have these advanced functionalities natively, such as Real-time Compression, HyperSwap, Easy Tier, encryption of internal and external virtualized capacities, FlashCopy, and remote data replication
- A high-availability storage infrastructure through HyperSwap
• Improved efficiency of the virtualized block storage infrastructure with advanced technologies, such as Real-time Compression, for up to 80% data compression rates without performance impact, and high-performance thin provisioning with zero detection
• Automatic and dynamic moves of the most accessed data to higher performance tiers through Easy Tier

IBM Storwize V3700 and V3500 are designed to accommodate the most common storage network technologies to enable easy implementation for the following:

• Server consolidation needs
• Transition from internal to external storage
• Transition from direct-attached storage to SAN storage
• Small and medium business customers that have limited IT knowledge and budget, but with storage and data protection challenges and requirements
• Small locations and remote sites

FlashSystem V840 and FlashSystem V9000 are for clients requiring:

• All-flash storage configurations with very low latency - microseconds of latency
• Rack-mounted enterprise storage with all sophisticated software functions available in SVC
• Nondisruptive migration from, or virtualization of, existing disk

Storwize V7000 Unified File Module Software V1.6

IBM Storwize V7000 Unified V1.6 software delivers file storage to the Storwize V7000 midrange disk system. Storwize V7000 Unified is a block and file storage system with a tightly integrated management console. The new capabilities available with V1.5 include:

• Server Message Block (SMB) 3.0
• Active Cloud Engine™ (ACE) based migration from V7K Unified to ESS
• CIFS (SMB) support for virtualized storage
• SAN-attached file modules
• Interoperability updates for V7K, TSM, and NFS

In addition to these software features, version 7.6 enables the following hardware features:

• 4 port, 16 Gbps FC adapters for SVC model DH8, Storwize V7000 generation 2 systems, and Storwize V9000 AC2 systems
• 4 port, 8 Gbps FC adapters for SVC
• Increased cache for Storwize V3500 (4 GB to 8 GB upgrade - Version 7.6 requires a minimum of 8 GB)

Some of these features address items in the statement of general direction in IBM Storwize Family Software Version 7.4 Announcement 214-450, dated October 28, 2014.

For further information on the hardware features enabled in V 7.6, refer to Hardware announcement 115-135, dated October 6, 2015.

Product positioning

Customers today face a challenging business environment. There is a need to store more information to make their business more competitive and for IT to be responsive and support initiatives, all while controlling IT costs and limiting the amount of staff required to support IT.
IBM Spectrum Virtualize systems provide management of storage from entry and midrange up to enterprise disk systems, and enable hosts to attach through SAN, FCoE, or iSCSI to existing Ethernet networks. IBM Spectrum Virtualize is designed to be easy to use, enabling existing staff to start working with it rapidly. IBM Spectrum Virtualize uses virtualization, thin provisioning, and compression technologies to improve storage utilization and meet changing needs quickly and easily. In this way, Spectrum Virtualize products are the ideal complement to server virtualization strategies.

IBM Spectrum Virtualize also enables migration of data from existing storage systems to new ones, simplifying implementation and minimizing disruption. These are offerings for customers with existing SAN or FCoE networks who seek to reduce the complexities and costs of managing their storage.

IBM Spectrum Virtualize is a cross-industry offering for customers who are mainly focused on cost savings while dealing with complexity and increasing storage requirements. These customers also focus on scaling capability with reasonable costs, including disaster recovery functions (Remote Mirroring, FlashCopy, Stretched clusters), performance features (SSD and Easy Tier), and security enhancements (Encryption).

Reference information


For more information about IBM 2145-DH8 SAN Volume Controller Storage Engine, refer to Hardware Announcement 114-077, dated May 6, 2014.

For more information about IBM Storwize V7000 2076-524, refer to Hardware Announcement 114-046, dated May 6, 2014.


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<td>5639-XBF reg</td>
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**IBM Spectrum Virtualize Software for Storwize V7000 External Data Virtualization Software V7**

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**IBM Spectrum Virtualize Software for Storwize V5000 Controller Software V7**

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**IBM Spectrum Virtualize Software for Storwize V5000 Expansion Software V7**

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IBM FlashSystem Software V7

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IBM FlashSystem Real-time Compression Software V7

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<td>5639-FCF reg</td>
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IBM FlashSystem Remote Mirroring Software V7

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<td>5639-FRD renewal</td>
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<tr>
<td>5639-FRF reg</td>
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IBM FlashSystem External Virtualization Software V7

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IBM FlashSystem V9000 Software V7

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</table>

Software Maintenance renewals for Spectrum Virtualize for SVC are managed in Passport Advantage.

**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).

*BP Attachment for Announcement Letter 215-391*

**Education support**

Classroom courses are available to IBM customers.

Hands-on courses are available worldwide to all audiences for SVC:

<table>
<thead>
<tr>
<th>Course number</th>
<th>Course title</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>SNV1G</td>
<td>SAN Volume Controller (SVC) Planning and implementation workshop</td>
<td></td>
</tr>
</tbody>
</table>

For more information and course schedules, visit the IBM training website


Search on the course number **SNV1G**.

More information is available at

http://www.ibm.com/services/learning/

or

http://www.ibm.com/training

IBM Global Services, IT Education Services, supports many IBM offerings. Visit

http://www.ibm.com/training/us

For descriptions of courses for IT professionals and managers, visit

http://www.ibm.com/services/learning/training.html

Questions? Contact 800-IBM-TEACH (426-8322)

For catalogs, schedules, and enrollments visit

http://www.ibm.com/training

**Offering Information**

Product information is available via the Offering Information website.
Publications

No publications are shipped with these programs.

The following publications can be downloaded in PDF format from the websites that follow this list:

<table>
<thead>
<tr>
<th>Title</th>
<th>Order number</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM Spectrum Virtualize Software for SAN Volume Controller Read First Flyer</td>
<td>GA32-0843</td>
</tr>
<tr>
<td>IBM SAN Volume Controller Model 2145-DH8 Hardware Installation Guide</td>
<td>GC27-3923</td>
</tr>
<tr>
<td>IBM SAN Volume Controller Hardware Maintenance Guide</td>
<td>GC27-2283</td>
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<tr>
<td>IBM SAN Volume Controller Troubleshooting Guide</td>
<td>GC27-2284</td>
</tr>
<tr>
<td>IBM SAN Volume Controller Software Installation and Configuration Guide</td>
<td>GC27-2286</td>
</tr>
<tr>
<td>IBM SAN Volume Controller and Storwize V7000 Command-Line Interface User’s Guide</td>
<td>GC27-2287</td>
</tr>
<tr>
<td>IBM SAN Volume Controller CIM Agent Developer’s Guide</td>
<td>SG27-2288</td>
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<tr>
<td>IBM SAN Volume Controller Safety Notices</td>
<td>GA32-0844</td>
</tr>
<tr>
<td>IBM Multipath Subsystem Device Driver User’s Guide</td>
<td>GC52-1309</td>
</tr>
<tr>
<td>IBM Storwize V7000 CIM Agent Developer’s Guide</td>
<td>GC27-2292-02</td>
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<tr>
<td>IBM Storwize V7000 Read First</td>
<td>GC27-2293-01</td>
</tr>
<tr>
<td>IBM Storwize V7000 Quick Installation Guide</td>
<td>GC27-2290-02</td>
</tr>
<tr>
<td>IBM Storwize V7000 Troubleshooting, Recovery, and Maintenance Guide</td>
<td>GC27-2291-02</td>
</tr>
<tr>
<td>IBM Storwize V7000 Safety Notices</td>
<td>GC27-3924-00</td>
</tr>
<tr>
<td>IBM Storwize V5000 Quick Installation Guide</td>
<td>GI13-2861-00</td>
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<td>IBM Storwize V5000 Installation Poster</td>
<td>SC27-5923-00</td>
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<td>IBM Storwize V5000 Read First Flyer</td>
<td>GI13-2860-00</td>
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<tr>
<td>IBM Systems Safety Notices</td>
<td>G229-9054-06</td>
</tr>
</tbody>
</table>

To view online information and link to a download site, visit IBM Knowledge Center, then see the Publications listed under the 7.5.0 release.

- For SAN Volume Controller
- For IBM Storwize V7000
- For IBM Storwize V5000
- For IBM Storwize V3700
- For IBM Storwize V3500
http://www-01.ibm.com/support/knowledgecenter/STLM6B/welcome
• For IBM FlashSystem V840
• For IBM FlashSystem V9000
  https://www-947.ibm.com/support/entry/portal/product/system_storage/flash_storage/flash_high_availability_systems/ibm_flashsystem_v9000?
  productContext=-1330121379

• To order additional selected hardcopy publications for a fee or to download free
  PDF format publications, visit the IBM Publications Center website
  http://www.ibm.com/shop/publications/order

To directly download publications in PDF format, visit the IBM product support
website.
• For SAN Volume Controller
  http://www.ibm.com/storage/support/2145
• For Storwize V7000
  http://www.ibm.com/storage/support/storwize/v7000
• For Storwize V5000
  http://www.ibm.com/storage/support/storwize/v5000
• For Storwize V3700
  http://www.ibm.com/storage/support/storwize/v3700
• For Storwize V3500
  http://www.ibm.com/storage/support/storwize/v3500
• For IBM FlashSystem V840
  https://www-947.ibm.com/support/entry/portal/product/system_storage/flash_storage/flash_high_availability_systems/ibm_flashsystem_v840?
  productContext=863560521
• For IBM FlashSystem V9000
  https://www-947.ibm.com/support/entry/portal/product/system_storage/flash_storage/flash_high_availability_systems/ibm_flashsystem_v9000?
  productContext=-1330121379

• Call the Publications Support Group at 800-879-2755, and select option 1.
• Contact your IBM representative.

IBM Publications Center

Hard copies of selected publications are available for a fee from the IBM Publications Center, as well as free softcopy publications. 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. A large number of publications are available online in various file formats, and they can all be downloaded.

Services

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/

Technical information

Specified operating environment

Hardware requirements

IBM Spectrum Virtualize Software for SVC requires at least one pair of IBM System Storage SAN Volume Controller (2145-DH8) storage engines with dual, uninterruptible power supplies.

As with SVC V5 and later, IBM Spectrum Virtualize Software for SVC V7 software cannot be loaded or run on SVC hardware engine model 2145-4F2.

IBM Spectrum Virtualize Software for SAN Volume Controller Encryption Software V7.6 (5641-B01 and 5725-Y35) requires the Encryption Enablement Feature ACE2.

IBM Spectrum Virtualize Software for Storwize V7000 requires at least one IBM Storwize V7000 Control Enclosure (2076-524, 2076-112, 2076-124, 2076-312, or 2076-324) for installation.

IBM Spectrum Virtualize Software for Storwize V5000 requires at least one IBM Storwize V5000 control enclosure (2077-12C, 2077-24C, 2078-12C, or 2078-24C) for installation.

IBM Spectrum Virtualize Software for Storwize V5000 requires at least one IBM Storwize V5000 control enclosure (2077-12C, 2077-24C, 2078-12C, or 2078-24C) for installation.

IBM FlashSystem V840 Software V7.6 (5639-FS7) requires an IBM FlashSystem V840 Storage System (9846-AC1 and 9846-AE1, or 9848-AC1 and 9848-AE1) for installation.

IBM FlashSystem V9000 Software V7.6 (5639-RB7) requires at least two IBM FlashSystem V9000 Control Enclosures (9846-AC2 or 9848-AC2) and at least one IBM FlashSystem V9000 Storage Enclosure (9846-AE2 or 9848-AE2).

Current support summaries, including specific software, hardware, and firmware levels supported, are maintained at the respective support website.

- For SVC
  http://www.ibm.com/storage/support/2145
- For Storwize V7000
  http://www.ibm.com/storage/support/storwize/v7000
- For Storwize V5000
  http://www.ibm.com/storage/support/storwize/v5000
- For Storwize V3700
  http://www.ibm.com/storage/support/storwize/v3700
- For Storwize V3500
  http://www.ibm.com/storage/support/storwize/v3500
- For IBM FlashSystem V840
- For IBM FlashSystem V9000

IBM United States Software Announcement 215-391  IBM is a registered trademark of International Business Machines Corporation  15
Software requirements

Installation of IBM Spectrum Virtualize Software V7.6 can be done directly from systems running Storwize Family Software V7.1.

For current hardware and software interoperability dependencies, and other product environment and configuration information, refer to the respective support website.

- For SVC
- For Storwize V7000
- For Storwize V5000
- For Storwize V3700
- For Storwize V3500
- For IBM FlashSystem V840
- For IBM FlashSystem V9000

IBM includes one year of software maintenance with each program license acquired. The initial period of software maintenance can be extended by the purchase of a renewal option when ordered through Passport Advantage or Passport Advantage Express™.

**Note:** Only IBM Spectrum Virtualize Software for SVC can be ordered through Passport Advantage.

When ordering using the program number with feature codes, software maintenance can be extended by selecting the applicable two-, three-, four-, or five-year software maintenance registration program number and features.

There are no software licenses required or available for the IBM Storwize V3500 and IBM Storwize V3700.

For the IBM Spectrum Virtualize Software for SVC software only, all Software Maintenance renewals will be managed and invoiced through Passport Advantage.

Refer to the Description section for new storage system and host environment support added by this release. For all current storage systems and host environments supported, refer to the respective support website.

- For SVC
- For Storwize V7000
- For Storwize V5000
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.

**Compatibility**

For further information regarding currently supported environments and operating guidelines, visit the respective support website.

- For SVC
- For Storwize V7000
- For Storwize V5000
- For Storwize V3700
- For Storwize V3500
- For IBM FlashSystem V840
- For IBM FlashSystem V9000

**Limitations**

This program only operates on specified storage hardware as detailed in the Hardware requirements section.

For hardware-associated limitations, refer to the announcements listed in the Reference information section.

For additional information, refer to Usage restriction section in the Terms and conditions section of this announcement, and to the License Information document that is available on the IBM Software License Agreement website.
Additional information on configuration limitations and configuration guidelines is further documented in the README file accompanying the Spectrum Virtualize Software or in furnished publications for this product available at the support website.

- For SVC
- For Storwize V7000
- For Storwize V5000
- For Storwize V3700
- For Storwize V3500
- For IBM FlashSystem V840
- For IBM FlashSystem V9000

Encryption and other functions in this announcement may be subject to limitations and restrictions for supported configurations, environments, and use. Refer to the V7.6 Configuration Limits and Restrictions document for details.

To view this document, access the IBM Systems Support site at [http://www.ibm.com/support](http://www.ibm.com/support)

Select the applicable product (such as Storwize V7000) in the Product Finder menu.

Enter 7.5 Configuration Limits and Restrictions in the Search Support field and check the “Search only...” box.

**Planning information**

**Customer responsibilities**

Planning for, and provision of, the power and environmental support of the required IBM Spectrum Virtualize product, including its storage engines, is a customer responsibility.

Refer to the announcements listed in the Reference information section.

Planning considerations for IBM Spectrum Virtualize Software are listed in the respective product's IBM Knowledge Center, which is available at

- For SAN Volume Controller
- For IBM Storwize V7000
- For IBM Storwize V5000
• For IBM Storwize V3700
  http://www-01.ibm.com/support/knowledgecenter/STLM5A/welcome

• For IBM Storwize V3500
  http://www-01.ibm.com/support/knowledgecenter/STLM6B/welcome

• For IBM FlashSystem V840

• For IBM FlashSystem V9000
  http://www-01.ibm.com/support/knowledgecenter/STKMQV/welcome

Customers with a 5641-VC7 or 5641-CP7 license are responsible to combine the total terabytes managed for each function from individual SVC License Manager (cluster) reports to ensure they are within the enterprise license entitlement (within that country) for each function.

Customers with enclosure licenses for optional functions, such as Easy Tier and FlashCopy, are responsible to combine the total number of enclosures managed for each function to ensure they are within the enterprise license entitlement (within that country) for each function.

Installability
Refer to the Software requirements section for complete information.

Packaging

New order packaging

License information documents for IBM Spectrum Virtualize Software programs ship with the hardware on which these programs are preloaded.

The IBM Agreement for Acquisition of Support and Addendum for Support, Z125-6011, is shipped with each new Spectrum Virtualize Software order.

SVC

IBM Spectrum Virtualize Software for SVC V7 (5641-VC7, 5641-CP7, and 5641-B01) is preinstalled on, and shipped with, the required IBM 2145 SVC Storage Engines.

After receipt of an order for IBM Spectrum Virtualize Software for SVC 5641-VC7, the Business Partner or customer will be required to register and accept Passport Advantage or Passport Express terms and conditions. Upon registration, the customer will be authorized for the electronic download of software code updates. The product includes the license and one year of support, with up to four additional years available for purchase with the product.

In addition to the IBM Agreement for Acquisition of Software Maintenance, the following are shipped with each new IBM System Storage SVC order:

• License Information for IBM System Storage SAN Volume Controller V7.6, G113-2841 and LC27-8566
• IBM System Storage SAN Volume Controller Read First file, GA32-0843
• License Information for IBM System Storage SAN Volume Controller Storage Replication Adapter for VMware SRM, GA76-0431

Storwize V7000

IBM Spectrum Virtualize Software for Storwize V7000 V7, (5639-VM7, 5639-EV7, 5639-RM7, and 5639-CP7) is preinstalled on, and shipped with, the required IBM 2076 Storwize V7000 Disk Systems.
In addition to the IBM Agreement for Acquisition of Software Maintenance, the License Information for IBM System Storage SVC and IBM Storwize V7000 Version 7, GI13-2841, is shipped with each new IBM Storwize V7000 Controller order.

**Storwize V5000**

IBM Spectrum Virtualize Software for Storwize V5000 (5639-ST7) is preinstalled on, and shipped with, the required IBM 2077 or 2078 IBM Storwize V5000 Disk Systems.

The paid invoice acts as Proof of Entitlement (PoE) for all orders of IBM Spectrum Virtualize Software V7. All associated media listed in the Publications section are also shipped with the new hardware order. One media set per IBM Spectrum Virtualize system will be shipped. Refer to the hardware announcements listed in the Reference information section for correlated hardware order features.

**Subsequent media orders**

For additional available publications, refer to the Publications section.

For assistance in placing orders with or without media features, contact your IBM representative.

Publications are in English.

This program, when downloaded from a website, contains the applicable IBM license agreement and License Information, if appropriate, and will be presented for acceptance at the time of installation of the program. For future reference, the license and License Information will be stored in a directory such as LICENSE.TXT.

**Security, auditability, and control**

IBM Spectrum Virtualize Software can use an existing LDAP for authentication (for example, interfacing with Microsoft™ Active Directory).

Use of supplementary antivirus software is recommended, but not required.

The customer is responsible for evaluation, selection, and implementation of security features, administrative procedures, and appropriate controls in application systems and communication facilities.

**Ordering information**

**Order handling**

IBM Spectrum Virtualize Software for SAN Volume Controller products identified in this announcement (5641-VC7, 5641-CP7, and 5641-B01) will be ordered through existing channels using existing configurator and ordering tools. However, the fulfillment processes have been modified to improve customer records management associated with Software Subscription and Support, often referred to as Software Maintenance. Software Subscription and Support will be entitled through Passport Advantage or Passport Advantage Express.

The products 5641-VC7, 5641-CP7, and 5641-B01, when selected during the configuration process with each hardware system, will be enabled for the system unit for which the product was ordered. Optionally, software and license only configurations can be created for 5641-VC7, 5641-CP7, and 5641-B01 based on existing supported hardware system units in the customer business environment. Offerings in this announcement are available exclusively through electronic download.
Passport Advantage customer: Media pack entitlement details

A Passport Advantage media pack will not be generated. Read first information, will be available with downloaded code updates from Passport Advantage.

Media pack information can be found on the Passport Advantage website

http://www.ibm.com/software/passportadvantage

Passport Advantage (PPA) allows greater flexibility to help customers manage their software licenses and Subscription and Support renewals. Customers can now have a common anniversary date for Subscription and Support renewals for all IBM software, under a PPA agreement, including IBM Storage software. The anniversary date, established at the order ship date for the initial product acquisition, will remain unchanged while their Passport Advantage or Passport Advantage Express agreement remains in effect.

To order a basic license, specify the program number and the one-time charge feature number in the quantity desired (maximum quantity of 250).

The program is available via electronic download only.

Program name: IBM Spectrum Virtualize Software for SAN Volume Controller Encryption Software V7

PID: 5641-B01

Use-based OTC with One-year Software Maintenance

<table>
<thead>
<tr>
<th>Description</th>
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Software Maintenance:

Program name: IBM Spectrum Virtualize Software for SAN Volume Controller Encryption Software V7 - One-year NC Registration

PID: 5641-B02

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Program name: IBM Spectrum Virtualize Software for SAN Volume Controller Encryption Software V7 - Two-year Registration One-time charge

PID: 5641-B03

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Program name: IBM Spectrum Virtualize Software for SAN Volume Controller Encryption Software V7 - Three-year Registration One-time charge

PID: 5641-B04

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Program name: IBM Spectrum Virtualize Software for SAN Volume Controller Encryption Software V7 - Four-year Registration One-time charge

PID: 5641-B05

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Program name: IBM Spectrum Virtualize Software for SAN Volume Controller Encryption Software V7 - Five-year Registration One-time charge

PID: 5641-B06

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Charge metric

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<td>IBM Spectrum Virtualize Software for SAN Volume Controller V7</td>
<td>5641-VC7</td>
<td>Per terabyte increments</td>
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<tr>
<td>IBM Spectrum Virtualize Software for SAN Volume Controller V7 (for Passport Advantage)</td>
<td>5725-M19</td>
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<td>IBM Spectrum Virtualize Software for SAN Volume</td>
<td>5641-B01</td>
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IBM United States Software Announcement 215-391  IBM is a registered trademark of International Business Machines Corporation
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<td>5725-Y35</td>
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<td>IBM Spectrum Virtualize Software for Storwize V7000 V7</td>
<td>5639-VM7</td>
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<td>IBM Spectrum Virtualize Software for Storwize V7000 External Virtualization software V7</td>
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<td>5639-CB7</td>
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<td>IBM FlashSystem V9000 Software V7.6</td>
<td>5639-RB7</td>
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</table>
New orders for Spectrum Virtualize Software

For Spectrum Virtualize Software V7 program number orders, first order the appropriate hardware for the initial system or cluster, then order the Spectrum Virtualize Software license.

Note: Real-time Compression, External Virtualization, Remote Mirroring software product identifiers are optional, and are ordered along with or where there is already a complete Spectrum Virtualize system, like the SAN Volume Controller 2145 or the Storwize V7000 2076 hardware, in place with the appropriate required Spectrum Virtualize software license for that system.

New orders for IBM FlashSystem V840 Software V7.6 for FlashSystem V840

For new IBM FlashSystem V840 Software V7.6 orders, first order the appropriate hardware for the initial system or cluster, then order the IBM FlashSystem V840 Software V7.6 license.

Note: Real-time Compression, External Virtualization, and Remote Mirroring, software product identifiers are optional. They can be ordered at the same time as the IBM FlashSystem V840 Software V7.6 and the corresponding FlashSystem V840 hardware, or they can be ordered after the initial purchase, assuming the system is appropriately configured and licensed.

New orders for IBM FlashSystem V9000 Software V7.6

For new IBM FlashSystem V9000 Software V7 orders, first order the appropriate hardware for the initial system or cluster, then order the IBM FlashSystem V9000 Software V7 license.

License metric definition

For SVC: Per Storage Device means one per SVC node. The Storage Device in this metric is the SVC node itself.

Terabyte (T/TB)

1 TB of managed storage = 2 to the power of 40 bytes = 1,099,511,627,776 bytes, trillion bytes.

For Storwize V7000, Storwize V5000, and FlashSystem V840:

Storage Device

Storage Device is a unit of measure by which the Program can be licensed. A Storage Device is an independently powered, channel-attached device that stores or controls the storage of data on magnetic disks or solid state drives, such as disk controllers and their respective expansion units, each constituting separate Storage Devices. Licensee must obtain entitlements for every Storage Device which runs, uses services provided by, or otherwise accesses the Program and for every Storage Device on which the Program is installed. Instead of the entitlements required for the Program directly, Licensee must obtain entitlements for this Program sufficient to cover the Storage Devices managed by the Program.

A storage device is equivalent to an enclosure, the term used most often when describing the Spectrum Virtualize Software product licensing and usage.

Customers requesting ESD

Downloading from the electronic software delivery website requires an active Software Maintenance Agreement for each product to be downloaded and registration with the ESS website.

Visit

http://www.ibm.com/servers/eserver/ess
Website registration requires:

- A valid customer number
- A software order number associated with the customer number

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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, IBM International Passport Advantage Agreement, and the IBM Agreement for Acquisition of Software Maintenance.

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IBM International Program License Agreement including the License Information document and Proof of Entitlement (PoE) govern your use of the program. PoEs are required for all authorized use. Part number products only, offered outside of Passport Advantage, where applicable, are license only and do not include Software Maintenance.

This software license includes Software Subscription and Support (also referred to as Software Maintenance).

**Agreement for Acquisition of Software Maintenance**

The IBM Agreement for Acquisition of Software Maintenance (Z125-6011) applies for Subscription and Support (also referred to as Software Maintenance) and does not require customer signatures.

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. IBM includes one year of Software Subscription and Support (also referred to as Software Maintenance) with the initial license acquisition of each program acquired. The initial period of Software Subscription and Support (also referred to as Software Maintenance) can be extended by the purchase of a renewal option, if available.

The customer is responsible for ensuring they renew their SWMA coverage for all licensed features and capacities before expiration. Restarting SWMA after expiration will incur a higher charge for that renewal.

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 number**

GI13-2841 License Information for:

- 5641-VC7 - IBM Spectrum Virtualize SAN Volume Controller Software V7.6
- 5641-CP7 - IBM Spectrum Virtualize SAN Volume Controller Compression Software V7.6
- 5639-VM7 - IBM Spectrum Virtualize V7000 Software V7.6
- 5639-EV7 - IBM Spectrum Virtualize V7000 External Virtualization Software V7.6
- 5639-RM7 - IBM Spectrum Virtualize V7000 Remote Mirroring Software V7.6
- 5639-CP7 - IBM Spectrum Virtualize V7000 Compression Software V7.6
On or near the planned availability date, the current License Information documents will be available for review on the IBM Software License Agreement website


**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 warranty applies only to the unmodified portion of the program. IBM does not warrant uninterrupted or error-free operation of the program or that IBM will correct all program defects. You are responsible for the results obtained from the use of the program.

IBM provides you with access to IBM databases containing information on known program defects, defect corrections, restrictions, and bypasses at no additional charge. For further information, consult the IBM Software Support Handbook found at

http://www.ibm.com/support/handbook

IBM will maintain this information for at least one year after the original licensee acquires the program (warranty period).

**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 (1) for programs acquired under the IBM International Passport Advantage offering, this term applies only to your first acquisition of the program and (2) 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.
Volume orders (IVO)

No

Passport Advantage applies

Yes, and through the Passport Advantage website at

http://www.ibm.com/software/passportadvantage

Usage restriction

Yes

SVC standard software (5641-VC7)

This program (5641-VC7) is licensed on a per-terabyte (with cumulative tiers) capacity basis. (Refer to the Ordering information section for information on charges for this program.) Users may only install this program on IBM System Storage SAN Volume Controller 2145-DH8, 2145-CG8, or 2145-CF8 Storage Engines, or subsequent IBM replacements of these.

IBM SAN Volume Controller standard software and its associated features are licensed to the customer (enterprise). Note that a customer who has physical sites in multiple countries may consolidate their licenses only within each country. Check with your sales representative and review all necessary conditions prior to licensing.

A customer’s right to use the IBM FlashCopy for SAN Volume Controller and Metro/Global Mirror for SAN Volume Controller features of this program is also limited to the amount of authorizations obtained from IBM. The authorizations for FlashCopy and for Metro/Global Mirror cannot exceed the total capacity authorization for the amount of managed storage on all clusters. Use of FlashCopy features requires license authorizations for only the FlashCopy sources, not the targets.

Use of Metro/Global Mirror features requires license authorizations for both the Metro/Global Mirror source and target capacities in use.

Customers may use the encryption feature once they purchase feature ACE2 on the hardware, and the encryption PID (5641-B01 or 5725-Y35) software enablement offering. Only one encryption software product is required per SVC node, regardless of the capacity of the system. Every SVC node in an SVC cluster must have encryption enabled for it to function.

This program is only supported for use with host servers, storage sub-systems, and SAN configurations identified by IBM as being supported for attachment to the IBM System Storage SAN Volume Controller. This program is provided together with code provided under separate license agreements, including, but not limited to, open source license agreements.

Storwize V7000

The following Program Unique Terms apply. This program is licensed for use with the IBM Storwize V7000 system with which the program was delivered, and only to manage the capacity specified in the proof of entitlement document for that license. A separate license is required for each IBM Storwize V7000 storage enclosure. The following paragraph titled "Disabling device" applies to the use of the IBM Storwize V7000 Software components. The term "Program" in these paragraphs shall mean the IBM Storwize V7000 Software components.

Disabling device: The Program may include a disabling device that will prevent certain features from being used. You will not tamper with such disabling device or otherwise change the Program.
**Transferability:** The Program 5639-VM7, 5639-CB7, or 5639-XB7 are nontransferable between IBM Storwize V7000 systems and are only to be used on the IBM Storwize V7000 system for which it was purchased. If the system is transferred to a new owner, the program license transfers with the system. However, Software Maintenance does not transfer, and a new maintenance agreement must be purchased by the new owner.

For additional information, refer to the License Information document that is available on the IBM Software License Agreement website


**Storwize V5000**

The following Program Unique Terms apply. This program is licensed for use with the IBM Storwize V5000 with which the program was delivered and only to manage the capacity specified in the proof of entitlement document for that license. A separate license is required for each IBM Storwize V5000 storage enclosure. The following paragraph titled "Disabling device" applies to the use of the IBM Storwize V5000 Software components. The term "Program" in these paragraphs shall mean the IBM Storwize V5000 Software components.

**Disabling device:** The Program may include a disabling device that will prevent certain features from being used. You will not tamper with such disabling device or otherwise change the Program.

**Transferability:** The Programs 5639-ST7, 5639-CT7, or 5639-XT7 are nontransferable between IBM Storwize V5000 systems and are only to be used on the IBM Storwize V5000 system for which it was purchased. If the system is transferred to a new owner, the program license transfers with the system. However, Software Maintenance does not transfer, and a new maintenance agreement must be purchased by the new owner.

For additional information, refer to the License Information document that is available on the IBM Software License Agreement website


**Software Subscription and Support applies**

Yes. Software Subscription and Support (also referred to as Software Maintenance), is now included in the Passport Advantage Agreement. Installation and technical support for the products announced in this announcement is provided by the Software Subscription and Support offering of the IBM International Passport Advantage Agreement. This fee service enhances customer productivity by providing voice or electronic access into the IBM support organizations.

IBM includes one year of Software Subscription and Support with the initial license acquisition of each program acquired. The initial period of Software Subscription and Support can be extended by the purchase of a renewal option.

While your Software Subscription and Support 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 Handbook at

http://www.ibm.com/support/handbook

Software Subscription and Support 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.
For additional information about the Passport Advantage Agreement, visit the Passport Advantage website at

http://www.ibm.com/software/passportadvantage

All distributed software licenses include Software Subscription and 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.

**Variable charges apply**

No

**Educational allowance available**

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

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**Statement of good security practices**

IT system security involves protecting systems and information through prevention, detection, and response to improper access from within and outside your enterprise. Improper access can result in information being altered, destroyed, or misappropriated or can result in misuse of your systems to attack others. Without a comprehensive approach to security, no IT system or product should be considered completely secure and no single product or security measure can be completely effective in preventing improper access. IBM systems and products are designed to be part of a comprehensive security approach, which will necessarily involve additional operational procedures, and may require other systems, products, or services to be most effective. IBM does not warrant that systems and products are immune from the malicious or illegal conduct of any party.

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**Prices**

**Business Partner information**

If you are an IBM Business Partner -- Distributor for Workstation Software acquiring products from IBM, you may link to Passport Advantage Online for resellers where you can obtain Business Partner pricing information. An IBM ID and password are required.

https://www.ibm.com/software/howtobuy/passportadvantage/paoreseller

**SVC Passport Advantage**

For Passport Advantage information and charges, contact your IBM representative or authorized IBM Business Partner:

Additional information is also available on the following Passport Advantage website

http://www.ibm.com/software/howtobuy/passportadvantage/

**Passport Advantage**

For Passport Advantage information and charges, contact your IBM representative or authorized IBM Business Partner for Software Value Plus. Additional information is also available at

http://www.ibm.com/software/passportadvantage

Information on charges is available at
Choose the option entitled Purchase/upgrade tools.

**Program name: IBM Spectrum Virtualize Software for SAN Volume Controller Encryption Software V7**

PID: 5641-B01

Use-based OTC with One-year Software Maintenance

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**Program name: IBM Spectrum Virtualize Software for SAN Volume Controller Encryption Software V7 - One-year NC Registration**

PID: 5641-B02

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**Program name: IBM Spectrum Virtualize Software for SAN Volume Controller Encryption Software V7 - Two-year Registration One-time charge**

PID: 5641-B03

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**Program name: IBM Spectrum Virtualize Software for SAN Volume Controller Encryption Software V7 - Three-year Registration One-time charge**

PID: 5641-B04

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**Program name: IBM Spectrum Virtualize Software for SAN Volume Controller Encryption Software V7 - Four-year Registration One-time charge**

PID: 5641-B05
**Description** | **Program number** | **Feature number**
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SVC Encryption Per Storage Device Four-year Registration One-time charge | 5641-B05 | 1446

SVC Encryption Per 250 Storage Device Four-year Registration One-time charge | 5641-B05 | 1447

**Program name: IBM Spectrum Virtualize Software for SAN Volume Controller Encryption Software V7 - Five-year Registration One-time charge**

**PID:** 5641-B06

**Description** | **Program number** | **Feature number**
--- | --- | ---
SVC Encryption Per Storage Device Five-year Registration One-time charge | 5641-B06 | 1448

SVC Encryption Per 250 Storage Device Five-year Registration One-time charge | 5641-B06 | 1449

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http://www.ibm.com/financing

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http://www.ibm.com/financing

**Order now**

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Phone: 800-IBM-CALL (426-2255)

Fax: 800-2IBM-FAX (242-6329)

For IBM representative: callserv@ca.ibm.com
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**Note:** Shipments will begin after the planned availability date.

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For questions regarding Software Value Plus, visit

http://www.ibm.com/partnerworld/page/svpAuthorizedPortfolioContacts

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**Corrections**

*(Corrected on February 12, 2016)*
The Usage restriction for 5641-VC7 has been updated under the Terms and conditions section.

(Corrected on January 25, 2016)

Added a statement to the Licensed metric definition subsection of the Ordering information section to clarify *Per Storage Device for SVC.*