



IBM Spectrum Virtualize Software V7.8 delivers new software functionality for the Spectrum Virtualize family of offerings

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At a glance

IBM Spectrum Virtualize™ V7.8 delivers support for the latest platforms in the IBM® Storwize® product family, and adds new software functionality and improvements:

- More flexible data protection with transparent cloud tiering to leverage the cloud as snapshot targets and restore snapshots from the cloud on select platforms
- Improved data economics through advanced functionalities for lower endurance flash drives
- Improved security with support for encryption key management software
- Scalability with support for high-density expansion enclosures
- More flexibility through Storwize model conversions

Overview

IBM Spectrum Virtualize software delivers a powerful solution for storage virtualization, offering advanced storage capabilities such as high availability, Real-time Compression™, Easy Tier® data tiering, encryption, Distributed RAID, clustering for performance and capacity scalability, and enterprise-class local and remote copy services.

IBM Spectrum Virtualize V7.8 adds the following new benefits:

- Increased flexibility to protect data with transparent cloud tiering technology to leverage the cloud as snapshot targets and restore snapshots from the cloud
- Improved data economics through advanced functionalities for lower endurance flash drives, better balancing performance gains, and lower cost per terabyte with lower endurance
- Improved security with support to encryption key management software that complies with Key Management Interoperability Protocol (KMIP) standards, such as IBM Security Key Lifecycle Manager (SKLM) to help centralize, simplify, and automate the encryption key management process to help minimize risk and reduce operational costs of encryption key management
- Increased scalability with support for high-density expansion enclosures that can hold up to 92 drives in a 5U form factor
- Increased flexibility through Storwize model conversions enables existing customers to convert existing Storwize models to more powerful models

Key prerequisites

Software requirements

IBM SAN Volume Controller V7.8 (5641-VC7, 5641-CP7, 5725-M19, and 5725-H04) has the same software prerequisites as IBM SAN Volume Controller V7.7.

IBM Spectrum Virtualize software only V7.8 (5725-Z61) has the same software prerequisites as IBM SAN Volume Controller V7.8

Enterprise Class Support for IBM SAN Volume Controller (5773-ECS) is required on IBM SAN Volume Controller with a three-year warranty (2147-SV1). 5773-ECS requires feature #1792.

IBM Spectrum Virtualize Software for SAN Volume Controller Encryption Software V7.8 (5641-B01 and 5725-Y35) requires PID 5641-VC7.

IBM Storwize V7000 V7.8 (5639-CB7, 5639-XB7, 5639-EB7, 5639-VM7, 5639-EV7, 5639-RM7, and 5639-CP7) has the same software prerequisites as IBM Storwize V7000 V7.7.

IBM Storwize V5000 V7.8 (5639-CT7, 5639-XT7, and 5639-ET7) has the same software prerequisites as IBM Storwize V5000 V7.7.

IBM Spectrum Virtualize Software for Storwize V5010 V7.8 (5639-SV1) requires the base software feature. All other features are optional.

IBM Spectrum Virtualize Software for Storwize V5020 V7.8 (5639-SV2) requires the base software feature. All other features are optional.

IBM Spectrum Virtualize Software for Storwize V5030 V7.8 (5639-SV3) requires the base software feature. All other features are optional.

IBM Spectrum Virtualize Software for Storwize V50x0 Expansion V7.8 (5639-SV4) requires the base software feature. There are no optional software features on the expansions.

For all current storage systems and host environments supported with the IBM FlashSystem^(R) V840, go to the [IBM FlashSystem V840](#) website.

For all current storage systems and host environments supported with the IBM FlashSystem V9000, go to the [IBM FlashSystem V9000](#) website

Refer to the [Description](#) section for more information about these products and their software requirements.

Hardware requirements

IBM Spectrum Virtualize software only requires at least one pair of supported IntelTM Servers. The hardware requirements for this announcement are:

- Lenovo x3650 M5 - single or dual CPU Xeon E5-2667 v3 8c 3.2GHz
- 2 CPUs are required if running the Real-time Compression software feature
- Emulex G5 16GB FC Host Bus Adapter(s)
- Mellanox Intel 10Gbe iSCSI Host Bus Adapter(s)

IBM Spectrum Virtualize Software for SAN Volume Controller requires at least one pair of IBM System Storage^(R) SAN Volume Controller (2145-SV1, 2145-DH8, 2145-CF8, 2145-CG8, or 2147-SV1) storage engines for installation.

IBM Spectrum Virtualize Software for SAN Volume Controller Encryption Software V7.8 (5641-B01 and 5725-Y35) requires the Encryption Enablement Feature ACE2.

IBM Spectrum Virtualize Software for Storwize V7000 Controller Software (5639-CB7) requires at least one IBM Storwize V7000 control enclosure (2076-AF6, 2076-624, 2076-524) for installation.

IBM Spectrum Virtualize Software for Storwize V7000 Expansion Software (5639-XB7) requires at least one IBM Storwize V7000 expansion enclosure (2076-92F, 2076-AFF, 2076-12F, or 2076-24F) for installation. The high density enclosure (2076-92F) requires four of the base software charge codes to support the number of disk slots in the system.

IBM Spectrum Virtualize Software for Storwize V7000 External Data Virtualization Software (5639-EB7) requires at least one IBM Storwize V7000 enclosure (2076-AF6, 2076-624, 2076-524, 2076-112, 2076-124, 2076-212, 2076-224, 2076-312, or 2076-324) for installation.

IBM Spectrum Virtualize Software for Storwize V5000 (5639-CT7) 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 Expansion Software (5639-XT7) requires at least one IBM Storwize V5000 expansion enclosure (2077-12E, 2077-24E, 2078-12E, 2078-24E) for installation.

IBM Spectrum Virtualize Software for Storwize V5000 External Data Virtualization Software (5639-ET7) requires at least one IBM Storwize V5000 control enclosure (2077-112, 2077-124, 2077-212, 2077-224, 2077-312, 2077-324, 2078-112, 2078-124, 2078-212, 2078-224, 2078-312, or 2078-324) for installation.

IBM Spectrum Virtualize Software for Storwize V5000 External Data Virtualization Software (5639-ET7) requires at least one IBM Storwize V5000 control enclosure (2077-112, 2077-124, 2077-212, 2077-224, 2077-312, 2077-324, 2077-AF3, 2078-112, 2078-124, 2078-212, 2078-224, 2078-312, or 2078-324, or 2078-AF3) for installation.

IBM Spectrum Virtualize Software for Storwize V5010 V7.8 (5639-SV1) requires at least one IBM Storwize V5010 control enclosure (2077-112 or 124, 2078-112 or 124) for installation.

IBM Spectrum Virtualize Software for Storwize V5020 V7.8 (5639-SV2) requires at least one IBM Storwize V5020 control enclosure (2077-212 or 224, 2078-212 or 224) for installation.

IBM Spectrum Virtualize Software for Storwize V5030 V7.8 (5639-SV3) requires at least one IBM Storwize V5030 control enclosure (2077-AF3, 2077-312 or 324, 2078-AF3, 2078-312 or 324) for installation. The compression feature for V5030 requires the 64 GB cache feature (#ACHD) on models 312 and 324 for machine types 2077 and 2078.

IBM Spectrum Virtualize Software for Storwize V50x0 Expansion V7.8 (5639-SV4) requires at least one IBM Storwize V50x0 expansion enclosure (2077-92F, 2077-12F, 2077-24F, 2077-AFF, 2078-92F, 2078-12F, 2078-24F, or 2078-AFF) for installation. The high density enclosure (2077-92F or 2078-92F) requires four of the base software charge codes to support the number of disk slots in the system.

IBM FlashSystem V840 Software V7.8 (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 V7.8 (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) or Expansion Enclosure (9846-12F, 9846-24F, 9846-92F, 9848-12F, 9848-24F, or 9848-92F). The high density expansion enclosure (9846-92F or 9848-92F) requires four FlashSystem V9000 Software licenses.

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

- [SAN Volume Controller](#)
- [Storwize V7000](#)
- [Storwize V5000](#)
- [Storwize V3700](#)
- [Storwize V3500](#)
- [IBM FlashSystem V840](#)
- [IBM FlashSystem V9000](#)

Planned availability date

- December 9, 2016: IBM Spectrum Virtualize software V7.8 new order shipments begin except as noted below
- December 14, 2016: IBM Spectrum Virtualize Software Only V7.8

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, availability, scalability, security and efficiency 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 almost 400 different brands and models of Fibre Channel-attached and iSCSI-attached block 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, Storwize V7000 Unified, Storwize V5000, Storwize V3700, Storwize V3500, and FlashSystems V9000, 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 arrays, even if the virtualized Storage array does not have these advanced functionalities natively, including Real-time Compression, encryption of external virtualized capacities, Easy Tier (tiering), FlashCopy^(R) (snapshot), and remote data replication
- Enable a high-availability storage infrastructure through Stretched Cluster or HyperSwap^(R)
- 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 and dynamically to higher performance tiers through Easy Tier
- Improve security of internal and externally virtualized capacities through Encryption
- Protect data with local copy services (FlashCopy snapshots)
- Perform remote data replication and disaster recovery with synchronous or asynchronous Remote Mirror among offerings that utilize IBM Spectrum Virtualize software, through both Fibre Channel and IP ports
- Improve usage of IP networks for remote-copy data transmission with IP link compression
- Cluster storage engines for performance and capacity scalability

IBM Storwize V7000 and IBM Storwize V5000 family 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 to scale up and scale out
- Advanced functionalities to be used across multiple virtualized storage array, 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

FlashSystemTM V840 and FlashSystem V9000 are for customers requiring:

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

Version 7.8 of Spectrum Virtualize releases the following new functions:

- Increased flexibility to protect data with transparent cloud tiering technology that enables you to leverage the cloud as snapshot targets and restore snapshots from the cloud. Snapshots are encrypted and compressed before being uploaded to the cloud for more security, lower telecommunication costs, and lower cloud storage costs.

- Improved data economics through advanced functionalities for lower endurance flash drives, better balancing performance gains, and lower cost per terabyte with lower endurance. Easy Tier support, interface alerting to report high percentage of DWPD consumption rates, and advanced warning of possible flash array failures are also included.
- Improved security with support to encryption key management software that complies with KMIP standards, such as IBM SKLM. Encryption key management software can help centralize, simplify, and automate the encryption key management process to help minimize risk and reduce operational costs of encryption key management. By using encryption key management software, you will not be required to use USB flash drives to store encryption keys or to physically access the hardware in which Spectrum Virtualize is installed, benefiting those with large numbers of Storwize controller enclosures, SVC clusters, FlashSystems V9000, or Spectrum Virtualize as Software Only servers.
- Increased scalability with support for high-density expansion enclosures that can hold up to 92 drives in a 5U form factor.
- Increased flexibility through Storwize model conversions for existing customers to convert existing Storwize models to more powerful models. Supported conversions are from Model 524 to Model 624 of Storwize V7000 Gen2, from Storwize V5010 to Storwize V5020, from Storwize V5010 to V5030, and from Storwize V5020 to Storwize V5030.

Some of these features address the Spectrum Virtualize statements of direction in the following announcements:

- IBM Spectrum Virtualize R7.7.1 Software Announcement [216-346](#), dated August 23, 2016
- IBM SAN Volume Controller Model SV1 Hardware Announcement [116-080](#), dated August 23, 2016
- IBM Storwize V7000 Model 624 Hardware Announcement [116-080](#), dated August 23, 2016
- IBM Spectrum Virtualize Software V7.6 for Storwize V5000 Software Announcement [216-056](#), dated February 16, 2016
- IBM Storwize V5000 Hardware Announcement [116-009](#), dated February 16, 2016
- IBM Storwize Family Software R7.4.0 Software Announcement [214-450](#), dated October 28, 2014

Accessibility by people with disabilities

A US Section 508 Voluntary Product Accessibility Template (VPAT) containing details on accessibility compliance can be found on the [IBM Accessibility](#) website.

Section 508 of the US Rehabilitation Act

IBM Spectrum Virtualize Software V7.8 is capable as of December 9, 2016, when used in accordance with IBM's associated documentation, of satisfying the applicable requirements of Section 508 of the Rehabilitation Act, provided that any assistive technology used with the product properly interoperates with it. A US Section 508 Voluntary Product Accessibility Template (VPAT) can be found on the [IBM Accessibility](#) website.

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 deliver 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, FCoE, or iSCSI 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 and data protection functions (Remote Mirroring, FlashCopy^(R)), high availability (stretched clusters and HyperSwap^(R)), performance features (SSD and Easy Tier), and security enhancements (encryption).

Availability of national languages

Translation information, if available, can be found at the [Translation Reports](#) website.

Program number

Program number	VRM	Program name
5641-VC7	7.8	IBM Spectrum Virtualize Software for SAN Volume Controller V7
5725-M19	7.8	IBM Spectrum Virtualize Software for SAN Volume Controller V7 (for Passport Advantage ^(R))
5641-CP7	7.8	IBM Spectrum Virtualize Software for SAN Volume Controller Real-time Compression Software V7
5725-H04	7.8	IBM Spectrum Virtualize Software for SAN Volume Controller Real-time Compression Software V7 (for Passport Advantage)
5641-B01	7.8	IBM Spectrum Virtualize Software for SAN Volume Controller Encryption Software V7
5725-Y35	7.8	IBM Spectrum Virtualize Software for SAN Volume Controller Encryption Software V7 (for Passport Advantage)
5725-Z61	7.8	IBM Spectrum Virtualize software only V7
5639-VM7	7.8	IBM Spectrum Virtualize Software for Storwize V7000
5639-EV7	7.8	IBM Spectrum Virtualize Software for Storwize V7000 External Virtualization Software
5639-RM7	7.8	IBM Spectrum Virtualize Software for Storwize V7000 Remote Mirroring Software

Program number	VRM	Program name
5639-CP7	7.8	IBM Spectrum Virtualize Software for Storwize V7000 Real-time Compression Software
5639-CB7	7.8	IBM Spectrum Virtualize Software for Storwize V7000 Controller Software
5639-XB7	7.8	IBM Spectrum Virtualize Software for Storwize V7000 Expansion Software
5639-EB7	7.8	IBM Spectrum Virtualize Software for Storwize V7000 External Data Virtualization Software
5639-ST7	7.8	IBM Spectrum Virtualize Software for Storwize V5000
5639-CT7	7.8	IBM Spectrum Virtualize Software for Storwize V5000 Controller Software
5639-XT7	7.8	IBM Spectrum Virtualize Software for Storwize V5000 Expansion Software
5639-ET7	7.8	IBM Spectrum Virtualize Software for Storwize V5000 External Data Virtualization Software
5639-SV1	7.8	IBM Spectrum Virtualize Software for Storwize V5010
5639-SV2	7.8	IBM Spectrum Virtualize Software for Storwize V5020
5639-SV3	7.8	IBM Spectrum Virtualize Software for Storwize V5030
5639-SV4	7.8	IBM Spectrum Virtualize Software for V50x0 Expansion
5639-FS7	7.8	IBM FlashSystem Software V7
5639-FC7	7.8	IBM FlashSystem Real-Time Compression Software V7
5639-FR7	7.8	IBM FlashSystem Remote Mirroring Software V7
5639-FV7	7.8	IBM FlashSystem External Virtualization Software V7
5639-RB7	7.8	IBM FlashSystem V9000 Software V7

Product identification number

IBM Spectrum Virtualize Software for SAN Volume Controller V7

Program PID number	Maintenance 1 year PID number	Maintenance 3 year PID number
5641-VC7	5641-VCA reg	5641-VCC reg
Maintenance 2 year PID number	Maintenance 4 year PID number	Maintenance 5 year PID number
5641-VCB reg	5641-VCD reg	5641-VCE reg

IBM Spectrum Virtualize Software for SAN Volume Controller Real-time Compression Software V7

Program PID number	Maintenance 1 year PID number	Maintenance 3 year PID number
5641-CP7	5641-CS1 reg	5641-CS3 reg
Maintenance 2 year PID number	Maintenance 4 year PID number	Maintenance 5 year PID number
5641-CS2 reg	5641-CS4 reg	5641-CS5 reg

IBM Spectrum Virtualize Software for SAN Volume Controller Encryption Software V7

Program PID number	Maintenance 1 year PID number	Maintenance 2 year PID number
5641-B01	5641-B02 reg	5641-B03 reg
Maintenance 3 year PID number	Maintenance 4 year PID number	Maintenance 5 year PID number
5641-B04 reg	5641-B05 reg	5641-B06 reg

IBM Spectrum Virtualize Software for Storwize V7000 V7

Program PID number	Maintenance 1 year PID number	Maintenance 3 year PID number
5639-VM7	5639-SM1 reg/ren	5639-SM3 reg
	5639-SM2 afl	5639-SM4 renewal
		5639-SM5 afl
Maintenance 2 year PID number	Maintenance 4 year PID number	Maintenance 5 year PID number
5639-SM6 reg	5639-SM7 reg	5639-SM8 reg

IBM Spectrum Virtualize Software for Storwize V7000 External Virtualization Software V7

Program PID number	Maintenance 1 year PID number	Maintenance 3 year PID number
5639-EV7	5639-EVA reg/ren	5639-EVD reg
	5639-EVB afl	5639-EVE renewal
		5639-EVF afl
Maintenance 2 year PID number	Maintenance 4 year PID number	Maintenance 5 year PID number
5639-EVC reg	5639-EVG reg	5639-EVH reg

IBM Spectrum Virtualize Software for Storwize V7000 Remote Mirroring Software V7

Program PID number	Maintenance 1 year PID number	Maintenance 3 year PID number
5639-RM7	5639-RMA reg/ren	5639-RMD reg
	5639-RMB afl	5639-RME ren
		5639-RMF™ afl
Maintenance 2 year PID number	Maintenance 4 year PID number	Maintenance 5 year PID number
5639-RMC reg	5639-RMG reg	5639-RMH reg

IBM Spectrum Virtualize Software for Storwize V7000 Real-time Compression Software V7

Program PID number	Maintenance 1 year PID number	Maintenance 3 year PID number
5639-CP7	5639-CS1 reg/ren	5639-CS3 reg
	5639-CS2 afl	5639-CS4 renewal
		5639-CS5 afl
Maintenance 2 year PID number	Maintenance 4 year PID number	Maintenance 5 year PID number
5639-CS6 reg	5639-CS7 reg	5639-CS8 reg

IBM Spectrum Virtualize Software for Storwize V7000 Controller Software V7

Program PID number	Maintenance 1 year PID number	Maintenance 3 year PID number
5639-CB7	5639-CBA reg/ren	5639-CBC reg
	5639-CBB afl	5639-CBD renewal
		5639-CBE afl
Maintenance 2 year PID number	Maintenance 4 year PID number	Maintenance 5 year PID number
5639-CBF reg	5639-CBG reg	5639-CBH reg

IBM Spectrum Virtualize Software for Storwize V7000 Expansion Software V7

Program PID number	Maintenance 1 year PID number	Maintenance 3 year PID number
5639-XB7	5639-XBA reg/ren	5639-XBC reg
	5639-XBB afl	5639-XBD renewal
		5639-XBE afl
Maintenance 2 year PID number	Maintenance 4 year PID number	Maintenance 5 year PID number
5639-XBF reg	5639-XBG reg	5639-XBH reg

IBM Spectrum Virtualize Software for Storwize V7000 External Data Virtualization Software V7

Program PID number	Maintenance 1 year PID number	Maintenance 3 year PID number
5639-EB7	5639-EBA reg/ren	5639-EBC reg
	5639-EBB afl	5639-EBD renewal
		5639-EBE afl
Maintenance 2 year PID number	Maintenance 4 year PID number	Maintenance 5 year PID number
5639-EBF reg	5639-EBG reg	5639-EBH reg

IBM Spectrum Virtualize Software for Storwize V5000 Software V7

Program PID number	Maintenance 1 year PID number	Maintenance 3 year PID number
5639-ST7	5639-S13 reg/ren	5639-S15 reg
	5639-S14 afl	5639-S16 renewal
		5639-S17 afl
Maintenance 2 year PID number	Maintenance 4 year PID number	Maintenance 5 year PID number
5639-S18 reg	5639-S19 reg	5639-S20 reg

IBM Spectrum Virtualize Software for Storwize V5000 Controller Software V7

Program PID number	Maintenance 1 year PID number	Maintenance 3 year PID number
5639-CT7	5639-CTA reg/ren	5639-CTC reg
	5639-CTB afl	5639-CTD renewal
		5639-CTE afl
Maintenance 2 year PID number	Maintenance 4 year PID number	Maintenance 5 year PID number
5639-CTF reg	5639-CTG reg	5639-CTH reg

IBM Spectrum Virtualize Software for Storwize V5000 Expansion Software V7

Program PID number	Maintenance 1 year PID number	Maintenance 3 year PID number
5639-XT7	5639-XTA reg/ren 5639-XTB afl	5639-XTC reg 5639-XTD renewal 5639-XTE afl
Maintenance 2 year PID number	Maintenance 4 year PID number	Maintenance 5 year PID number
5639-XTF reg	5639-XTG reg	5639-XTH reg

IBM Spectrum Virtualize Software for Storwize V5000 External Data Virtualization Software V7

Program PID number	Maintenance 1 year PID number	Maintenance 3 year PID number
5639-ET7	5639-ETA reg/ren 5639-ETB afl	5639-ETC reg 5639-ETD renewal 5639-ETE afl
Maintenance 2 year PID number	Maintenance 4 year PID number	Maintenance 5 year PID number
5639-ETF reg	5639-ETG reg	5639-ETH reg

IBM Spectrum Virtualize Software for Storwize V5010 V7

Program PID number	Maintenance 1 year PID number	Maintenance 3 year PID number
5639-SV1	5639-SVA reg/ren 5639-SVB afl	5639-SVC reg 5639-SVD renewal 5639-SVE afl
Maintenance 2 year PID number	Maintenance 4 year PID number	Maintenance 5 year PID number
5639-SVF reg	5639-SVG reg	5639-SVH reg

IBM Spectrum Virtualize Software for Storwize V5020 V7

Program PID number	Maintenance 1 year PID number	Maintenance 3 year PID number
5639-SV2	5639-SVJ reg/ren 5639-SVK afl	5639-SVL reg 5639-SVM renewal 5639-SVN afl
Maintenance 2 year PID number	Maintenance 4 year PID number	Maintenance 5 year PID number
5639-SVP reg	5639-SVQ reg	5639-SVR reg

IBM Spectrum Virtualize Software for Storwize V5030 V7

Program PID number	Maintenance 1 year PID number	Maintenance 3 year PID number
5639-SV3	5639-SVS reg/ren 5639-SVT afl	5639-SVU reg 5639-SVV renewal 5639-SVW afl
Maintenance 2 year PID number	Maintenance 4 year PID number	Maintenance 5 year PID number
5639-SVX reg	5639-SVY reg	5639-SVZ reg

IBM Spectrum Virtualize Software for Storwize V50x0 Expansion V7

Program PID number	Maintenance 1 year PID number	Maintenance 3 year PID number
5639-SV4	5639-SSJ reg/ren 5639-SSK afl	5639-SSL reg 5639-SSM renewal 5639-SSN afl
Maintenance 2 year PID number	Maintenance 4 year PID number	Maintenance 5 year PID number
5639-SSP reg	5639-SSQ reg	5639-SSR reg

IBM FlashSystem Software V7

Program PID number	Maintenance 1 year PID number	Maintenance 3 year PID number
5639-FS7	5639-FSA reg/ren 5639-FSB afl	5639-FSC reg 5639-FSD renewal 5639-FSE afl
Maintenance 2 year PID number	Maintenance 4 year PID number	Maintenance 5 year PID number
5639-FSF reg	5639-FSG reg	5639-FSH reg

IBM FlashSystem Real-Time Compression Software V7

Program PID number	Maintenance 1 year PID number	Maintenance 3 year PID number
5639-FC7	5639-FCA reg/ren 5639-FCB afl	5639-FCC reg 5639-FCD renewal 5639-FCE afl
Maintenance 2 year PID number	Maintenance 4 year PID number	Maintenance 5 year PID number
5639-FCF reg	5639-FCG reg	5639-FCH reg

IBM FlashSystem Remote Mirroring Software V7

Program PID number	Maintenance 1 year PID number	Maintenance 3 year PID number
5639-FR7	5639-FRA reg/ren 5639-FRB afl	5639-FRC reg 5639-FRD renewal 5639-FRE afl
Maintenance 2 year PID number	Maintenance 4 year PID number	Maintenance 5 year PID number
5639-FRF reg	5639-FRG reg	5639-FRH reg

IBM FlashSystem External Virtualization Software V7

Program PID number	Maintenance 1 year PID number	Maintenance 3 year PID number
5639-FV7	5639-FVA reg/ren 5639-FVB afl	5639-FVC reg 5639-FVD renewal 5639-FVE afl
Maintenance 2 year PID number	Maintenance 4 year PID number	Maintenance 5 year PID number
5639-FVF reg	5639-FVG reg	5639-FVH reg

IBM FlashSystem V9000 Software V7

Program PID number	Maintenance 1 year PID number	Maintenance 3 year PID number
5639-RB7	5639-RBA reg/ren 5639-RBB afl	5639-RBC reg 5639-RBD renewal 5639-RBE afl
Maintenance 2 year PID number	Maintenance 4 year PID number	Maintenance 5 year PID number
5639-RBF reg	5639-RBG reg	5639-RBH reg

Software Maintenance renewals for Spectrum Virtualize for SVC and Spectrum Virtualize Software only are managed in Passport Advantage^(R).

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^(R) ID and password are required (use IBMid).

Education support

Classroom courses are available to IBM customers.

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

Course number	Course title
SNV1G	SAN Volume Controller (SVC) Planning and implementation workshop

For more information and course schedules, go to the [IBM training](#) website.

Search on the course number **SNV1G**.

For descriptions of courses for IT professionals and managers, go to the [IBM Authorized training](#) website.

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

For catalogs, schedules, and enrollments, go to the [IBM Authorized training](#) website.

Offering Information

Product information is available on the [IBM Offering Information](#) website.

More information is also available on the [Passport Advantage and Passport Advantage Express^{\(R\)}](#) website.

Publications

No publications are shipped with these programs.

The following publications can be downloaded in PDF format from the websites below:

Title	Order number
<i>IBM SAN Volume Controller Model 2145-DH8 Hardware Installation Guide</i>	GC27-3923
<i>IBM SAN Volume Controller Hardware Maintenance Guide</i>	GC27-2283
<i>IBM SAN Volume Controller Troubleshooting Guide</i>	GC27-2284
<i>IBM SAN Volume Controller and Storwize Family Command-Line Interface User's Guide</i>	GC27-2287
<i>IBM Storwize V7000 Read First</i>	GC27-2293-01
<i>IBM Storwize V7000 Gen 2 Quick Installation Guide</i>	GC27-6500
<i>IBM Storwize V7000 Troubleshooting, Recovery, and Maintenance Guide</i>	GC27-2291-02
<i>IBM Storwize V5000 Gen 2 Quick Installation Guide</i>	CG27-8581
<i>IBM Storwize V5000 Installation Poster</i>	SC27-5923-00
<i>IBM Storwize V5000 Read First Flyer</i>	GI13-2860-00

Title	Order number
<i>IBM Systems Safety Notices</i>	G229-9054-06

To view online information and link to a download site, go to the [IBM Storwize V5000](#) page in IBM Knowledge Center, then see the publications listed under the 7.7.0 release.

To order additional selected hardcopy publications for a fee or to download free PDF format publications, go to the [IBM Publications Center](#) website.

To directly download publications in PDF format, go to the IBM product support website.

- [SAN Volume Controller](#)
 - [Storwize V7000](#)
 - [Storwize V5000](#)
 - [Storwize V3700](#)
 - [Storwize V3500](#)
 - [IBM FlashSystem V840](#)
 - [IBM FlashSystem V9000](#)
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- 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, contact your Lab Services Sales or Delivery Leader.

Technical information

Specified operating environment

Hardware requirements

IBM Spectrum Virtualize Software for SAN Volume Controller requires at least one pair of IBM System Storage SAN Volume Controller (2145-SV1, 2145-DH8, 2145-CF8, 2145-CG8, or 2147- SV1) storage engines for installation.

IBM Spectrum Virtualize Software for SAN Volume Controller Encryption Software V7.8 (5641- B01 and 5725-Y35) requires the Encryption Enablement Feature ACE2.

IBM Spectrum Virtualize Software for Storwize V7000 Controller Software (5639-CB7) requires at least one IBM Storwize V7000 control enclosure (2076-AF6, 2076-624, 2076-524) for installation.

IBM Spectrum Virtualize Software for Storwize V7000 Expansion Software (5639-XB7) requires at least one IBM Storwize V7000 expansion enclosure (2076-92F, 2076-AFF, 2076-312, or 2076-324) for installation. The high density enclosure (2076-92F) requires four of the base software charge codes to support the number of disk slots in the system.

IBM Spectrum Virtualize Software for Storwize V7000 External Data Virtualization Software (5639-EB7) requires at least one IBM Storwize V7000 enclosure (2076-AF6, 2076-624, 2076-524, 2076-112, 2076-124, 2076-312, or 2076-324) for installation.

IBM Spectrum Virtualize Software for Storwize V5000 (5639-CT7) requires at least one IBM Storwize V5000 control enclosure (2077-112, 2077-124, 2077-212, 2077-224, 2077-312, 2077-324, 2078-112, 2078-124, 2078-212, 2078-224, 2078-312, or 2078-324) for installation.

IBM Spectrum Virtualize Software for Storwize V5000 Expansion Software (5639-XT7) requires at least one IBM Storwize V5000 expansion enclosure (2077-12E, 2077-24E, 2078-12E, 2078-24E) for installation.

IBM Spectrum Virtualize Software for Storwize V5000 External Data Virtualization Software (5639-ET7) requires at least one IBM Storwize V5000 control enclosure (2077-112, 2077-124, 2077-212, 2077-224, 2077-312, 2077-324, 2077-AF3, 2078-112, 2078-124, 2078-212, 2078-224, 2078-312, or 2078-324, or 2078-AF3) for installation.

IBM Spectrum Virtualize Software for Storwize V5010 V7.8 (5639-SV1) requires at least one IBM Storwize V5010 control enclosure (2077-112 or 124, 2078-112 or 124) for installation.

IBM Spectrum Virtualize Software for Storwize V5020 V7.8 (5639-SV2) requires at least one IBM Storwize V5020 control enclosure (2077-212 or 224, 2078-212 or 224) for installation.

IBM Spectrum Virtualize Software for Storwize V5030 V7.8 (5639-SV3) requires at least one IBM Storwize V5030 control enclosure (2077-AF3, 2077-312 or 324, 2078-AF3, 2078-312 or 324) for installation. The compression feature for V5030 requires the 64 GB cache feature (#ACHD) on models 312 and 324 for machine types 2077 and 2078.

IBM Spectrum Virtualize Software for Storwize V50x0 Expansion V7.8 (5639-SV4) requires at least one IBM Storwize V50x0 expansion enclosure (2077-92F, 2077-12F, 2077-24F, 2077-AFF, 2078-92F, 2078-12F, 2078-24F, or 2078-AFF) for installation. The high density enclosure (2077-92F or 2078-92F) requires four of the base software charge codes to support the number of disk slots in the system.

IBM FlashSystem V840 Software V7.8 (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 V7.8 (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) or Expansion Enclosure (9846-12F, 9846-24F, 9846-92F, 9848-12F, 9848-24F, or 9848-92F). The high density expansion enclosure (9846-92F or 9848-92F) requires four FlashSystem V9000 Software licenses.

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

- [SAN Volume Controller](#)

- [Storwize V7000](#)
- [Storwize V5000](#)
- [Storwize V3700](#)
- [Storwize V3500](#)
- [IBM FlashSystem V840](#)
- [IBM FlashSystem V9000](#)

Software requirements

Installation of IBM Spectrum Virtualize Software V7.8 can be done directly from systems running Storwize Family Software V7.6.

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

- [SAN Volume Controller](#)
- [Storwize V7000](#)
- [Storwize V5000](#)
- [Storwize V3700](#)
- [Storwize V3500](#)
- [IBM FlashSystem V840](#)
- [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, go to the respective support website.

- [SAN Volume Controller](#)
- [Storwize V7000](#)
- [Storwize V5000](#)
- [Storwize V3700](#)
- [Storwize V3500](#)
- [IBM FlashSystem V840](#)
- [IBM FlashSystem V9000](#)

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, go to the respective support website.

- [SVC](#)
- [Storwize V7000](#)
- [Storwize V5000](#)
- [Storwize V3700](#)
- [Storwize V3500](#)
- [IBM FlashSystem V840](#)
- [IBM FlashSystem V9000](#)

Limitations

This program only operates on specified storage hardware as detailed in the [Hardware requirements](#) 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 [IBM SVC](#), [IBM Storwize V7000](#), [IBM Storwize V5000](#), [IBM Storwize V3700](#), [IBM Storwize V3500](#), [IBM FlashSystem V840](#), or [IBM FlashSystem V9000](#) support websites.

Encryption and other functions in this announcement may be subject to limitations and restrictions for supported configurations, environments, and use. Refer to the *V7.7 Configuration Limits and Restrictions* document for details.

To view this document, access the [IBM Systems Support](#) website.

Select the applicable product (such as Storwize V5000) in the **Product Finder** menu.

Enter *7.8 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.

Planning considerations for IBM Spectrum Virtualize Software are listed in IBM Knowledge Center under the respective product.

- [IBM SAN Volume Controller](#)
- [IBM Spectrum Virtualize software only](#)
- [IBM Storwize V7000](#)
- [IBM Storwize V5000](#)
- [IBM Storwize V3700](#)
- [IBM Storwize V3500](#)
- [IBM FlashSystem V840](#)
- [IBM FlashSystem V9000](#)

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.

Customers with a 5641-Z61 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.

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*, GI13-2841
- *IBM System Storage SAN Volume Controller Read First file*, GA32-0843

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, 5639-SV1, 5639-SV2, 5639-SV3, or 5639-SV4) 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.

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

Ordering information for Passport Advantage

Passport Advantage (PPA) enables 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.

IBM Spectrum Virtualize Software Only V7 can be ordered in 2 licensing models:

- Monthly license with optional automatic renewals
- Perpetual Licensing with optional automatic renewals

Program name: **IBM Spectrum Virtualize Software V7 (5725-Z61)**

Description	Part number
IBM Spectrum Virtualize Software V7 Stg Cap Unit Monthly License	D1PHVLL
IBM Spectrum Virtualize Software V7 Stg Cap Unit Lic + SW S&S 12 Mo	D1PHTLL
IBM Spectrum Virtualize Software V7 Stg Cap Unit Annual SW S&S Rnwl	E0MZNLL
IBM Spectrum Virtualize Software V7 Stg Cap Unit SW S&S Reinstate 12 Mo	D1PHULL

The product in the above table are also available via web download from Passport Advantage.

IBM Spectrum Virtualize can be ordered as a monthly license with optional automatic renewals.

To order for Passport Advantage, specify the desired part number and quantity.

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.

Ordering information for Non-Passport Advantage

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.

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

The program is available via electronic download only.

Program name: IBM Spectrum Virtualize Software for Storwize V7000 Controller Software V7

PID: 5639-CB7

Use-based OTC

Description	Program number	Feature number
Storwize V7000 Controller Transparent cloud tiering SW with 1 Year SW Maintenance Per Storage device	5639-CB7	0007

Program name: IBM Spectrum Virtualize Software for Storwize V5020 software V7

PID: 5639-SV2

Use-based OTC

Description	Program number	Feature number
Storwize V5020 Upgrade from 5639-SV1 V5010 With One-year SW maintenance Per Storage device	5639-SV2	0006

Program name: IBM Spectrum Virtualize Software for Storwize V5030 software V7

PID: 5639-SV3

Use-based OTC

Description	Program number	Feature number
Storwize V5030 Upgrade from 5639-SV1 V5010 With One-year SW maintenance Per Storage device	5639-SV3	0008

Description	Program number	Feature number
Storwize V5030 Upgrade from 5639-SV2 V5020 With One-year SW maintenance Per Storage device	5639-SV3	0009

Software maintenance

Program name: IBM Spectrum Virtualize Software for Storwize V7000 Controller Software Maintenance

Use-based OTC

Description	Program number	Feature number
Storwize V7000 Controller Transparent cloud tiering SW One-year Renewal Per Storage device	5639-CBA	0013
Storwize V7000 Controller Transparent cloud tiering SW One-year NC Registration Per Storage device	5639-CBA	0014
Storwize V7000 Controller Transparent cloud tiering SW One-year After license Per Storage device	5639-CBB	0007
Storwize V7000 Controller Transparent cloud tiering SW Three-years Registration Per Storage device	5639-CBC	0008
Storwize V7000 Controller Transparent cloud tiering SW Three-years Renewal Per Storage device	5639-CBD	0007
Storwize V7000 Controller Transparent cloud tiering SW Three-years After license Per Storage device	5639-CBE	0007
Storwize V7000 Controller Transparent cloud tiering SW Two-years Registration Per Storage device	5639-CBF	0007
Storwize V7000 Controller Transparent cloud tiering SW Four-years Registration Per Storage device	5639-CBG	0007
Storwize V7000 Controller Transparent cloud tiering SW Five-years Registration Per Storage device	5639-CBH	0007

Charge metric

Program name	Part number or PID number	Charge metric
IBM Spectrum Virtualize Software for SAN Volume Controller V7	5641-VC7	Per SCU increments for SVC Base License. Per terabyte increments for FlashCopy and Remote Mirror.
IBM Spectrum Virtualize Software for SAN Volume Controller V7 (for Passport Advantage)	5725-M19	Per SCU increments for SVC Base License. Per terabyte increments for

Program name	Part number or PID number	Charge metric
		FlashCopy and Remote Mirror.
IBM Spectrum Virtualize Software for SAN Volume Controller Real-time Compression Software V7	5641-CP7	Per SCU increments
IBM Spectrum Virtualize Software for SAN Volume Controller Real-time Compression Software V7 (for Passport Advantage)	5725-H04	Per SCU increments
IBM Spectrum Virtualize Software for SAN Volume Controller Encryption Software V7	5641-B01	Per Storage Device
IBM Spectrum Virtualize Software for SAN Volume Controller Encryption Software V7 (for Passport Advantage)	5725-Y35	Per Storage Device
IBM Spectrum Virtualize software only V7	5725-Z61	Per SCU
IBM Spectrum Virtualize Software for Storwize V7000 V7	5639-VM7	Per Storage Device
IBM Spectrum Virtualize Software for Storwize V7000 External Virtualization software V7	5639-EV7	Per Storage Device
IBM Spectrum Virtualize Software for Storwize V7000 Remote Mirroring software V7	5639-RM7	Per Storage Device
IBM Spectrum Virtualize Software for Storwize V7000 Real-time Compression software V7	5639-CP7	Per Storage Device
IBM Spectrum Virtualize Software for Storwize V7000 Controller software V7	5639-CB7	Per Storage Device
IBM Spectrum Virtualize Software for Storwize V7000 Expansion software V7	5639-XB7	Per Storage Device
IBM Spectrum Virtualize Software for Storwize V7000 External data virtualization software V7	5639-EB7	Per Storage Device
IBM Spectrum Virtualize Software for Storwize V5000 software V7	5639-ST7	Per Storage Device
IBM Spectrum Virtualize Software for Storwize V5000 Controller software V7	5639-CT7	Per Storage Device
IBM Spectrum Virtualize Software for Storwize V5000 Expansion software V7	5639-XT7	Per Storage Device
IBM Spectrum Virtualize Software for Storwize	5639-ET7	Per Storage Device

Program name	Part number or PID number	Charge metric
V5000 External data virtualization software V7		
IBM Spectrum Virtualize Software for Storwize V5010 software V7	5639-SV1	Per Storage Device
IBM Spectrum Virtualize Software for Storwize V5020 software V7	5639-SV2	Per Storage Device
IBM Spectrum Virtualize Software for Storwize V5030 software V7	5639-SV3	Per Storage Device
IBM Spectrum Virtualize Software for Storwize V50x0 Expansion software V7	5639-SV4	Per Storage Device
IBM FlashSystem V840 Software V7.8	5639-FS7	Per Storage Device
IBM FlashSystem V840 Real-time Compression Software V7.8	5639-FC7	Per Storage Device
IBM FlashSystem V840 Remote Mirroring Software V7.8	5639-FR7	Per Storage Device
IBM FlashSystem V840 External Virtualization Software V7.8	5639-FV7	Per Storage Device
IBM FlashSystem V9000 Software V7.8	5639-RB7	Per Storage Device

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, and Encryption 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 V7.8 for FlashSystem™ V840

For new IBM FlashSystem V840 Software V7.8 orders, first order the appropriate hardware for the initial system or cluster, then order the IBM FlashSystem V840 Software V7.8 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 V7.8 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 V7.8

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

Storage Device "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 Capacity Units (SCU)

A Storage Capacity Unit is measuring the managed capacity in a way that the price is differentiated by the technology used to store the data.

Sufficient entitlements must be obtained for the number of Storage Capacity Units (SCU) required to cover the TB of usable capacity managed by the program as set forth below.

Storage capacity managed by the program is classified into the following three categories:

- Category 1: Flash and Solid-State Drives (SSDs)
- Category 2: Serial Attached SCSI (SAS) Drives, Fiber Channel Drives, and systems using Category 3 drives with advanced architectures to deliver high-end storage performance.
- Category 3: Near Line SAS (NL-SAS) and Serial ATA (SATA) Drives

Any storage capacity used that is not listed above is classified as Category 1.

The abstract concept of Storage Capacity Units allows the amount of capacity used per category to change over time, as long as the total amount SCUs required is equal or less than the entitlements that a customer owns.

Each Storage Capacity Unit entitlement can be used to cover the following number of terabytes (TB) by category:

* 1 SCU equates to 1.00 TB of Category 1

* 1 SCU equates to 1.18 TB of Category 2

* 1 SCU equates to 4.00 TB of Category 3

When calculating the count of SCUs per category, fractions will be rounded up to the following integer number.

The following seven tiers apply:

Storage Capacity Unit (1-100), Storage Capacity Unit (101-250), Storage Capacity Unit (251-500), Storage Capacity Unit (501-750), Storage Capacity Unit (751-1250), Storage Capacity Unit (1251-2000), and Storage Capacity Unit (2001+) are units of measure by which the program can be licensed.

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 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 Drive Bay or Drive Slot are attachment points in a storage chassis or expansion unit in which Hard Disk Drives (HDDs) or Solid-State Drives (SSDs) can be installed. For each Storage Device with more than twenty-five (25) Drive Bays or Drive Slots, Licensee must obtain a separate entitlement for each quantity of 25 (rounded up) Drive Bays or Drive Slots capable of housing HDDs or SSDs managed by the Program. The entitlements needed are for the number of drive bays or slots available and does not depend on the number of HDDs or SSDs actually installed.

Customers requesting ESD

Downloading from the electronic software delivery website requires an active Software Maintenance Agreement for each product to be downloaded and registered with the [ESS](#) website.

Website registration requires:

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

Terms and conditions

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.

Licensing

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. 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 V7.8
- 5641-CP7 -IBM Spectrum Virtualize SAN Volume Controller Compression Software V7.8
- 5641-B01 -IBM Spectrum Virtualize SAN Volume Controller Encryption Software V7.8
- 5639-VM7 -IBM Spectrum Virtualize V7000 Software V7.8
- 5639-EV7 -IBM Spectrum Virtualize V7000 External Virtualization Software V7.8
- 5639-RM7 -IBM Spectrum Virtualize V7000 Remote Mirroring Software V7.8
- 5639-CP7 -IBM Spectrum Virtualize V7000 Compression Software V7.8
- 5639-ST7 -IBM Spectrum Virtualize V5000 Software V7.8
- 5639-CB7 -IBM Spectrum Virtualize V7000 Controller Software V7.8
- 5639-XB7 -IBM Spectrum Virtualize V7000 Expansion Software V7.8
- 5639-EB7 -IBM Spectrum Virtualize V7000 External Data Virtualization Software V7.8

L-SSCZ-ACJTY License Information for:

- IBM Spectrum Virtualize software only

L-SSCZ-A6RND2 License Information for:

- 5639-SV1 -IBM Spectrum Virtualize Software for Storwize V5010
- 5639-SV2 -IBM Spectrum Virtualize Software for Storwize V5020
- 5639-SV3 -IBM Spectrum Virtualize Software for Storwize V5030
- 5639-SV4 -IBM Spectrum Virtualize Software for Storwize V50x0 Expansion

SC27-6420 License Information for:

- 5639-FS7 -IBM FlashSystem V840 Software V7
- 5639-FV7 -IBM FlashSystem V840 External Virtualization Software V7
- 5639-FR7 -IBM FlashSystem V840 Remote Mirroring Software V7
- 5639-FC7 -IBM FlashSystem V840 Real-time Compression Software V7

LC27-6698 License Information for:

- 5639-RB7 -IBM FlashSystem V9000 Software V7

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, see the [IBM Software 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, information is available on the [Passport Advantage and Passport Advantage Express](#) website.

Usage restriction

Yes

SVC standard software (5641-VC7)

This program (5641-VC7) is licensed on per-Storage Capacity Unit (SCU) with cumulative license basis for SVC Base License and SVC Real Time Compression; licensed on a per-terabyte (with cumulative tiers) capacity basis for SVC FlashCopy and SVC Remote Mirror; and licensed on a per-storage device for SVC Encryption. (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 non-transferable 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.

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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.

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 lawful, comprehensive security approach, which will necessarily involve additional operational procedures, and may require other systems, products, or services to be most effective.

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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 on the [Passport Advantage and Passport Advantage Express](#) website.

Current prices can be found on the [IBM Support Portal](#) website.

Program name: IBM Spectrum Virtualize Software for Storwize V7000 Controller Software V7

PID: 5639-CB7

Use-based OTC

Description	Program number	Feature number
Storwize V7000 Controller Transparent cloud tiering SW with 1 Year SW Maintenance Per Storage device	5639-CB7	0007

Program name: IBM Spectrum Virtualize Software for Storwize V5020 software V7

PID: 5639-SV2

Use-based OTC

Description	Program number	Feature number
Storwize V5020 Upgrade from 5639-SV1 V5010 With One-year SW maintenance Per Storage device	5639-SV2	0006

Program name: IBM Spectrum Virtualize Software for Storwize V5030 software V7

PID: 5639-SV3

Use-based OTC

Description	Program number	Feature number
Storwize V5030 Upgrade from 5639-SV1 V5010 With One-year SW maintenance Per Storage device	5639-SV3	0008
Storwize V5030 Upgrade from 5639-SV2 V5020 With One-year SW maintenance Per Storage device	5639-SV3	0009

Software maintenance

Program name: IBM Spectrum Virtualize Software for Storwize V7000 Controller Software Maintenance

Use-based OTC

Description	Program number	Feature number
Storwize V7000 Controller Transparent cloud tiering SW One-year Renewal Per Storage device	5639-CBA	0013
Storwize V7000 Controller Transparent cloud tiering SW One-year NC Registration Per Storage device	5639-CBA	0014

Description	Program number	Feature number
Storwize V7000 Controller Transparent cloud tiering SW One-year After license Per Storage device	5639-CBB	0007
Storwize V7000 Controller Transparent cloud tiering SW Three-years Registration Per Storage device	5639-CBC	0008
Storwize V7000 Controller Transparent cloud tiering SW Three-years Renewal Per Storage device	5639-CBD	0007
Storwize V7000 Controller Transparent cloud tiering SW Three-years After license Per Storage device	5639-CBE	0007
Storwize V7000 Controller Transparent cloud tiering SW Two-years Registration Per Storage device	5639-CBF	0007
Storwize V7000 Controller Transparent cloud tiering SW Four-years Registration Per Storage device	5639-CBG	0007
Storwize V7000 Controller Transparent cloud tiering SW Five-years Registration Per Storage device	5639-CBH	0007

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Corrections

(Corrected on December 9, 2016)

The Storage Device section in the Ordering information section and the hardware requirements for 5639-ET7 in the Key prerequisites and Hardware requirements sections have been updated.

(Corrected on November 10, 2016)

The Storage Device section in the Ordering information section and the hardware requirements for 5639-RB7 in the Key prerequisites and Hardware requirements sections have been updated.