

IBM Spectrum Virtualize software 8.4 delivers additional capabilities for supported platforms

Table of contents

1 Overview	9 Publications
1 Key requirements	10 Technical information
4 Planned availability date	14 Ordering information
4 Description	16 Terms and conditions
5 Product positioning	22 Prices
6 Program number	22 Announcement countries

At a glance

IBM Spectrum^(R) Virtualize 8.4 adds support for three-site replication for HyperSwap^(R), DRAID 1 on IBM^(R) FlashSystems 7200 and 9200, expansion of mirrored vDisks, support for additional storage-class memory (SCM) on some platforms, and updates to Data Reduction Pools (DRP).

Overview

IBM Spectrum Virtualize 8.4 delivers additional features and updates to the IBM Spectrum Virtualize family of products, including IBM FlashSystem^(R) 5000, 7000, and 9000 models, and IBM SAN Volume Controller (SVC).

The following updates are available in version 8.4:

- Three-site mirroring with HyperSwap support provides improved availability for data in three-site implementations. This expands on the disaster recovery capabilities inherent in this topology.
- Three-site mirroring using Metro Mirror was previously supported only in limited installations. With 8.4, this implementation is generally available.
- DRAID 1 support provides the ability to extend distributed RAID advantages to smaller pools of drives. This improves performance over traditional RAID 1 implementations, allowing users to make better use of flash technology.
- Expansion of mirrored vDisks allows the vDisk capacity to be expanded or reduced online, without requiring an offline format and sync. This improves the availability of the volume for use because the new capacity is available immediately.
- Up to twelve SCM devices per enclosure are supported in this release. Previously, the limit for all SCM drives was four per enclosure. With 8.4, FlashSystem 5100, 7000, and 9000 systems can support up to twelve Optane drives per enclosure. Simultaneously with this release, up to twelve Z-SSD drives can be supported in version 8.3.1, and later.
- DRP improvements include redirect-on-write support for FlashCopy^(R) relationships, reduced failover times, improved availability of Compressimator data, and improved reliability and availability of data in DRP pools through reconstruct read.

Key requirements

Software requirements

IBM SAN Volume Controller (5641-VC8, 5641-CP8, 5725-M19, and 5725-H04) requires the base software feature. All other features are optional.

IBM Spectrum Virtualize Software for SAN Volume Controller Encryption (5641-B08 and 5725-Y35) requires PID 5641-VC8 or 5725-M19.

IBM Spectrum Virtualize Software for Storwize^(R) V7000 (5639-CB8, 5639-XB8, and 5639-EB8) requires the base software feature. All other features are optional.

IBM Spectrum Virtualize Software for FlashSystem 5100 External Data Virtualization Software (5639-ET8) requires the base software feature. All other features are optional.

IBM Spectrum Virtualize Software for FlashSystem 5100 (5639-SV9) requires the base software feature. All other features are optional.

IBM Spectrum Virtualize Software for FlashSystem 7000 (5639-DB8) requires the base software feature. Externally virtualized storage is subject to the same capacity-based licenses as SAN Volume Controller and is optional.

IBM Spectrum Virtualize Software for FlashSystem 7000 Expansions (5639-XD8) requires at least one IBM FlashSystem 7000 expansion enclosure (2076-12G, 2076-24G, or 2076-92G) for installation. The high-density enclosures (2076-92G) require four of the base software charge codes to support the number of drive slots in the system.

IBM Spectrum Virtualize Software for FlashSystem 9110 (5639-FA2) requires the base software feature. Externally virtualized storage is subject to the same capacity-based licenses as SAN Volume Controller and is optional.

IBM Spectrum Virtualize Software for FlashSystem 9150 and 9200 (5639-FA3) requires the base software feature. Externally virtualized storage is subject to the same capacity-based licenses as SAN Volume Controller and is optional.

IBM Spectrum Virtualize Software for FlashSystem 9x00 Expansions (5639-FA1) requires at least one IBM FlashSystem 9100 expansion enclosure (9846-AFF, 9846-A9F, 9848-AFF, or 9848-A9F) for installation. The high-density enclosures (9846-A9F and 9848-A9F) require four of the base software charge codes to support the number of drive slots in the system.

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-SA2, 2145-SV2, 2147-SV1, 2147-SA2, or 2147-SV2) storage engines for installation. This software is also used to license External Data Virtualization on the IBM FlashSystem 7000 and 9000 families.

IBM Spectrum Virtualize Software for SAN Volume Controller Encryption (5641-B08 and 5725-Y35) requires Encryption Enablement Feature ACE2 or ACE5.

IBM Spectrum Virtualize Software for Storwize V7000 Controller (5639-CB8) requires at least one IBM Storwize V7000 control enclosure (2076-724, 2076-U7B, 2076-U7A, 2076-AF6, 2076-624, or 2076-524) for installation. 2076-724 and 2076-U7B require version 8.2.0.2, or later.

IBM Spectrum Virtualize Software for Storwize V7000 Expansion software (5639-XB8) requires at least one IBM Storwize V7000 expansion enclosure (2076-A9F, 2076-92F, 2076-AFF, 2076-12F, or 2076-24F) for installation. The high-density enclosures (2076-A9F or 2076-92F) require 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 (5639-EB8) requires at least one IBM Storwize V7000 enclosure (2076-724, 2076-AF6, 2076-624, or 2076-524) for installation.

IBM Spectrum Virtualize Software for FlashSystem 5100 (5639-SV9) requires at least one IBM FlashSystem 5100 (2077-4H4, 2078-4H4, or 2078-UHB) or IBM Storwize V5100 control enclosure (2077-AF4, 2077-424, 2078-AF4, 2078-424, or 2078-U5B) for installation.

IBM Spectrum Virtualize Software for FlashSystem 7000 Controller software (5639-DB8) requires at least one IBM FlashSystem 7000 control enclosure (2076-824 or 2076-U7C) for installation.

IBM Spectrum Virtualize Software for FlashSystem 7000 Expansion software (5639-XD8) requires at least one IBM FlashSystem 7000 expansion enclosure (2076-12G, 2076-24G, 2076-92G) for installation. The high-density enclosures (2076-92G) require four of the base software charge codes to support the number of drive slots in the system.

IBM Spectrum Virtualize Software for FlashSystem 5100 External Data Virtualization (5639-ET8) requires at least one IBM Storwize V5000 control enclosure (2077-AF4, 2077-424, 2077-AF3, 2077-312, 2077-324, 2078-AF4, 2078-424, 2078-AF3, 2078-312, or 2078-324) or one FlashSystem 5100 control enclosure (2077-4H4, 2078-4H4, or 2078-UHB) for installation.

IBM Spectrum Virtualize Software for FlashSystem 5100 (5639-SV9) requires at least one IBM FlashSystem 5100 (2077-4H4, 2078-4H4, or 2078-UHB) or IBM Storwize V5100 control enclosure (2077-AF4, 2077-424, 2078-AF4, 2078-424, or 2078-U5B) for installation.

IBM Spectrum Virtualize Software for FlashSystem 9110 Controller (5639-FA2) requires at least one IBM FlashSystem 9110 control enclosure (9846-AF7, 9848-AF7, or 9848-UF7) for installation.

IBM Spectrum Virtualize Software for FlashSystem 9150 and 9200 Controller (5639-FA3) requires at least one IBM FlashSystem 9150 control enclosure (9846-AF8, 9848-AF8, or 9848-UF8), or one IBM FlashSystem 9200 (9846-AG8, 9848-AG8, or 9848-UG8), for installation.

IBM Spectrum Virtualize Software for FlashSystem 9x00 Expansions (5639-FA1) requires at least one IBM FlashSystem 9100 expansion enclosure (9846-AFF, 9846-A9F, 9848-AFF, or 9848-A9F) for installation. The high-density enclosures (9846-A9F and 9848-A9F) require four of the base software charge codes to support the number of drive slots in the system.

The optional IBM Spectrum Virtualize Software for SAN Volume Controller Encryption software (PID 5641-B08 or 5725-Y35 for Passport Advantage^(R)) is not available in the following countries:

- Armenia
- Belarus
- Kazakhstan
- Kyrgyzstan
- Russia

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

- [SAN Volume Controller](#)
- [FlashSystem 7200](#)
- [FlashSystem 5000](#)
- [FlashSystem 5100](#)

- [IBM FlashSystem 9100](#)
- [IBM FlashSystem 9200](#)

Planned availability date

November 13, 2020

See the [Availability of national languages](#) section for national language availability.

Description

Expanding the three-site replication model to include HyperSwap improves data availability options in three-site implementations. Systems configured in a three-site topology have high disaster recovery capabilities, but a disaster may take the data offline until the system can be failed over to an alternate site. HyperSwap allows active-active configurations to maintain data availability, eliminating the need to failover if communications should be disrupted. This provides a more robust environment, allowing up to 100% uptime for data, as well as recovery options inherent to disaster recovery solutions. In addition, the previously limited deployment of three-site replication with Metro Mirror is generally available with 8.4.

Adding DRAID 1 support provides the ability to establish DRAID mirroring to smaller numbers of drives than with other levels of DRAID, reducing the minimum cost requirements to implement DRAID in a system. Traditional RAID 1 writes to one drive from the host but can read from both. Distributing the primary data between the drives in DRAID allows both reading and writing to both drives, improving overall performance in both I/O operations and during rebuilds. DRAID 1 supports a minimum of two drives, with no requirement to establish a rebuild area in two-drive configurations. Two-drive configurations are limited to SCM devices and flash drives, where the cost of additional devices can make DRAID 6 impractical in some instances.

Support of expanding mirrored vDisks with sync and format allows client to expand and reduce the size of their vDisks without requiring an offline format. This technology utilizes fast format on both devices at the same time, eliminating the need to sync once the format is complete. The benefit is that the newly expanded capacity is available and treated as in sync immediately, rather than having to wait for an offline format and synchronization of the volumes.

This release increases the restriction of SCM drives per enclosure in the FlashSystem 5100, 7000, and 9000 families from four to twelve. The limit of twelve is effective in version 8.3.1 and later for Z-SSD drives, and version 8.4 and later for Optane drives.

DRPs receive several updates in 8.4:

- FlashCopy volumes are optimized for flash devices by utilizing redirect-on-write technology versus copy-on-write designed for spinning disks. Redirect-on-write decreases the I/O amplification for snapshots, improving performance when using flash devices. This technology uses the DRP internal deduplication referencing mechanism to convert these situations to more efficient metadata operations, instead of requiring a complete data operation. Redirect on write is limited to deduplication volumes in the same IO pool that are not in a mirrored relationship.
- Back-end clustering technology has been improved to reduce failover times, providing improved failover capabilities in the system.
- In 8.4, the Compressimator is always on. This allows the system to sample each volume at regular intervals, providing the ability to display the compressibility of the data in the GUI and IBM Storage Insights at any time.
- Support of a reconstruct read improves the data corruption handling algorithms in data reduction pools, improving reliability and availability of the data in these pools.

Product positioning

Clients 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. Clients also are embarking on the journey of IT transformation, transitioning from traditional data centers to using five or more private and public cloud providers in their business environments.

IBM Spectrum Virtualize systems deliver management of storage from entry and midrange up to enterprise storage systems, and enable hosts to attach through Fibre Channel (FC), FC over Ethernet (FCoE), iSCSI, or FC-NVMe. 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, IBM Spectrum Virtualize products are the ideal complement to server virtualization strategies.

In conjunction with IBM Spectrum Virtualize on premises, IBM Spectrum Virtualize for Public Cloud 8.3.1 can enable clients to migrate data to and from supported public cloud providers, including IBM Cloud^(R) and Amazon Web Services (AWS). Clients can create hybrid multicloud solutions for their traditional block data and workloads through the use of built-in IP replication capabilities. IBM Spectrum Virtualize for Public Cloud is deployed on cloud IaaS from IBM Cloud or AWS, either on bare metal servers in IBM Cloud or on Amazon Elastic Compute Cloud (Amazon EC2) instances on AWS, and virtualizing AWS Amazon Elastic Block Store (EBS) storage. This ability enables clients to create clustered configurations just like on premises, while bringing the optimization and virtualization capabilities of IBM Spectrum Virtualize to public cloud infrastructures. These capabilities include most of the key features of IBM Spectrum Virtualize such as FlashCopy, transparent cloud tiering, thin provisioning, Global Mirror, Metro Mirror, Global Mirror with change volumes, and Easy Tier^(R) to public cloud IaaS.

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

IBM Spectrum Virtualize software delivers a cross-industry offering for clients who are dealing with levels of complexity and increasing storage requirements. It has been enhanced with flash optimizations to support workloads demanding low latencies. These clients are also focused on scaling capacity and performance (scale up and scale out), data efficiency capabilities (deduplication, compression, thin provisioning, and iSCSI Unmap), high availability functionalities (stretched cluster, HyperSwap, and mirrored volumes), disaster recovery functions (Global and Metro Mirror), local copy services (FlashCopy), and performance features (flash drives and Easy Tier) at a reasonable cost.

Availability of national languages

Planned and supported geography translations will be available for download by November 13, 2020, at the following product websites:

- [SAN Volume Controller](#)
- [FlashSystem 7200](#)
- [FlashSystem 5000](#)
- [FlashSystem 5100](#)
- [Spectrum Virtualize](#)
- [FlashSystem 9100](#)

- [FlashSystem 9200](#)

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

Program number

Program number	VRM	Program name
5641-VC8	8.4.0	IBM Spectrum Virtualize Software for SAN Volume Controller
5725-M19	8.4.0	IBM Spectrum Virtualize Software for SAN Volume Controller (for Passport Advantage)
5641-CP8	8.4.0	IBM Spectrum Virtualize Software for SAN Volume Controller Compression Software
5725-H04	8.4.0	IBM Spectrum Virtualize Software for SAN Volume Controller Real-time Compression Software (for Passport Advantage)
5641-B08	8.4.0	IBM Spectrum Virtualize Software for SAN Volume Controller Encryption Software
5725-Y35	8.4.0	IBM Spectrum Virtualize Software for SAN Volume Controller Encryption Software V8 (for Passport Advantage)
5639-CB8	8.4.0	IBM Spectrum Virtualize Software for Storwize V7000 Controller Software
5639-XB8	8.4.0	IBM Spectrum Virtualize Software for Storwize V7000 Expansion Software
5639-EB8	8.4.0	IBM Spectrum Virtualize Software for Storwize V7000 External Data Virtualization Software
5639-ET8	8.4.0	IBM Spectrum Virtualize Software for FlashSystem 5100 External Data Virtualization Software
5639-SV9	8.4.0	IBM Spectrum Virtualize Software for FlashSystem 5100
5639-FA2	8.4.0	IBM Spectrum Virtualize Software for FlashSystem 9110 Controller
5639-FA3	8.4.0	IBM Spectrum Virtualize Software for FlashSystem 9150 and 9200 Controller
5639-FA1	8.4.0	IBM Spectrum Virtualize Software for FlashSystem 9x00 Expansions
5639-DB8	8.4.0	IBM Spectrum Virtualize Software for FlashSystem 7000 Controller
5639-XD8	8.4.0	IBM Spectrum Virtualize Software for FlashSystem 7000 Expansion

IBM Spectrum Virtualize Software for SAN Volume Controller 8

Program number	Maintenance 1 year PID number	Maintenance 2 year PID number	Maintenance 3 year PID number	Maintenance 4 year PID number	Maintenance 5 year PID number
5641-VC8	5641-VCA	5641-VCB	5641-VCC	5641-VCD	5641-VCE

IBM Spectrum Virtualize Software for SAN Volume Controller Compression Software 8

Program number	Maintenance 1 year PID number	Maintenance 2 year PID number	Maintenance 3 year PID number	Maintenance 4 year PID number	Maintenance 5 year PID number
5641-CP8	5641-CS1	5641-CS2	5641-CS3	5641-CS4	5641-CS5

IBM Spectrum Virtualize Software for SAN Volume Controller Encryption Software 8

Program number	Maintenance 1 year PID number	Maintenance 2 year PID number	Maintenance 3 year PID number	Maintenance 4 year PID number	Maintenance 5 year PID number
5641-B08	5641-B02	5641-B03	5641-B04	5641-B05	5641-B06

IBM Spectrum Virtualize Software for Storwize V7000 Controller Software 8

Program number	Maintenance 1 year PID number	Maintenance 2 year PID number	Maintenance 3 year PID number	Maintenance 4 year PID number	Maintenance 5 year PID number
5639-CB8	5639-CBA	5639-CBF	5639-CBC	5639-CBG	5639-CBH
	5639-CBB		5639-CBD		
			5639-CBE		

IBM Spectrum Virtualize Software for Storwize V7000 Expansion Software 8

Program number	Maintenance 1 year PID number	Maintenance 2 year PID number	Maintenance 3 year PID number	Maintenance 4 year PID number	Maintenance 5 year PID number
5639-XB8	5639-XBA	5639-XBF	5639-XBC	5639-XBG	5639-XBH
	5639-XBB		5639-XBD		
			5639-XBE		

IBM Spectrum Virtualize Software for Storwize V7000 External Data Virtualization Software 8

Program number	Maintenance 1 year PID number	Maintenance 2 year PID number	Maintenance 3 year PID number	Maintenance 4 year PID number	Maintenance 5 year PID number
5639-EB8	5639-EBA	5639-EBF	5639-EBC	5639-EBG	5639-EBH
	5639-EBB		5639-EBD		
			5639-EBE		

IBM Spectrum Virtualize Software for FlashSystems 5100 External Data Virtualization Software 8

Program number	Maintenance 1 year PID number	Maintenance 2 year PID number	Maintenance 3 year PID number	Maintenance 4 year PID number	Maintenance 5 year PID number
5639-ET8	5639-ETA	5639-ETF	5639-ETC	5639-ETG	5639-ETH
	5639-ETB		5639-ETD		
			5639-ETE		

IBM Spectrum Virtualize Software for FlashSystem 5100 8

Program number	Maintenance 1 year PID number	Maintenance 2 year PID number	Maintenance 3 year PID number	Maintenance 4 year PID number	Maintenance 5 year PID number
5639-SV9	5639-SAV	5639-SCV	5639-SDV	5639-SGV	5639-SHV
	5639-SBV		5639-SEV		
			5639-SFV		

IBM Spectrum Virtualize Software for FlashSystem 9110 Controller 8

Program number	Maintenance 1-year PID number	Maintenance 2-year PID number	Maintenance 3-year PID number	Maintenance 4-year PID number	Maintenance 5-year PID number
5639-FA2	5639-FAJ	5639-FAP	5639-FAL	5639-FAQ	5639-FAR
	5639-FAK		5639-FAM		
			5639-FAN		

IBM Spectrum Virtualize Software for FlashSystem 9150 and 9200 Controller 8

Program number	Maintenance 1-year PID number	Maintenance 2-year PID number	Maintenance 3-year PID number	Maintenance 4-year PID number	Maintenance 5-year PID number
5639-FA3	5639-FAS	5639-FAX	5639-FAU	5639-FAY	5639-FAZ
	5639-FAT		5639-FAV		
			5639-FAW		

IBM Spectrum Virtualize Software for FlashSystem 9x00 Expansions 8

Program number	Maintenance 1-year PID number	Maintenance 2-year PID number	Maintenance 3-year PID number	Maintenance 4-year PID number	Maintenance 5-year PID number
5639-FA1	5639-FAA	5639-FAF	5639-FAC	5639-FAG	5639-FAH
	5639-FAB		5639-FAD		
			5639-FAE		

IBM Spectrum Virtualize Software for FlashSystem 7000 Controller 8

Program number	Maintenance 1 year PID number	Maintenance 2 year PID number	Maintenance 3 year PID number	Maintenance 4 year PID number	Maintenance 5 year PID number
5639-DB8	5639-DBA	5639-DBC	5639-DBD	5639-DBG	5639-DBH
	5639-DBB		5639-DBE		
			5639-DBF		

IBM Spectrum Virtualize Software for FlashSystem 7000 Expansion 8

Program number	Maintenance 1 year PID number	Maintenance 2 year PID number	Maintenance 3 year PID number	Maintenance 4 year PID number	Maintenance 5 year PID number
5639-XD8	5639-XDA	5639-XDF	5639-XDC	5639-XDG	5639-XDH
	5639-XDB		5639-XDD		
			5639-XDE		

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

Education support

IBM training provides education to support many IBM offerings. Descriptions of courses for IT professionals and managers can be found on the [IBM Training](#) website.

Contact your IBM representative for course information.

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

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

Title	Order number
<i>ENUG</i>	Z125-5823
<i>IBM Systems Safety Notices</i>	G229-9054

To download these free PDF format publications, go to the [IBM Publications Center](#) website.

To access IBM Knowledge Center and to directly download any publications in PDF format, go to the individual IBM Knowledge Center product website:

- [SAN Volume Controller](#)
- [FlashSystem 7200 and Storwize V7000](#)
- [FlashSystem 5000, 5100, and Storwize V5000E](#)
- [FlashSystem 9200 and 9100](#)

Services

Contact your IBM representative for the list of selected services available in your country, either as standard or customized offerings for the efficient installation, implementation, or integration of this product.

Technical information

Specified operating environment

Hardware requirements

IBM Spectrum Virtualize software for SAN Volume Controller 8 requires at least one pair of IBM System Storage SAN Volume Controller (2145-SV1, 2145-DH8, 2145-SA2, 2145-SV2, 2147-SV1, 2147-SA2, or 2147-SV2) storage engines for installation. This software is also used to license external data virtualization on the IBM FlashSystem 7000 and 9000 families.

IBM Spectrum Virtualize software for SAN Volume Controller Encryption 8 (5641-B08 and 5725-Y35) requires Encryption Enablement Feature ACE2 or ACE5.

IBM Spectrum Virtualize software for Storwize V7000 Controller (5639-CB8) requires at least one IBM Storwize V7000 control enclosure (2076-724, 2076-U7B, 2076-U7A, 2076-AF6, 2076-624, or 2076-524) for installation. 2076-724 and 2076-U7B require version 8.2.0.2, or later.

IBM Spectrum Virtualize software for Storwize V7000 Expansion (5639-XB8) requires at least one IBM Storwize V7000 expansion enclosure (2076-A9F, 2076-92F, 2076-AFF, 2076-12F, or 2076-24F) for installation. The high-density enclosures (2076-A9F or 2076-92F) require 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 (5639-EB8) requires at least one IBM Storwize V7000 enclosure (2076-724, 2076-AF6, 2076-624, or 2076-524) for installation.

IBM Spectrum Virtualize software for FlashSystem 5100 (5639-SV9) requires at least one IBM FlashSystem 5100 (2077-4H4, 2078-4H4, or 2078-UHB) or IBM Storwize V5100 control enclosure (2077-AF4, 2077-424, 2078-AF4, 2078-424, or 2078-U5B) for installation.

IBM Spectrum Virtualize software for FlashSystem 7000 Controller (5639-DB8) requires at least one IBM FlashSystem 7000 control enclosure (2076-824 or 2076-U7C) for installation.

IBM Spectrum Virtualize software for FlashSystem 7000 Expansion (5639-XD8) requires at least one IBM FlashSystem 7000 expansion enclosure (2076-12G, 2076-24G, 2076-92G) for installation. The high-density enclosures (2076-92G) require four of the base software charge codes to support the number of drive slots in the system.

IBM Spectrum Virtualize software for FlashSystem 5100 External Data Virtualization (5639-ET8) requires at least one IBM Storwize V5000 control enclosure (2077-AF4, 2077-424, 2077-AF3, 2077-312, 2077-324, 2078-AF4, 2078-424, 2078-AF3, 2078-312, or 2078-324) or one FlashSystem 5100 control enclosure (2077-4H4, 2078-4H4, or 2078-UHB) for installation.

IBM Spectrum Virtualize software for FlashSystem 5100 8 (5639-SV9) requires at least one IBM FlashSystem 5100 (2077-4H4, 2078-4H4, or 2078-UHB) or IBM Storwize V5100 control enclosure (2077-AF4, 2077-424, 2078-AF4, 2078-424, or 2078-U5B) for installation.

IBM Spectrum Virtualize software for FlashSystem 9110 Controller (5639-FA2) requires at least one IBM FlashSystem 9110 control enclosure (9846-AF7, 9848-AF7, or 9848-UF7) for installation.

IBM Spectrum Virtualize software for FlashSystem 9150 and 9200 Controller (5639-FA3) requires at least one IBM FlashSystem 9150 control enclosure (9846-AF8, 9848-AF8, or 9848-UF8), or one IBM FlashSystem 9200 (9846-AG8, 9848-AG8, or 9848-UG8), for installation.

IBM Spectrum Virtualize software for FlashSystem 9x00 Expansions (5639-FA1) requires at least one IBM FlashSystem 9100 expansion enclosure (9846-AFF, 9846-A9F, 9848-AFF, or 9848-A9F) for installation. The high-density enclosures (9846-A9F and 9848-A9F) require four of the base software charge codes to support the number of drive slots in the system.

IBM Spectrum Virtualize software for SAN Volume Controller Encryption (PID 5641-B08 or 5725-Y35 for Passport Advantage) is not available in the following countries:

- Armenia
- Belarus
- Kazakhstan
- Kyrgyzstan
- Russia

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

- [SAN Volume Controller](#)
- [FlashSystem 7200](#)
- [FlashSystem 5000](#)
- [FlashSystem 5100](#)
- [IBM FlashSystem 9100](#)
- [IBM FlashSystem 9200](#)

Software requirements

Installation of IBM Spectrum Virtualize software 8.4 can be done directly from systems running IBM Spectrum Virtualize software 4.2.1, or later.

For current hardware and software interoperability dependencies, and other product environment and configuration information, see the respective support website:

- [SAN Volume Controller](#)
- [FlashSystem 7200](#)
- [FlashSystem 5000](#)
- [FlashSystem 5100](#)
- [IBM FlashSystem 9100](#)
- [IBM FlashSystem 9200](#)

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 the applicable two-, three-, four-, or five-year software maintenance registration program number and features.

Note: Only IBM Spectrum Virtualize software for SVC, IBM Spectrum Virtualize software only, and IBM Spectrum Virtualize for Public Cloud can be ordered through Passport Advantage. IBM Spectrum Virtualize for Public Cloud is only offered as a monthly term license through Passport Advantage which includes subscription and support together with the software license.

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.

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

For all current storage systems and host environments supported, go to the respective support website:

- [SAN Volume Controller](#)
- [FlashSystem 7200](#)
- [FlashSystem 5000](#)
- [FlashSystem 5100](#)
- [IBM FlashSystem 9100](#)
- [IBM FlashSystem 9200](#)

Compatibility

For further information about currently supported environments and operating guidelines, go to the respective support website:

- [SAN Volume Controller](#)
- [FlashSystem 7200](#)
- [FlashSystem 5000](#)
- [FlashSystem 5100](#)
- [FlashSystem 9100](#)
- [FlashSystem 9200](#)

Limitations

FlashSystem 5010 systems support data reduction pools, but do not support compression or deduplication.

This program only operates on specified storage hardware as detailed in the [Hardware requirements](#) section.

For additional information, see the [Usage restrictions](#) section in the [Terms and conditions](#) section of this announcement, and 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 IBM Spectrum Virtualize software or in furnished publications for this product available at the [IBM SVC](#), [IBM FlashSystem 7200](#), [IBM FlashSystem 5000](#), [IBM FlashSystem 5100](#), [IBM FlashSystem 9100](#), [IBM FlashSystem 9200](#), and [IBM Spectrum Virtualize](#) support websites.

Encryption and other functions in this announcement may be subject to limitations and restrictions for supported configurations, environments, and use. See the *IBM Spectrum Virtualize V8.3 Configuration Limits and Restrictions* document for details.

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

Select the applicable product (such as FlashSystem 5000) in the **Product Finder** menu.

Enter *V8.3 Configuration Limits and Restrictions* in the Search Support field and check the *Search only...* box.

IBM Support

[IBM Support](#) is your gateway to technical support tools and resources that are designed to help you save time and simplify support. IBM Support can help you find answers to questions, download fixes, troubleshoot, submit and track problem cases, and build skills. Learn and stay informed about the transformation of IBM

Support, including new tools, new processes, and new capabilities, by going to the [IBM Support Insider](#).

Planning information

Client responsibilities

Planning for and provisioning of the required power and environmental support for an IBM Spectrum Virtualize family product, including its storage engines, is a client responsibility.

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

- [SAN Volume Controller](#)
- [FlashSystem 7200 and Storwize V7000](#)
- [FlashSystem 5000, 5100, and Storwize V5000E](#)
- [FlashSystem 9200 and 9100](#)

Clients with a 5641-VC8 or 5641-CP8 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.

Clients 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.

Packaging

This offering is available from [IBM Marketplace](#). On IBM Marketplace, you can discover, try, and buy software, hardware, and services from IBM and third-party providers.

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 IBM Spectrum Virtualize software order.

SVC

IBM Spectrum Virtualize software for SVC 8 (5641-VC8, 5641-CP8, and 5641-B08) is preinstalled on, and shipped with, the required IBM 2145 or 2147 SVC storage engines.

After receipt of an order for IBM Spectrum Virtualize software for SVC 5641-VC8, the IBM Business Partner or client will be required to register and accept Passport Advantage or Passport Express terms and conditions. Upon registration, the client 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 V8*, GI13-2841
- *IBM System Storage SAN Volume Controller Read First* file, GA32-0843

IBM FlashSystem 7000

IBM Spectrum Virtualize software for FlashSystem 7000 8 (5639-DB8, 5639-XD8) is preinstalled on, and shipped with, the required IBM 2076 FlashSystem 7000 systems.

In addition to the *IBM Agreement for Acquisition of Software Maintenance*, the License Information for IBM FlashSystem 7000 V8, GI13-2841, is shipped with each new IBM FlashSystem 7200 Controller order.

IBM FlashSystem 5100

IBM Spectrum Virtualize software for FlashSystem 5100 (5639-SV9) is preinstalled on, and shipped with, the required IBM 2077 or 2078 IBM FlashSystem 5100 systems.

The paid invoice acts as Proof of Entitlement (PoE) for all orders of IBM Spectrum Virtualize software 8. All associated media listed in the [Terms and conditions](#) section are also shipped with the new hardware order. One media set per IBM Spectrum Virtualize system will be shipped.

IBM FlashSystem 9100 and 9200

IBM FlashSystem 9100 and 9200 software (5639-FA1, 5639-FA2, and 5639-FA3) is preinstalled on, and shipped with, IBM 9846 and 9848 FlashSystem 9100 and 9200 systems.

In addition to the *IBM Agreement for Acquisition of Software Maintenance*, the License Information is shipped with each new controller order.

The paid invoice acts as PoE for all orders of IBM Spectrum Virtualize software 8. 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, see the [Publications](#) section.

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

Publications are in English.

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

Ordering information

Products announced as dual-pipe are available for ordering by program number and feature number or by part number. Products can be obtained by part number through [Passport Advantage](#).

For more information, contact your IBM representative or IBM Business Partner.

IBM Configurator for e-business (e-config)

There is no new ordering information in this release. For available feature numbers, see Software Announcement [ZP20-0034](#), dated February 11, 2020.

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

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

Charge metric

The charge metrics for these licensed products can be found in the following License Information documents:

Program identifier	Program Name	License Information document number
5641-VC8	IBM Spectrum Virtualize Software for SAN Volume Controller 8.4.0	L-SVGY-BTPUWF
5725-M19	IBM Spectrum Virtualize Software for SAN Volume Controller (for Passport Advantage) 8.4.0	L-SVGY-BTPUWF
5641-CP8	IBM Spectrum Virtualize Software for SAN Volume Controller Compression Software 8.4.0	L-SVGY-BTPUWF
5725-H04	IBM Spectrum Virtualize Software for SAN Volume Controller Real-time Compression Software (for Passport Advantage) 8.4.0	L-SVGY-BTPUWF
5641-B08	IBM Spectrum Virtualize Software for SAN Volume Controller Encryption Software 8.4.0	L-SVGY-BTPUWF
5725-Y35	IBM Spectrum Virtualize Software for SAN Volume Controller Encryption Software (for Passport Advantage) 8.4.0	L-SVGY-BTPUWF
5639-CB8	IBM Spectrum Virtualize Software for Storwize V7000 Controller Software 8.4.0	L-SVGY-BTXHVD
5639-EB8	IBM Spectrum Virtualize Software for Storwize V7000 External Data Virtualization Software 8.4.0	L-SVGY-BTXHVD
5639-XB8	IBM Spectrum Virtualize Software for Storwize V7000 Expansion Software 8.4.0	L-SVGY-BTXHVD
5639-ET8	IBM Spectrum Virtualize Software for FlashSystem 5100 External Data Virtualization Software 8.4.0	L-SVGY-BTPUUU
5639-SV9	IBM Spectrum Virtualize Software for FlashSystem 5100 8.4.0	L-SVGY-BTPUUU
5639-FA2	IBM Spectrum Virtualize Software for FlashSystem 9110 Controller 8.4.0	L-SVGY-BTPUSE
5639-FA3	IBM Spectrum Virtualize Software for FlashSystem	L-SVGY-BTPUSE

Program identifier	Program Name	License Information document number
	9150 and 9200 Controller 8.4.0	
5639-FA1	IBM Spectrum Virtualize Software for FlashSystem 9x00 Expansion 8.4.0	L-SVGY-BTPUSE
5639-DB8	IBM Spectrum Virtualize Software for FlashSystem 7000 Controller 8.4.0	L-SVGY-BTPUT8
5639-XD8	IBM Spectrum Virtualize Software for FlashSystem 7000 Expansion 8.4.0	L-SVGY-BTPUT8

Select your language of choice and scroll down to the Charge Metrics section. Follow-on releases, if any, may have updated terms. See the [License Information documents](#) website for more information.

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).

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 client signatures.

Licenses under the IBM International Program License Agreement (IPLA) 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 can be extended by the purchase of a renewal option, if available. Two charges apply: 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

The following License Information documents apply to the offerings in this announcement:

Program identifier	Program Name	License Information document number
5641-VC8	IBM Spectrum Virtualize Software for SAN Volume Controller 8.4.0	L-SVGY-BTPUWF
5725-M19	IBM Spectrum Virtualize Software for SAN Volume Controller (for Passport Advantage) 8.4.0	L-SVGY-BTPUWF
5641-CP8	IBM Spectrum Virtualize Software for SAN Volume Controller Compression Software 8.4.0	L-SVGY-BTPUWF
5725-H04	IBM Spectrum Virtualize Software for SAN Volume Controller Real-time Compression Software (for Passport Advantage) 8.4.0	L-SVGY-BTPUWF
5641-B08	IBM Spectrum Virtualize Software for SAN Volume Controller Encryption Software 8.4.0	L-SVGY-BTPUWF
5725-Y35	IBM Spectrum Virtualize Software for SAN Volume Controller Encryption Software (for Passport Advantage) 8.4.0	L-SVGY-BTPUWF
5639-CB8	IBM Spectrum Virtualize Software for Storwize V7000 Controller Software 8.4.0	L-SVGY-BTXHVD
5639-EB8	IBM Spectrum Virtualize Software for Storwize V7000 External Data Virtualization Software 8.4.0	L-SVGY-BTXHVD
5639-XB8	IBM Spectrum Virtualize Software for Storwize V7000 Expansion Software 8.4.0	L-SVGY-BTXHVD
5639-ET8	IBM Spectrum Virtualize Software for FlashSystem 5100 External Data Virtualization Software 8.4.0	L-SVGY-BTPUUU
5639-SV9	IBM Spectrum Virtualize Software for FlashSystem 5100 8.4.0	L-SVGY-BTPUUU
5639-FA2	IBM Spectrum Virtualize Software for FlashSystem 9110 Controller 8.4.0	L-SVGY-BTPUSE
5639-FA3	IBM Spectrum Virtualize Software for FlashSystem 9150 and 9200 Controller 8.4.0	L-SVGY-BTPUSE
5639-FA1	IBM Spectrum Virtualize Software for FlashSystem 9x00 Expansion 8.4.0	L-SVGY-BTPUSE
5639-DB8	IBM Spectrum Virtualize Software for FlashSystem 7000 Controller 8.4.0	L-SVGY-BTPUT8
5639-XD8	IBM Spectrum Virtualize Software for FlashSystem 7000 Expansion 8.4.0	L-SVGY-BTPUT8

Select your language of choice and scroll down to the Charge Metrics section.

Follow-on releases, if any, may have updated terms. See the [License Information documents](#) website for more information.

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 Support Guide](#).

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

Program support

Subscription and Support includes telephone assistance, as well as access to updates, releases, and versions of the program as long as support is in effect. You will be notified of discontinuance of support with 12 months' notice.

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)

Yes. Contact your IBM representative.

Passport Advantage applies

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

Usage restrictions

Yes

This offering is subject to usage restrictions.

SVC standard software (5641-VC8)

This program (5641-VC8) is licensed on per-storage capacity unit (SCU) with cumulative license basis for SVC Base License and SVC 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. 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 SVC standard software and its associated features are licensed to the client (enterprise). Note that a client 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 client'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.

Clients may use the encryption feature once they purchase feature ACE2 on the hardware, and the encryption PID (5641-B08 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 SVC. This program is delivered together with code provided under separate license agreements, including, but not limited to, open source license agreements.

See License Information document [L-SVGY-BTPUWF](#) for details. These restrictions are current as of the date of announcement. Follow-on releases, if any, may have updated terms. See the [License Information documents](#) website for any new or revised restrictions.

FlashSystem 7000

The following Program Unique Terms apply. This program is licensed for use with the IBM FlashSystem 7000 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 FlashSystem 7000 storage enclosure. The following paragraph titled "Disabling device" applies to the use of the IBM FlashSystem 7000 Software components. The term "Program" in these paragraphs shall mean the IBM FlashSystem 7000 Software components.

For all externally virtualized storage, such as any storage not purchased as part of a 9100 or 9200 system, SVC capacity based licensing applies.

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-DB8, 5639-CB8, 5639-XB8, and 5639-XD8 are not transferable between IBM FlashSystem 7000 systems and are only to be used on the IBM FlashSystem 7000 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.

See License Information documents [L-SVGY-BTXHVD](#) and [L-SVGY-BTPUT8](#) for details. These restrictions are current as of the date of announcement. Follow-on releases, if any, may have updated terms. See the [License Information documents](#) website for any new or revised restrictions.

FlashSystem 5100

The following Program Unique Terms apply. This program is licensed for use with the IBM FlashSystem 5100 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 FlashSystem 5100 storage enclosure. The following paragraph titled "Disabling device" applies to the use of the IBM FlashSystem 5100 Software components. The term "Program" in these paragraphs shall mean the IBM FlashSystem 5100 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-SV9 is not transferable between IBM FlashSystem 5100 systems and is only to be used on the IBM FlashSystem 5100 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.

See License Information document [L-SVGY-BTPUUU](#) for details. These restrictions are current as of the date of announcement. Follow-on releases, if any, may have updated terms. See the [License Information documents](#) website for any new or revised restrictions.

FlashSystem 9100 and 9200

The following Program Unique Terms apply. This program is licensed for use with the IBM FlashSystem 9100 and 9200 systems 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 FlashSystem 9100 or 9200 storage enclosure. The following paragraph titled "Disabling device" applies to the use of the IBM FlashSystem 9100 or 9200 Software components. The term "Program" in these paragraphs shall mean the IBM FlashSystem 9100 or 9200 Software components.

For all externally virtualized storage, such as any storage not purchased as part of a 9100 or 9200 system, SVC capacity based licensing applies.

For the utility models 9848-UF7, 9848-UF8, and 9848-UG8, external virtualization is not supported except for data migration onto the 9848-UF7, 9848-UF8, and 9848-UG8 within a 90 day window.

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-FA1, 5639-FA2, and 5639-FA3 are not transferable between IBM FlashSystem 9100 and 9200 systems, and are only to be used on the IBM FlashSystem 9100 or 9200 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.

See License Information document [L-SVGY-BTPUSE](#) for details. These restrictions are current as of the date of announcement. Follow-on releases, if any, may have updated terms. See the [License Information documents](#) website for any new or revised restrictions.

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 client 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 by 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 users.) IBM provides Severity 1 assistance 24 hours a day, every day of the year. For additional details, see the [IBM Support Guide](#). 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, go to the [Passport Advantage and Passport Advantage Express](#) website.

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. When ordering through the program number process, a 15% education allowance applies to qualified education institution clients.

Education software allowance program applies when ordering through the program number process.

For the part number ordering process, special education prices are available for qualified clients through Passport Advantage.

ESAP available

Yes, to qualified clients.

Statement of good security practices

IT system security involves protecting systems and information through intrusion 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 regulatory compliant, comprehensive security approach, which will necessarily involve additional operational procedures, and may require other systems, products, or services to be most effective.

Important: IBM does not warrant that any systems, products, or services are immune from, or will make your enterprise immune from, the malicious or illegal conduct of any party.

Prices

Business Partner information

If you are an IBM Business Partner acquiring products from IBM, you may link to Passport Advantage Online for resellers where you can obtain Business Partner pricing information. An IBMid and password are required to access the [IBM Passport Advantage](#) or [IBM PartnerWorld^{\(R\)}](#) website.

Passport Advantage

For Passport Advantage information and charges, contact your IBM representative or IBM Business Partner. Additional information is also available on the [Passport Advantage and Passport Advantage Express](#) website.

For all local charges, contact your IBM representative or your authorized IBM Business Partner.

IBM Global Financing

IBM Global Financing offers competitive financing to credit-qualified clients to assist them in acquiring IT solutions. Offerings include financing for IT acquisition, including hardware, software, and services, from both IBM and other manufacturers or vendors. Offerings (for all client segments: small, medium, and large enterprise), rates, terms, and availability can vary by country. Contact your local IBM Global Financing organization or go to the [IBM Global Financing](#) website for more information.

IBM Global Financing offerings are provided through IBM Credit LLC in the United States, and other IBM subsidiaries and divisions worldwide to qualified commercial and government clients. Rates are based on a client's credit rating, financing terms, offering type, equipment type, and options, and may vary by country. Other restrictions may apply. Rates and offerings are subject to change, extension, or withdrawal without notice.

Financing from IBM Global Financing helps you preserve cash and credit lines, enables more technology acquisition within current budget limits, can help accelerate implementation of economically attractive new technologies, offers payment and term flexibility, and can help match project costs to projected benefits. Financing is available worldwide for credit-qualified clients.

Announcement countries

All European, Middle Eastern, and African countries, except Islamic Republic of Iran, Sudan, and Syrian Arab Republic.

Trademarks

IBM Spectrum, HyperSwap, IBM, IBM FlashSystem, FlashCopy, Storwize, Passport Advantage, Easy Tier, Global Technology Services, PartnerWorld, Express and IBM Cloud are registered trademarks of IBM Corporation in the United States, other countries, or both.

Microsoft is a trademark of Microsoft Corporation in the United States, other countries, or both.

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

Terms of use

IBM products and services which are announced and available in your country can be ordered under the applicable standard agreements, terms, conditions, and prices in effect at the time. IBM reserves the right to modify or withdraw this announcement at any time without notice. This announcement is provided for your information only. Reference to other products in this announcement does not necessarily imply those products are announced, or intend to be announced, in your country. Additional terms of use are located at

[Terms of use](#)

For the most current information regarding IBM products, consult your IBM representative or reseller, or go to the [IBM worldwide contacts page](#)

[IBM Directory of worldwide contacts](#)