IBM Spectrum Control Base Edition
Version 3.3.0

Release Notes

First Edition (December 2017)

This edition applies to version 3.3.0 of the IBM Spectrum Control Base Edition software package. Newer document editions may be issued for the same product version in order to add missing information, update information, or amend typographical errors. The edition is reset to 'First Edition' for every new product version.

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Overview

IBM® Spectrum Control Base Edition is a centralized server system that consolidates a range of IBM storage provisioning, automation, and monitoring solutions through a unified server platform.

IBM Spectrum Control Base Edition provides a single server backend location and enables centralized management of IBM storage resources for different virtualization and cloud platforms.

The following solution components, referred to as interfaces, are supported by the software package:

- IBM Storage Provider for VMware VASA – Improves the ability to monitor and automate storage-related operations on VMware platforms. This includes support for VASA 2.0 and virtual volumes. In addition, it uses Storage Policy Based Management (SPBM) technology for optimizing the virtual machine provisioning process.
- IBM Storage Enhancements for VMware vSphere Web Client – Integrate into the VMware vSphere Web Client platform and enable VMware administrators to independently and centrally manage their storage resources on IBM storage systems.
- IBM Storage Plug-in for VMware vRealize Orchestrator – Allows VMware administrators to include IBM discovery and provisioning in their vRealize Orchestrator automation workflows.
- IBM Storage Management Pack for VMware vRealize Operations Manager – Allows VMware administrators to obtain comprehensive monitoring information about the IBM storage resources that are utilized in their virtualized cloud environment.
- IBM Storage Automation Plug-in for PowerShell – Runs cmdlets for provisioning and management of the storage systems, running Spectrum Virtualize software.
- IBM Storage Enabler for Containers – Provisions storage volumes from an external IBM storage to container frameworks. Storage provisioning can be fully automatized with additional support of cluster orchestration systems to automatically deploy, scale and manage containerized applications

Note: IBM Storage Automation Plug-in for PowerShell and IBM Storage Enabler for Containers are not provided as an integral part of the Spectrum Control Base package and must be installed separately.

You can download the IBM Spectrum Control Base Edition software package at any time from the IBM Fix Central website (www.ibm.com/support/fixcentral).

What's new in version 3.3.0

Version 3.3.0 introduces IBM Storage Enabler for Containers, a plug-in for allowing IBM storage systems to be utilized as block storage devices for Kubernetes container clusters. Also, this version adds support of LDAP groups for managing the IBM Storage Automation Plug-in for PowerShell and IBM Storage Enabler for Containers plug-ins.

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IBM Storage Enabler for Containers

IBM Storage Enabler for Containers uses Kubernetes Dynamic Provisioner and FlexVolume to automate IBM storage provisioning for Kubernetes persistent volumes. Through this plug-in, storage volumes are provisioned from an external IBM storage to container frameworks, allowing the use of the containers with stateful microservices, such as database applications. This ensures hassle-free deployment, scaling and management of containerized applications.

LDAP groups

LDAP user groups provide a quick way of giving users common access to certain resources within Spectrum Control Base. Starting from version 3.3.0, LDAP-based authentication can be applied a single user or a group of users, allowing management of the PowerShell and Enabler for Containers interfaces.

Compatibility and requirements

This section specifies the compatibility and requirements of version 3.3.0 of IBM Spectrum Control Base Edition.

Note: For information about the compatibility and requirements of previous versions, refer to relevant release notes of IBM Spectrum Control Base Edition or IBM Storage Integration Server.

Supported storage systems

IBM Spectrum Control Base Edition version 3.3.0 supports different IBM storage systems as listed in the following table.

Storage system	Microcode version	Compatibility note	Supported cloud interface(s)
IBM DS8870	7.5.1	VMware VASA 2.0 support is introduced by the bundle 87.51.xxx with the RESTful API patch. Virtual volume technology is not supported.	• IBM Storage Provider for VMware VASA • IBM Storage Enhancements for VMware vSphere Web Client
IBM DS8880	8.0.1, 8.1.x	VMware vSphere Web Client support is introduced by the bundle 88.1.xxx. Virtual volume technology is not supported.	• IBM Storage Provider for VMware VASA • IBM Storage Enhancements for VMware vSphere Web Client
IBM FlashSystem A9000	12.0.x, 12.1.x, 12.2.0	VMware virtual volume technology (VVol) is not supported	• IBM Storage Provider for VMware VASA • IBM Storage Enhancements for VMware vSphere Web Client • IBM Storage Plug-in for VMware vRealize Orchestrator • IBM Storage Management Pack for VMware vRealize Operations Manager • IBM Storage Enabler for Containers

Storage system	Microcode version	Compatibility note	Supported cloud interface(s)
IBM FlashSystem A9000R	12.0.x, 12.1.x, 12.2.0	VMware virtual volume technology (VVol) is not supported	• IBM Storage Provider for VMware VASA • IBM Storage Enhancements for VMware vSphere Web Client • IBM Storage Plug-in for VMware vRealize Orchestrator • IBM Storage Management Pack for VMware vRealize Operations Manager • IBM Storage Enabler for Containers
IBM FlashSystem V9000	7.4.1, 7.5.0, 7.6.0, 7.7.0, 7.8.x, 8.1.0	VMware VASA 2.0 (VVol) is supported by version 7.6.0 and above. However, VVols cannot be used, when a storage system is deployed in HyperSwap® topology.	• IBM Storage Provider for VMware VASA • IBM Storage Enhancements for VMware vSphere Web Client • IBM Storage Plug-in for VMware vRealize Orchestrator • IBM Storage Management Pack for VMware vRealize Operations Manager • IBM Storage Automation Plug-in for PowerShell • IBM Storage Enabler for Containers
IBM Flex System V7000	7.1.0, 7.2.0	IBM Flex System V7000 is bundled with Storwize® product family	• IBM Storage Provider for VMware VASA • IBM Storage Enhancements for VMware vSphere Web Client
IBM SAN Volume Controller	7.1.0, 7.2.0, 7.3.0, 7.4.0, 7.5.0, 7.6.0, 7.7.0, 7.8.x, 8.1.0	Microcode 7.3.0 PTF (with security fix) is also supported. VMware VASA 2.0 (VVol) is supported by version 7.6.0 and above. However, VVols cannot be used, when a storage system is deployed in HyperSwap topology.	• IBM Storage Provider for VMware VASA • IBM Storage Enhancements for VMware vSphere Web Client • IBM Storage Plug-in for VMware vRealize Orchestrator • IBM Storage Management Pack for VMware vRealize Operations Manager • IBM Storage Automation Plug-in for PowerShell • IBM Storage Enabler for Containers

Storage system	Microcode version	Compatibility note	Supported cloud interface(s)
IBM Spectrum Accelerate	11.5.x	Can be managed using Spectrum Control RESTful APIs. VMware virtual volume technology (VVol) is not supported.	• IBM Storage Provider for VMware VASA • IBM Storage Enhancements for VMware vSphere Web Client • IBM Storage Plug-in for VMware vRealize Orchestrator • IBM Storage Management Pack for VMware vRealize Operations Manager • IBM Storage Enabler for Containers
IBM Spectrum Virtualize™ as software only	7.7.1, 7.8.x, 8.1.0	Microcode 7.3.0 PTF (with security fix) is also supported. VMware VASA 2.0 (VVol) is supported by version 7.6.0 and above. However, VVols cannot be used, when a storage system is deployed in HyperSwap topology.	• IBM Storage Provider for VMware VASA • IBM Storage Enhancements for VMware vSphere Web Client • IBM Storage Plug-in for VMware vRealize Orchestrator • IBM Storage Management Pack for VMware vRealize Operations Manager • IBM Storage Automation Plug-in for PowerShell • IBM Storage Enabler for Containers
IBM Storwize V3500	7.1.0, 7.2.0, 7.3.0, 7.4.0, 7.5.0, 7.6.0, 7.7.0, 7.8.x	Microcode 7.3.0 PTF (with security fix) is also supported. VMware VASA 2.0 (VVol) is supported by version 7.6.0 and above.	• IBM Storage Provider for VMware VASA • IBM Storage Enhancements for VMware vSphere Web Client • IBM Storage Plug-in for VMware vRealize Orchestrator • IBM Storage Management Pack for VMware vRealize Operations Manager • IBM Storage Automation Plug-in for PowerShell • IBM Storage Enabler for Containers
IBM Storwize V3700	7.1.0, 7.2.0, 7.3.0, 7.4.0, 7.5.0, 7.6.0, 7.7.0, 7.8.x	Microcode 7.3.0 PTF (with security fix) is also supported. VMware VASA 2.0 (VVol) is supported by version 7.6.0 and above.	• IBM Storage Provider for VMware VASA • IBM Storage Enhancements for VMware vSphere Web Client • IBM Storage Plug-in for VMware vRealize Orchestrator • IBM Storage Management Pack for VMware vRealize Operations Manager • IBM Storage Automation Plug-in for PowerShell • IBM Storage Enabler for Containers

Storage system	Microcode version	Compatibility note	Supported cloud interface(s)
IBM Storwize V5000	7.1.0, 7.2.0, 7.3.0, 7.4.0, 7.5.0, 7.6.0, 7.7.0, 7.8.x, 8.1.0	Microcode 7.3.0 PTF (with security fix) is also supported. VMware VASA 2.0 (VVol) is supported by version 7.6.0 and above. However, VVols cannot be used, when a storage system is deployed in HyperSwap topology.	• IBM Storage Provider for VMware VASA • IBM Storage Enhancements for VMware vSphere Web Client • IBM Storage Plug-in for VMware vRealize Orchestrator • IBM Storage Management Pack for VMware vRealize Operations Manager • IBM Storage Automation Plug-in for PowerShell • IBM Storage Enabler for Containers
IBM Storwize V7000	7.1.0, 7.2.0, 7.3.0, 7.4.0, 7.5.0, 7.6.0, 7.7.0, 7.8.x, 8.1.0	Microcode 7.3.0 PTF (with security fix) is also supported. VMware VASA 2.0 (VVol) is supported by version 7.6.0 and above. However, VVols cannot be used, when a storage system is deployed in HyperSwap topology.	• IBM Storage Provider for VMware VASA • IBM Storage Enhancements for VMware vSphere Web Client • IBM Storage Plug-in for VMware vRealize Orchestrator • IBM Storage Management Pack for VMware vRealize Operations Manager • IBM Storage Automation Plug-in for PowerShell • IBM Storage Enabler for Containers
IBM Storwize V7000 Unified	1.4.2, 1.4.3, 1.5.x	Only block storage is supported. File shares and file systems are not supported.	• IBM Storage Provider for VMware VASA • IBM Storage Enhancements for VMware vSphere Web Client • IBM Storage Plug-in for VMware vRealize Orchestrator • IBM Storage Management Pack for VMware vRealize Operations Manager
IBM XIV® Storage System	10.2.4.x 11.0.x, 11.1.x, 11.2.x, 11.3.x, 11.4.x, 11.5.x, 11.6.x	VMware VASA 2.0 (VVol) is supported by version 11.5.1 and above	• IBM Storage Provider for VMware VASA • IBM Storage Enhancements for VMware vSphere Web Client • IBM Storage Plug-in for VMware vRealize Orchestrator • IBM Storage Management Pack for VMware vRealize Operations Manager • IBM Storage Enabler for Containers

Note:

- Newer microcode versions may also be compatible. When a newer microcode version becomes available, contact IBM Support to inquire whether the new microcode version is compatible with version 3.3.0 of IBM Spectrum Control™ Base. Alternatively, check for a newer version of IBM Spectrum Control Base.
- IBM FlashSystem® V9000, IBM Storwize Family and IBM SAN Volume Controller storage systems run the IBM Spectrum Virtualize software. In addition, IBM Spectrum Virtualize package is available as a deployable solution that can be run on any compatible hardware.
- Refer to the VMware compatibility matrix on IBM Knowledge Center for information about supported combinations of IBM storage system software versions and various VMware cloud platforms.

Supported operating systems

The IBM Spectrum Control Base Edition software can be installed on the following Linux versions.

Table 1. VMware deployment

Operating system	Architecture
Red Hat Enterprise Linux (RHEL) 6.3–6.9, 7.0–7.3	x64

Supported operating systems for containerized environment

Table 1 lists requirements for installation of the IBM Storage Enabler for Containers add-on, when deployed with Kubernetes orchestration system.

Table 2. Containerized deployment requirements

Operating system	Architecture
Red Hat Enterprise Linux (RHEL) 7.x	x64
Ubuntu 16.04 or later	x64
Kubernetes 1.6–1.8	x64

Included cloud interfaces

Version 3.3.0 of IBM Spectrum Control Base Edition includes the following cloud interfaces (plug-ins):

Cloud interface	Version
IBM Storage Provider for VMware APIs for Storage Awareness version 1.0	3.1.0
IBM Storage Provider for VMware APIs for Storage Awareness version 1.0	3.2.1
IBM Storage Enhancements for VMware vSphere Web Client	3.2.1
IBM Storage Management Pack for VMware vRealize Operations Manager	3.0.1
IBM Storage Plug-in for VMware vRealize Orchestrator	3.1.0
IBM Storage Automation Plug-in for PowerShell*	1.0.0

Cloud interface	Version
IBM Storage Enabler for Containers*	1.0.0

Note: Cloud interfaces marked with an asterisk (*) are not included into the Spectrum Control Base package and must be installed separately.

Minimum server hardware requirements

The Linux server upon which IBM Spectrum Control Base Edition is installed should meet the following minimum hardware requirements:

- 64-bit dual-core CPU
- 4 GB of RAM
- 16 GB of free disk space
- 4 GB swap space

The same requirements apply if a virtual machine is used instead of a physical server.

Note:

- For best performance, use a dedicated server.
- The minimum requirements are for supporting up to 20 storage systems and up to 1000 objects (storage resources, volumes, hosts, mappings, snapshots, mirroring groups, consistency groups).

Supported VMware platforms

Version 3.3.0 of IBM Spectrum Control Base Edition supports the following VMware platforms and frameworks.

VMware platform or framework	Version
vCenter Server	5.5.x, 6.0.x, 6.5.x
vSphere Web Client Server	5.5.x, 6.0.x, 6.5.x
vSphere APIs for Storage Awareness (VASA)	1.0, 2.0
vCenter Server Appliance (VCSA)	5.5.x, 6.0.x, 6.5.x
vRealize Operations Manager (vROps)	5.8.x, 6.0.x, 6.1, 6.2, 6.3, 6.4, 6.5, 6.6
vRealize Orchestrator (vRO)	5.5.x, 6.0.x, 7.0.x, 7.1.x, 7.2, 7.3

Note:

- The IBM Storage Enhancements for VMware vSphere Web Client are automatically deployed and enabled by registering vCenter servers on Spectrum Control Base.
- The IBM Storage Plug-in for VMware vRealize Orchestrator is deployed by installing its plug-in package on the vRealize Orchestrator server.
- The IBM Storage Management Pack for VMware vRealize Operations Manager is deployed by installing its PAK file on the vRealize Operations Manager server.
- Refer to the VMware compatibility matrix on IBM Knowledge Center for information about supported combinations of IBM storage system software versions and various VMware cloud platforms.

For more information, refer to the user guide.

Supported browsers

IBM Spectrum Control Base Edition can be accessed and managed with the following web browsers:

- Microsoft Internet Explorer 10.0 or later.
- Mozilla Firefox 31 or later.
- Google Chrome 39.0 or later.

The required screen resolution for GUI management is 1024×768 or higher.

CPU and memory consumption on vRealize Orchestrator

When the IBM Storage Plug-in for VMware vRealize Orchestrator is used, the CPU and memory consumption impact on the vRealize Orchestrator server is minimal: approximately 2% CPU usage at peak, and less than 1% memory usage.

The server environment on which the IBM Storage Plug-in for VMware vRealize Orchestrator was tested included:

- CPU: 2 vCPU, Intel Xeon X5650 @ 2.67GHz
- Memory: 3088 MB

Change log

This section summarizes the changes that were made in released version of IBM Spectrum Control Base Edition.

Note: New functional features of these versions are only briefly summarized. For a detailed summary of the new functional features of a specific version, refer to the 'What's new' section of its release notes.

Version 3.3.0 (December 2017)

Version 3.3.0 introduces IBM Storage Enabler for Containers, a plug-in for allowing IBM storage systems to be utilized as persistent storage devices for container frameworks. The additional changes are as follows.

Ticket ID	Description
SCB-4274	**Enhancement**: Added support for LDAP user groups. The LDAP user groups can be used for managing the PowerShell and Enabler for Containers interfaces.
SCB-4473	**Fixed**: vSphere Web Client might not display the host connection status correctly, if the N-Port ID Virtualization is enabled on SVC nodes.
SCB-4994	**Fixed**: A storage resource on a storage system, running Spectrum Virtualize, cannot be added using the Spectrum Control Base GUI.
SCB-5100	**Fixed**: IBM FlashSystem A9000R storage systems with capacity over 1.99 PB cannot be added to Spectrum Control Base.
SCB-5102	**Fixed**: A cloud interface cannot be modified, using the Spectrum Control Base GUI, if the number of existing interfaces is more than ten.

Version 3.2.1 (October 2017)

Version 3.2.1 added support for version 8.1.0 of the storage systems run the IBM Spectrum Virtualize software. The additional changes were as follows.

Ticket ID	Description
SCB-4719	**Fixed**: VVol-based datastore might become inactive after the Spectrum Control Base is upgraded from version 2.x.
SCB-4888	**Fixed**: The **`create_volume`** task might remain in progress indefinitely, if a large number of hosts is mapped to a new volume. The exact number is unclear, and deemed to be around 50.
SCB-4929	**Fixed**: ESXi hosts, which cannot be mapped and appear grayed out in the vWC GUI, might prevent the other hosts from being mapped as well.

Version 3.2.0 (February 2017)

Version 3.2.0 added support for IBM Storage Automation Plug-in for PowerShell. In addition, it introduced an experimental feature – IBM Storage Plug-in for Flocker (experimental feature, not intended for use in production environment). The additional changes were as follows.

Ticket ID	Description
SCB-2489	**Fixed**: When using the abstracted storage services, the vWC indication for optimized size of provisioned volume is inaccurate.
SCB-2804	**Fixed**: For DS8000 devices, the Background Copy field of a volume FlashCopy table is permanently set to Disabled.

Ticket ID	Description
SCB-3451	**Fixed**: The Stretched option for the service Availability capability is not supported on VASA 1.0 and VASA 2.0 without VVols.
SCB-3738	**Fixed**: A second change in a VM storage policy during the IBM SAN Volume Controller storage system synchronization might fail and result in assigning an incorrect policy to a VVol.
SCB-4153	**Fixed**: Delegating a VVol-enabled service on XIV storage systems to a vCenter interface causes the VMware vSphere Web Client to fail.

Version 3.1.1 (February 2017)

Version 3.1.1 replaced version 3.1.0. It introduced support for storage capacity, as implemented by version 12.0.3 of the IBM FlashSystem A9000 and A9000R storage systems, and added full compatibility with the current VMware vWC requirements.

Version 3.1.0 (December 2016)

Version 3.1.0 introduced support for new releases of the VMware platforms (vCenter, vWC, vRO, vROps). The additional changes were as follows.

Ticket ID	Description
SCB-879	**Enhancement**: Added the availability capability for a storage service, enabling the use of stretched clusters on IBM SAN Volume Controller systems.
SCB-934	**Enhancement**: Added the Quality of Service (QoS) capability for the Spectrum Accelerate Family storage services, enabling the use of volumes or storage resources according to predefined service levels.
SCB-2940	**Enhancement**: Improved handling of VMware virtual volumes (VVols), allowing for multiple VVol-enabled services to reside on a single storage space. Also, a new resource attachment method is used to attach several storage resources from different storage systems to one service.
SCB-2650	**Change**: Upgraded Django Python Web framework to version 1.8.
SCB-3038	**Change**: Introduced new methods of server authentication and token storage, using the current VMware SDK tools.
SCB-898	**Fixed**: IBM Spectrum Virtualize Family products do not support updating storage profile for virtual volumes.
SCB-2634	**Fixed**: When the TCP port 5672 is opened for the rabbitmq process, it accepts all traffic, compromising connection security.

Ticket ID	Description
SCB-2750	**Fixed**: When creating a new volume on a DS8000 storage system immediately deleting another one, the new volume state might appear as "Pending deletion".
SCB-2878	**Fixed**: If an IBM SAN Volume Controller is removed from the target list on an ESXi host, the storage system retains its connectivity and allows operations on itself.
SCB-3046	**Fixed**: A cloned virtual volume is displayed as a snapshot VVol.
SCB-3146	**Fixed**: When hot cloning a VM with a snapshot from a VVol-based datastore on a host to another datastore on a different host, may cause the operating system on the destination datastore to fail.
SCB-3184	**Fixed**: Spectrum Control Base UI allows attaching multiple storage resources from the same storage system to a VVol-based service, although only a single pool attachment is currently supported.
SCB-3187	**Fixed**: On IBM SAN Volume Controller (SVC) with microcode prior to version 7.8, if a snapshot is made for a VM cloned from a VVol-based VM or a template, restoring from this snapshot and then performing hot migration of the VM during I/Os, may result in data loss.
SCB-3209	**Fixed**: Changing VVol-related configuration on Spectrum Control Base after the storage system, holding the VVol metadata information, was detached from Spectrum Control Base, and then connected again, can cause malfunction in IBM Storage Provider for VMware VASA.
SCB-3232	**Fixed**: Cloning a VVol-based VM may result in the VM operating system failure, when the following conditions exist: • The VM has a snapshot. • The source and target datastores are VVol-based datastores and each of them is accessible from a different host. • The ESXi version is 6.0, 6.0U1 or 6.0U2.
SCB-3509	**Fixed**: Adding a storage system with a back-resolving IP address to Spectrum Control Base fails, if the resulting DNS name has no address association.

Version 3.0.3 (October 2016)

Version 3.0.3 replaced version 3.0.2 and resolved the following issue.

Ticket ID	Description
SCB-3390	**Fixed**: A conflict between volume attributes, provided by the IBM FlashSystem A9000 and A9000R storage systems and expected by Spectrum Control Base, has been detected. As a result, the IBM FlashSystem A9000 and A9000R population fails and information, regarding these systems, is not retrieved or put to use.

Version 3.0.2 (September 2016)

Version 3.0.2 replaced version 3.0.1. It addition, it introduced the following changes.

Ticket ID	Description
SCB-2937	**Fixed**: On IBM SAN Volume Controller, if a snapshot is made for a VM cloned from a VVol-based datastore, restoring from this snapshot after VVol-based to VMFS-based datastore migration, may result in data loss. Likewise, further VVol-based datastore to VVol-based datastore migration might fail.
SCB-3111	**Fixed**: Cold-cloning a VM to a VMFS-based datastore if the VM was previously cloned from a VVol-based VM on the same storage system, which was subsequently snapshotted and restored from the snapshot might result in data loss.
SCB-3128	**Fixed**: Hot cloning of a VVol-based compressed VM to a VVol-based to VMFS-based VM on a another storage system might result in data loss.
SCB-3169	**Fixed**: Hot migration of a hot-cloned VVol-based VM might fail.

Version 3.0.1 (July 2016)

Version 3.0.1 replaced version 3.0.0. In addition, it introduced the following changes.

Ticket ID	Description
SCB-2421	**Enhancement**: Memory utilization by IBM Storage Enhancements for VMware vSphere Web Client on the vCenter server has been vastly improved, resulting in better performance and resiliency.
SCB-2842	**Enhancement**: Performance of IBM Storage Enhancements for VMware vSphere Web Client has been optimized to improve the process of the vCenter object population. Now the application uses the VIM API to fetch only differences in configuration instead of populating the whole inventory.

Ticket ID	Description
SCB-488	**Fixed**: A volume cannot be moved to or from a child storage pool on IBM Spectrum Virtualize (7.4), using vSphere Web Client.
SCB-527	**Fixed**: VASA 2.0 fails to connect to a storage array if only management port 1 is down and the rest of the management ports are available.
SCB-771	**Fixed**: The volumes listed in the **Related Objects** tab of vWC cannot be sorted by name.
SCB-839	**Fixed**: DS8000® volume creation might fail when mapping multiple volume groups to one ESXi host.
SCB-840	**Fixed**: Error message '`Could not connect to vSphere Web Client server`' appears if the Spectrum Control Base software is upgraded without first logging out from vSphere Web Client.
SCB-1333	**Fixed**: When Spectrum Control Base is uninstalled and installed again, the storage services on its new instance that have the same name as the ones on the previous copy, are not recovered properly after failover to the standby instance. This occurs when the services are created before registering the Spectrum Control Base as VASA provider and results in the datastores becoming inaccessible.
SCB-2546	**Fixed**: When multiple vCenters use the same vWC server (same SSO domain), virtual volume instances may not properly appear in the vWC plug-in.
SCB-2554	**Fixed**: Advanced filtering tool for storage systems malfunctions in Mozilla Firefox browser.
SCB-2556	**Fixed**: When deploying the IBM Storage adapter on the vROps server, the PAK file version is displayed as version 1.0 instead of 3.0.0.

Version 3.0.0 (April 2016)

Version 3.0.0 introduced support for IBM FlashSystem A9000 and IBM FlashSystem A9000R storage systems with microcode 12.0. In addition, this version introduced support for RHEL 7.0–7.2.

Version 3.0.0 included the following additional changes.

Ticket ID	Description
SCB-1006	**Enhancement**: The Spectrum Control Base web management interface introduces a new filtering mechanism for storage arrays and resources. The filtering is based on arbitrary text strings or storage system attributes.

Ticket ID	Description
SCB-1065	**Enhancement**: The Spectrum Control Base web management interface is enhanced and improved to support the abstracted storage provisioning method. **Important:** To ensure proper transition from the physical to abstracted storage provisioning, additional configuration is required, as detailed in the *Upgrading an existing installation* section of the Spectrum Control Base user guide.
SCB-1773	**Enhancement**: Deduplication option is added to the storage service capabilities for the FlashSystem A9000 and A9000R storage systems.
SCB-1919	**Enhancement**: A guided configuration tour is invoked automatically after successful login to familiarize the user with the main elements of the Spectrum Control Base UI and principles of its operation.
SCB-1984	**Enhancement**: To improve operation security, Spectrum Control Base requires manual opening of various TCP ports prior to package installation.
SCB-2049	**Enhancement**: The **`scb_port_change.sh`** script is added for changing the TCP port used by Spectrum Control Base.
SCB-109	**Change**: IBM Storage Plug-in for VMware vRealize Orchestrator is deployed, using a configuration workflow.
SCB-929	**Change**: The IBM Storage Plug-in for VMware vRealize Orchestrator uses abstracted storage entities (spaces and services) instead of physical objects (pools and storage systems).
SCB-1045	**Change**: As a result of introduction of abstracted storage provisioning, instead of providing physical capabilities for the LUNs visible in ESXi , a storage service name is exposed via VASA. This is the service that the volume resides on.
SCB-1051	**Change**: During a VM storage policy creation, a VVol-enabled storage service is exposed in the vWC plug-in as a capability value of the IBM Storage Service entry. The storage space is presented as a VVol container. This information is displayed in the *storage_container:storage_service* format.
SCB-1406	**Change**: Spectrum Control Base generates messages to inform the user when volume capabilities are compatible or not with storage service requirements. The volume compatibility alarms are propagated to vCenter server via VASA API as well.
SCB-1912	**Change**: The storage resource name, over-provisioning and snapshot reserve parameters are introduced in the **Add New Resource** dialog box.

Ticket ID	Description
SCB-2062	**Change**: VVol-enabled services become available in the vWC plug-in. This presents relations of a VVol to its VM and storage service.
SCB-2463	**Change**: As a result of introduction of abstracted storage provisioning, the LUN parameter in the vWC plug-in **Create New Volume** dialog box is changed to **Suggested LUN**.
SCB-190	**Fixed**: Changes of the DS8000 storage system connectivity or its user access level are not propagated to the vWC plug-in.
SCB-794	**Fixed**: The *ibm_spectrum_control* and the *rsyslog* services do not load properly after the Spectrum Control Base reboot.
SCB-1264	**Fixed**: The Spectrum Control Base GUI does not limit the storage service name length. As a result, a storage resource creation may fail, if a length of its automatically assigned name exceeds 64 characters. The storage resource name consist of the following elements: service name_*pool*_identification suffix.
SCB-1580	**Fixed**: After upgrade from Spectrum Control Base version 2.0.1 to version 3.0.0, any character in a space or service name, which is not alphanumeric, dot, dash or underscore, is displayed as underscore.
SCB-1607	**Fixed**: When creating and mapping of a volume to a host is in progress, an attempt to create another volume and map it to the same host may fail. This occurs because the second volume will use the same LUN ID as the first one.
SCB-1675	**Fixed**: Spectrum Control Base cannot operate if the *Nginx*, *rabbitmq*, *postgresql* processes are not active.
SCB-2262	**Fixed**: XIV storage systems with microcode 11.6.1 or earlier do not support the following VM migration scenarios: • Migration of a VM with more than one snapshot between two VVol-based datastores, residing on the same storage system. To avoid this issue, delete all VM snapshots before its migration. • Taking a snapshot of a VM which was migrated between two VVol-based datastores, residing on the same storage system, if the VM had a snapshot before the migration.
SCB-2411	**Fixed**: VASA storage provider version number for Spectrum Control Base upgraded from 2.2.1 to 3.0.0, appears as 2.2.1.

Version 2.2.1 (November 2015)

Version 2.2.1 replaced version 2.2.0. It introduces support for the VMware virtual volume and Storage Policy Based Management (SPBM) technologies by the storage systems that run the IBM Spectrum Virtualize software with microcode version 7.6.0.

Version 2.2.1 had the following additional changes.

Ticket ID	Description
SCB-1501	**Enhancement**: Support for new data encryption used by the storage systems that run Spectrum Virtualize with microcode version 7.6.0.
SCB-1507	**Enhancement**: If a storage resource attached to a VVol-enabled service has reached its capacity, Spectrum Control Base can use other storage resources for virtual volume snapshots.
SCB-1362	**Fixed**: In VASA 1.0, storage resources on flash-based storage systems that run Spectrum Virtualize cannot be filtered according to their type.
SCB-1381, **SCB-1506**	**Fixed**: Storage systems that run Spectrum Virtualize generate orphaned virtual volumes during continuous volume operations, such as volume creation, deletion, migration and so on.
SCB-1345	**Fixed**: When a cloning operation is completed on storage systems that run Spectrum Virtualize via vWC before the background copy action is finished, a target VM migration to the clone results in data loss.
SCB-1485	**Fixed**: A FlashCopy mapping operation fails, if the licensed FlashCopy cluster capacity is exceeded.

Version 2.2.0 (September 2015)

Version 2.2.0 introduced the VMware virtual volume technology support for the storage systems that run IBM Spectrum Virtualize. For DS8870 systems, it added support for VMware VASA 2.0 without virtual volumes. It also introduced support for IBM Spectrum Accelerate™ version 11.5.1.x.

Note: The virtual volume functionality is supported by the IBM XIV (11.5.1 or later) and storage systems that run Spectrum Virtualize (7.6 or later).

Version 2.2.0 had the following additional changes.

Ticket ID	Description
SCB-818	**Enhancement**: Spectrum Control Base GUI can be used to delete a storage resource from a storage system.
SCB-975	**Enhancement**: The Spectrum Control Base for DS8000 upgrade and installation process has been improved by introduction of a RESTful API client.

Ticket ID	Description
SCB-38	**Fixed**: Spectrum Control Base fails to fetch updates from the storage array, if the server time is set back after the Spectrum Control Base installation.
SCB-662	**Fixed**: VMware vWC fails to take into consideration encryption capabilities, when creating volumes based on services with attached DS8000 storage pools.
SCB-807	**Fixed**: vWC fails during volume unmapping process, when deleting a volume that belongs to a consistency group.

Version 2.1.1 (June 2015)

Version 2.1.1 replaced version 2.1.0 and resolved the following issues.

Ticket ID	Description
SCB-93	**Fixed**: During installation, Spectrum Control Base fails to acknowledge license agreement acceptance by the user.
SCB-800	**Fixed**: The Migrate, Clone and Deploy actions on a template VM from a VVol-based datastore are not available, when: • Migrating from a VVol-based to a VMFS datastore. • Migrating between VVol-based datastores on different XIV systems.

Version 2.1.0 (June 2015)

Version 2.1.0 added support for newer versions of IBM storage systems.

Details of newly supported storage systems appear in Supported XIV storage systems. In addition, version 2.1.0 introduced the enhancements and resolved the issues, as listed below.

Ticket ID	Description
SCB-181	**Enhancement**: Support for RHEL 6.6.
SCB-467	**Enhancement**: Support for IBM Real-time Compression™, as introduced in the XIV microcode version 11.6. This includes creation of storage services with data compression in Spectrum Control, presenting only compatible storage pools for volume creation in vWC and filtering datastores according to storage profiles in VASA 1.0.
SCB-587	**Enhancement**: Introduction of the stricter password reuse policy by preventing the user to submit a new password that is the same as any of the prior passwords for that account.

Ticket ID	Description
SCB-605	**Enhancement**: Improvements in configuration procedure for storage services. This includes cancellation of the 'Any' option for space efficiency and encryption, allowing more flexible storage resource attachment.
SCB-31	**Fixed**: Spectrum Control does not generate an error message, when a storage service with a certain capability is attached to a storage array, which does not support the required capability.
SCB-35	**Fixed**: VASA 1 trusted certificates cannot be revoked, using the Spectrum Control interface.
SCB-392	**Fixed**: VMware vSphere Web Client fails to initialize in the vSphere 6 environment, displaying the following error message: `Error: Unable to load resource module from /ibmNgcVSpeherePlugin-ui/locales/ibmNgcVSpeherePlugin-ui-en_US.swf`. This may occur if a vCenter server, connected to Spectrum Control, was offline during the Spectrum Control upgrade. To ensure proper vWC initialization, remove the server from Spectrum Control, and reconnect it after the upgrade is finished.
SCB-569	**Fixed**: XIV and Spectrum Accelerate storage systems can be differentiated in VMware VASA 1.0 only using the UUID field under **Manage** > **Storage Providers** > **Storage System Details**. The XIV storage system UUID includes the `900` code, and Spectrum Accelerate includes either `104` or `204`code.
SCB-593	**Fixed**: Both local and directory-server users are able to connect to Spectrum Control.

Version 2.0.1 (April 2015)

Version 2.0.1 replaced version 2.0.0 and introduced support for IBM DS8870. In addition, version 2.0.1 resolved the following issues.

Ticket ID	Description
HSGSVR-262521	**Fixed**: Backup and restore operations are not available.
HSGSVR-262815	**Fixed**: A storage resource can be created on a managed domain and non-VVol-enabled service.
VWC-261791	**Fixed**: IBM Storage Enhancements for VMware vSphere Web Client are missing from the **Actions** menu of vWC, running under vSphere 6.

Version 2.0.0 (March 2015)

Version 2.0.0 of IBM Spectrum Control Base Edition was the first released version, supporting a range of IBM storage systems and including the following features and primary components:

- Newly designed, powerful and intuitive web management interface with improved usability and superb user experience.
- **IBM Storage Provider for VMware VASA**, improving ability to monitor and automate storage-related operations on VMware platforms. This includes support for VMware virtual volumes, with XIV v11.5.1, and for Storage Policy Based Management.
- **IBM Storage Enhancements for VMware vSphere Web Client**, allowing VMware administrators to self-provision volumes (LUNs) in selected storage pools that were predefined by the storage administrators. The volumes are mapped to ESXi hosts, clusters, or datacenters as logical drives that can be used for storing VMware datastores (virtual machine data containers).
- **IBM Storage Plug-in for VMware vCenter Orchestrator**, allowing VMware administrators to include IBM storage discovery and provisioning in their vCenter Orchestrator (vCO) automation workflows.
- **IBM Storage Management Pack for VMware vCenter Operations Manager**, allowing Operations Manager users to obtain comprehensive monitoring information about the IBM storage resources that are utilized in their virtualized environment.

The additional change were as follows.

Ticket ID	Description
HSGSVR-262175	**Fixed**:When an XIV array configuration includes a cluster with no hosts (empty cluster), a volume created from vSphere Web Client or vCenter Orchestrator is mapped to that cluster in addition to any specified host mapping. As a result, volumes that were mapped to an empty cluster must be manually unmapped.

Limitations

As opposed to known issues, limitations are functionality restrictions that are part of the predefined system design and capabilities in a particular version.

Data copying limitation

To prevent unauthorized copying, data transfer between virtual machines is subject to the following limitation:

- When a virtual machine with Spectrum Control Base installation is cloned from another VM or from a template, Spectrum Control Base fails to start, indicating the database corruption. You can use Spectrum Control Base backup and restore functionality to copy the application data to new VMs.

Known issues

This section details the known issues in version 3.3.0 of IBM Spectrum Control Base Edition and its solution components, along with possible solutions or workarounds (if available).

The following severity levels apply to known issues:

- **HIPER** – High Impact Pervasive. A critical issue that IBM has either fixed or plans to fix promptly. Requires immediate customer attention or code upgrade.
- **High Impact** – Potentially irrecoverable error that might impact data or access to data in rare cases or specific situations/configurations.
- **Moderate** – Limited functionality issue and/or performance issue with a noticeable effect.
- **Service** – Non-disruptive recoverable error that can be resolved through a workaround.
- **Low** – Low-impact usability-related issue.

Important:

- **The issues listed below apply to version 3.3.0 or earlier versions**. As long as a newer version has not yet been released, a newer release notes edition for version 3.3.0 might be issued to provide a more updated list of known issues and workarounds.
- When a newer version is released for general availability, the release notes of version 3.3.0 will no longer be updated. Accordingly, check the release notes of the newer version to learn whether any newly discovered issues affect version 3.3.0 or whether the newer version resolves any of the issues listed below.

Table 3. Known issues in IBM Spectrum Control Base Edition

Ticket ID	Component	Severity	Description
SCB-86	IBM Spectrum Control Base Edition	Moderate	When the XIV storage credentials are of an XIV domain administrator (supported by XIV microcode version 11.5 or later), volume mapping might return the `'LUN already in use'` error message. This occurs if the LUN number is already associated with a volume outside of the XIV domain. Currently there is no solution or workaround for this limitation.
SCB-94	IBM Spectrum Control Base Edition	Moderate	Volumes that were migrated from an XIV storage array (A) to another XIV storage array (B) using Hyper-Scale Mobility (online volume migration) might not be manageable. This specifically occurs if the volumes on the original XIV storage array (A) are deleted from the storage array (A), and then the same volume IDs are reused on that storage array (A). If both XIV systems (A and B) are connected to the same Spectrum Control Base and this situation occurs, it prevents the management of these volumes through Spectrum Control Base. Currently there is no solution or workaround for this limitation.

Table 3. Known issues in IBM Spectrum Control Base Edition (continued)

Ticket ID	Component	Severity	Description
SCB-368	IBM Spectrum Control Base Edition	Moderate	Spectrum Control Base fails to lock out a storage admin user account with LDAP credentials after an unsuccessful login attempt. Currently there is no solution or workaround for this limitation.
SCB-753	IBM Spectrum Control Base Edition	Moderate	Upgrading Spectrum Accelerate via RESful API by a user with insufficient access level may fail. This incomplete procedure prevents further upgrade attempts, using RESTful API. To avoid this issue, verify that the user performing the Spectrum Accelerate upgrade has sufficient access level for completing the task.
SCB-2222	IBM Spectrum Control Base Edition	Moderate	Failure to resolve a DNS hostname may result in the *rabbitmq* process malfunction. To avoid this issue, verify that the Spectrum Control Base DNS hostname can be resolved.
SCB-3300	IBM Spectrum Control Base Edition	Moderate	Due to the Django framework limitation, the Spectrum Control Base installation may take up to ten minutes. Currently there is no solution or workaround for this limitation.
SCB-5121	IBM Spectrum Control Base Edition	Moderate	LDAP configuration is excluded from the backup and restore process. To resolve this issue, reconfigure the LDAP access after the Spectrum Control Base is restored.

Table 3. Known issues in IBM Spectrum Control Base Edition (continued)

Ticket ID	Component	Severity	Description
SCB-48	IBM Spectrum Control Base Edition	Service	Whenever a directory-based storage admin fails to log in (from the Spectrum Control Base side) to any storage array that is in use, Spectrum Control Base immediately locks the storage admin user account and all storage arrays become inaccessible on the Spectrum Control Base side. This is to prevent repeated login attempt failures after which the directory server blocks that user account. In such a case, update the storage admin credentials on the storage array with which the login has failed. Alternatively, you can remove that specific storage array from Spectrum Control Base and then reset the credentials. You can find the relevant storage array by checking the `events.log` log file. For example: `Mar 26 13:50:01 ronend-sc1 ERROR ID:SC-0008 | Severity:ERROR | Parameters:reason=Logging in to array 2810-214-MN65025 has failed with the provided credentials. ,user_name=ronenu | Message:Storage credentials for user ronenu were disabled. Reason: Logging in to array 2810-214-MN65025 has failed with the provided credentials.`
SCB-85	IBM Spectrum Control Base Edition	Service	Disconnected storage array disappear from the Spectrum Control Base web interface after the upgrade. To avoid this issue, before performing upgrade, verify that all storage arrays are connected to Spectrum Control Base properly.
SCB-90	IBM Spectrum Control Base Edition	Service	Spectrum Control Base cannot use IPv6 addresses for management connection to the XIV storage systems. To resolve this issue, use IPv4 addressing, when configuring storage arrays.
SCB-165	IBM Spectrum Control Base Edition	Service	Editing the `ldap.ini` file manually may cause the Spectrum Control Base LDAP integration failure. To avoid this issue, use the **`sc_ldap`** CLI command for LDAP configuration.
SCB-188	IBM Spectrum Control Base Edition	Service	A long-running RESTful API task, such as phase-in, phase-out, etc, may not update its current state, if Spectrum Control Base service has been restarted during its operation. Currently there is no solution or workaround for this limitation.

Table 3. Known issues in IBM Spectrum Control Base Edition (continued)

Ticket ID	Component	Severity	Description
SCB-598	IBM Spectrum Control Base Edition	Service	In some cases, the Celery service might hang when it is stopped. To resolve this issue, terminate the Celery background process by using the Linux **kill -9** command.
SCB-1023	IBM Spectrum Control Base Edition	Service	Starting from version 2.2.0, a vCO server must be added manually to the Spectrum Control Base. However, if the Spectrum Control Base is upgraded from any previous release to version 2.2.0 or later, a vCO server is added automatically to the GUI. To resolve this issue, remove the vCO server manually after the upgrade is completed.
SCB-1355	IBM Spectrum Control Base Edition	Service	LDAP configuration is reset after Spectrum Control Base is upgraded from version 2.1.1 to version 2.2.0. Currently there is no solution or workaround for this limitation.
SCB-1359	IBM Spectrum Control Base Edition	Service	If a software on IBM SAN Volume Controller (SVC), which has been added to Spectrum Control Base, is re-installed, the storage system still appears connected, but does not function properly. To avoid this issue, remove SVC from Spectrum Control Base after the SVC software is re-installed and connect the storage system to Spectrum Control Base again.
SCB-1361	IBM Spectrum Control Base Edition	Service	The user catalog on the storage systems that run Spectrum Virtualize is not updated immediately after storage system credentials are changed via the Spectrum Control Base GUI. Currently there is no solution or workaround for this limitation.
SCB-2495	IBM Spectrum Control Base Edition	Service	Over-provisioning ratio of an XIV storage resource, attached to a service without capabilities, cannot be changed. To resolve this issue, change the over-provisioning ratio, using the XIV GUI, refresh the storage system in the Spectrum Control Base GUI and re-attach the resource to the service.
SCB-2517	IBM Spectrum Control Base Edition	Service	The *postgresql* service does not start if the `/tmp` folder does not have *o+x* access permission. To resolve this issue, configure the required permission for the/`tmp` folder, using the **chmod o+x /tmp** command.

Table 3. Known issues in IBM Spectrum Control Base Edition (continued)

Ticket ID	Component	Severity	Description
SCB-2888	IBM Spectrum Control Base Edition	Service	Installation fails when the root user has a default **umask**, preventing other users from changing root-created directories. To avoid this issue, use the **mkdir /opt/ibm** and **chmod 755 /opt/ibm** commands to create the /opt/ibm folder and set correct permissions.
SCB-5126	IBM Spectrum Control Base Edition	Service	After upgrading Spectrum Control Base to version 3.3.0, any LDAP user with the username consisting of capital letters becomes a local user. To resolve this issue, change the local user to an LDAP user after upgrading Spectrum Control Base to version 3.3.0.
SCB-5127	IBM Spectrum Control Base Edition	Service	Spectrum Control Base with LDAP enabled cannot be registered as a storage provider on VMware vCenter server. To avoid this issue, disable LDAP for the Spectrum Control Base instance before registering it as a storage provider.
SCB-377	IBM Spectrum Control Base Edition	Low	If the IP address of a storage array changes, the **sc_storage_array** CLI command is unable to update the IP address of the storage array. In such a case, use the Spectrum Control Base GUI to edit and update the IP address of the storage array (In the Arrays pane, move the mouse pointer over an array that you want to update, and then click the **Edit** button).
SCB-803	IBM Spectrum Control Base Edition	Low	Restoring Spectrum Control Base version 2.1.0 from a backup file created in a previous version may result assigning service capabilities that did not exist in the 2.1.0 configuration. To resolve this issue, restore the required service capabilities manually.
SCB-3660	IBM Spectrum Control Base Edition	Low	On RHEL 7.x, due to the Django framework update, Spectrum Control Base upgrade from version 3.0.3 to version 3.1.0 generates several warning messages about missing files. Despite the messages, the upgrade completes correctly. Currently there is no solution or workaround for this limitation.

Table 3. Known issues in IBM Spectrum Control Base Edition (continued)

Ticket ID	Component	Severity	Description
SCB-3845	IBM Spectrum Control Base Edition	Low	Used capacity indication for storage services does not take into account the space reserved for snapshots on XIV and Spectrum Accelerate storage systems. As a result, the real free hard capacity is less than displayed in Spectrum Control Base. Currently there is no solution or workaround for this limitation.
SCB-4124	IBM Spectrum Control Base Edition	Low	Storage resource (pool) capacity for the IBM FlashSystem A9000 and A9000R storage systems is limited to 1 PB. Any attempt to create a storage resource, exceeding 1 PB in size results in error message. Currently there is no solution or workaround for this limitation.
SCB-4251	IBM Spectrum Control Base Edition	Low	For Storwize V7000 Unified storage arrays, the microcode version number, build number, and system ID number are not consistent when appearing in Spectrum Control Base, vSphere Web Client, and storage system management GUIs. Different version numbers and system IDs are displayed on each platform. Currently there is no solution or workaround for this limitation.
SCB-4252	IBM Spectrum Control Base Edition	Low	The registration of Spectrum Control Base as a VASA storage provider on the vCenter server side might fail if an expired self-signed SSL certificate is present on Spectrum Control Base. To resolve this issue, replace the self-signed certificate as explained in the user guide.
SCB-4253	IBM Spectrum Control Base Edition	Low	After an upgrade or reinstallation of Spectrum Control Base, some DS8000 or SAN Volume Controller storage system identifiers might change, causing Spectrum Control Base to stop synchronizing with these storage systems. To resolve this issue, use the Spectrum Control Base GUI or CLI to remove and then add back these storage systems.
SCB-4254	IBM Spectrum Control Base Edition	Low	RESTful API may not display the correct number of storage array IP interfaces. Currently there is no solution or workaround for this limitation.

Table 4. Known issues in IBM Storage Provider for VMware VASA

Ticket ID	Component	Severity	Description
SCB-1138	IBM Storage Provider for VMware VASA	Moderate	A VM cannot be created on a datastore, if a size of thick-provisioned virtual disk size is bigger than any of the Spectrum Virtualize child pools comprising the vDisk. To avoid this issue, make sure that at least one of the child pools has sufficient disk space to host the datastore vDisk.
SCB-1366	IBM Storage Provider for VMware VASA	Moderate	Rescanning storage providers on VMware vCenter server results in rescan error, if two Spectrum Control Base instances are registered as storage providers for VASA 1.0 and VASA 2.0. To avoid this issue, register all Spectrum Control Base instances as storage providers for VASA 1.0 or VASA 2.0.
SCB-2518	IBM Storage Provider for VMware VASA	Moderate	After a VM migration from a VVol-based datastore, the datastore may become inaccessible via vWC. To resolve this issue, cancel registration of Spectrum Control Base as a VASA storage provider, and run the registration again.
SCB-2531	IBM Storage Provider for VMware VASA	Moderate	When migrating a VM into a VVol-based datastore, which does not support space efficiency (thin or thick), the migration fails without a specific error message, explaining the reason for the failure. To avoid this issue, create a VVol-enabled storage service that supports thick and thin provisioning. Then attach storage resources which will be able to support the correct destination VVol-based destination datastore.
SCB-2653	IBM Storage Provider for VMware VASA	Moderate	Storage system information does not appear on the vCenter server after registering Spectrum Control Base as a storage provider for the first time. To resolve this issue, wait for several minutes after the initial registration attempt, and run the registration again.
SCB-3366	IBM Storage Provider for VMware VASA	Moderate	On IBM SAN Volume Controller, restoring a VM from a snapshot created from a VVol-based VM on a stretched cluster is not supported. Currently there is no solution or workaround for this limitation.

Table 4. Known issues in IBM Storage Provider for VMware VASA (continued)

Ticket ID	Component	Severity	Description
SCB-3712	IBM Storage Provider for VMware VASA	Moderate	Stretched capability of storage profile cannot be changed for virtual volumes on IBM SAN Volume Controller storage systems. Currently there is no solution or workaround for this limitation.
SCB-3723	IBM Storage Provider for VMware VASA	Moderate	When a VM policy is changed to 'datastore default', the data VVol moves to a thick-provisioned disk for a VM with the following attributes: • VM is created on a thin-provisioned disk. • The disk is based on a VVol-based datastore. • The VVol-based datastore is based on a storage space with a service without space efficiency. Currently there is no solution or workaround for this limitation.
SCB-3727	IBM Storage Provider for VMware VASA	Moderate	If a thin-provisioned disk is added to VM and created on a new storage policy, which had no VM before, any thick-provisioned disk added to this VM afterward appears as 'non-compliant' in the vSphere Web Client. Likewise, if a thick-provisioned disk is added to VM and created on a new storage policy, which had no VM before, any thin-provisioned disk added to this VM afterward appears as 'non-compliant' in the vSphere Web Client. To avoid this situation, when you create a new storage policy, add a new VM based on this profile first, then add a disk to an existing VM.
SCB-3751	IBM Storage Provider for VMware VASA	Moderate	A FastClone procedure might fail on IBM SAN Volume Controller storage systems, if the source and target VMs use different storage policies. Currently there is no solution or workaround for this limitation.
SCB-4146	IBM Storage Provider for VMware VASA	Moderate	Combination of a storage resource on a Spectrum Accelerate Family system and a service with Availability capability set to Regular is not supported. This combination may cause an unstable behavior of Spectrum Control Base. Currently there is no solution or workaround for this limitation.

Table 4. Known issues in IBM Storage Provider for VMware VASA (continued)

Ticket ID	Component	Severity	Description
SCB-215	IBM Storage Provider for VMware VASA	Service	If spaces are included in the IP interface name (iSCSI) of an XIV storage system, that XIV cannot be monitored by the IBM Storage Provider for VMware VASA, and information of that XIV array is not visible to the relevant vCenter server. To avoid this issue, do not include spaces in the IP interface name of the XIV storage system.
SCB-255	IBM Storage Provider for VMware VASA	Service	Cloning of a virtual machine from a VVol to another VVol on the same IBM SAN Volume Controller (SVC) fails, when the user chooses to customize the VM hardware during the cloning procedure. Moreover, resizing of the source and target VMs fails, if the SVC background copy is in progress. To avoid this issue, customize the virtual machine hardware only after the VM cloning and SVC background copy process are completed.
SCB-523	IBM Storage Provider for VMware VASA	Service	If a storage system is removed and added to Spectrum Control Base after its storage resource was added to a VVol-enabled service, its previous configuration is not preserved after the addition. This occurs if Spectrum Control Base is not registered as a VASA provider. To avoid this issue, verify that Spectrum Control Base is registered as a VASA provider before adding the storage system after its removal. In addition, after the storage system is added, it is recommended to check the vCenter log whether Spectrum Control Base was identified as an active VASA provider.
SCB-1085	IBM Storage Provider for VMware VASA	Service	When attempting to resize a virtual disk on a storage system, running Spectrum Virtualize, while the disk formatting is in progress, vCenter displays the following error message: '`The disk extend operation failed:The VVol target encountered a vendor specific error.`'. To avoid this issue, resize the virtual disk only after the disk formatting process is finished.
SCB-2369	IBM Storage Provider for VMware VASA	Service	A name of a VM, which is created on a VVol datastore, can have only ASCII-based characters. Currently there is no solution or workaround for this limitation.

Table 4. Known issues in IBM Storage Provider for VMware VASA (continued)

Ticket ID	Component	Severity	Description
SCB-3063	IBM Storage Provider for VMware VASA	Service	When using RESTful API to map a volume to several hosts, which do not have a common storage resource (pool), this operation may fail To avoid this issue, verify that all hosts to be mapped, share at least one storage resource on the same storage system.
SCB-3351	IBM Storage Provider for VMware VASA	Service	Resizing a VM based on an IBM SAN Volume Controller stretched cluster can fail, if the two copies of the virtual volume are not synchronized. To avoid this issue, wait for the synchronization to complete on storage system side. You can use the SVC **`lsvdisksyncprogress`** command to monitor synchronization progress.
SCB-3463	IBM Storage Provider for VMware VASA	Service	The Edit Settings operation for a VVol-based VM fails, if a storage resource used by the VM datastore has less free space than the VVol data disk of VM. To avoid this issue, make sure that the storage resource for the VM datastore has sufficient free space to accommodate the VVol data disk.
SCB-3631	IBM Storage Provider for VMware VASA	Service	Memory-type VVols may fail to show in the VM **Related Objects** tab under **IBM Storage VVols**. To avoid this issue, restart the related Spectrum Control Base storage services.
SCB-4147	IBM Storage Provider for VMware VASA	Service	A storage resource can be added to a storage system, which supports encryption, for a storage service with enabled encryption, even if the encryption functionality is disabled on the storage system itself. Currently there is no solution or workaround for this limitation.
SCB-3732	IBM Storage Provider for VMware VASA	Low	If a selected VM policy is not supported by the datastore, the `'NoneType' object is not iterable.'` message is stored in the `vasa2.log` file. Currently there is no solution or workaround for this limitation.

Table 5. Known issues in IBM Storage Enhancements for VMware vSphere Web Client

Ticket ID	Component	Severity	Description
SCB-417	IBM Storage Enhancements for VMware vSphere Web Client	Moderate	The **Manage** > **Host Mapping** tab of the **IBM Storage Volume** object shows incorrect mapping information. Hosts that cannot access the datastore are shown as not being mapped to the LUN. Currently there is no solution or workaround for this limitation.
SCB-447	IBM Storage Enhancements for VMware vSphere Web Client	Moderate	When using the storage system management GUI (as opposed to the IBM Storage Enhancements GUI in vSphere Web Client) to map a single volume to more than one ESXi hosts using different LUN IDs, the volume is not properly recognized by vSphere Web Client and cannot be managed by the IBM Storage Enhancements. In addition, multiple errors might occur on the vSphere Web Client during the use or modification of that volume. To avoid this issue, **always use the same LUN ID** when mapping a volume to multiple ESXi hosts via the storage system management GUI.
SCB-3654	IBM Storage Enhancements for VMware vSphere Web Client	Moderate	When a vCenter user without storage management privileges adds a vCenter interface to Spectrum Control Base and then modifies the vCenter with the administrator credentials, logs into vSphere Web client and performs volume operations, some of these operations may fail. To resolve this issue, remove the vCenter interface from Spectrum Control Base, and add the vCenter again, using valid administrator credentials.
SCB-3759	IBM Storage Enhancements for VMware vSphere Web Client	Moderate	After VMware vCenter reboot or upgrade, the changes made for the vCenter before the reboot or upgrade fail to propagate to the IBM extension for vCenter. To resolve this issue, restart the refresh vWC service by logging into the Spectrum Control Base host as root and running the **`/etc/init.d/ibm_spectrum_control restart_vwc_refresh`**.

Table 5. Known issues in IBM Storage Enhancements for VMware vSphere Web Client (continued)

Ticket ID	Component	Severity	Description
SCB-4184	IBM Storage Enhancements for VMware vSphere Web Client	Moderate	Removing a vCenter interface from Spectrum Control Base may cause unstable behavior of the vWC plug-in. To resolve this issue, perform one of the following procedures, depending on the Spectrum Control Base and vCenter deployment scenarios: • If you remove a vCenter interface from Spectrum Control Base, restart the vSphere Web Client, before reconnecting the vCenter interface to the Spectrum Control Base instance. • If you uninstall Spectrum Control Base, wait until the uninstallation process is completed, and then restart each vCenter server that was connected to Spectrum Control Base at the time of uninstall. • If you upgrade Spectrum Control Base, wait until the upgrade process is completed, and then restart all vSphere vWCs attached to the upgraded Spectrum Control Base server.
SCB-4193	IBM Storage Enhancements for VMware vSphere Web Client	Moderate	If a vCenter interface is disconnected from a Spectrum Control Base server, and then reconnected to its another instance, the old connectivity remains visible in vSphere Web Client. To resolve this issue, restart the vSphere Web Client.
SCB-154	IBM Storage Enhancements for VMware vSphere Web Client	Service	If a vCenter server is disconnected from Spectrum Control Base during the upgrade, the vWC extension appears with the previous version, when the vCenter server is re-activated. To resolve this issue, remove and reattach the vCenter server on Spectrum Control Base.

Table 5. Known issues in IBM Storage Enhancements for VMware vSphere Web Client (continued)

Ticket ID	Component	Severity	Description
SCB-381	IBM Storage Enhancements for VMware vSphere Web Client	Service	A vCenter server that receives a new IP address retains information about storage resources of a Spectrum Control Base connected to it prior to the address change. If the vCenter server is added to another Spectrum Control Base instance, the previously connected arrays and pools remain visible in the vWC. To resolve this issue, log into vCenter Managed Object Browser (MOB) at `https://<vCenter_server_IP>/mob.`, using your vCenter credentials. Navigate to **Content** > **ExtensionManager** > **UnregisterExtension**. Enter `com.ibm.storage.vwc`, when a pop-up window is displayed, and click **Invoke Method** twice. Repeat registration of the vCenter server on the newly connected Spectrum Control Base.
SCB-399	IBM Storage Enhancements for VMware vSphere Web Client	Service	If a volume is deleted, using vSphere Web Client, but the deletion fails on the storage system, the volume is removed from the vSphere Web Client display. In this case, the volume is successfully unmapped from the host, but there is no indication on the vSphere Web Client that the volume still exists. To avoid this issue, delete the volume from the storage system directly.
SCB-671	IBM Storage Enhancements for VMware vSphere Web Client	Service	vWC volume creation and mapping task may fail, if a source pool that exists on an XIV storage system within a domain, has been attached to service created by the default Spectrum Control user. To avoid this issue, associate the default Spectrum Control Base user with the storage array domain.
SCB-701	IBM Storage Enhancements for VMware vSphere Web Client	Service	A volume being moved between two XIV storage systems using IBM Hyper-Scale Mobility, cannot be unmapped in vWC from the ESXi host after the source storage system enters the proxy mode. To resolve this issue, remove volume mapping using the XIV GUI.

Table 5. Known issues in IBM Storage Enhancements for VMware vSphere Web Client (continued)

Ticket ID	Component	Severity	Description
SCB-775	IBM Storage Enhancements for VMware vSphere Web Client	Service	Creating a volume with minimum size (87 GB) on **XIV**, **Spectrum Accelerate** or **FlashSystem A9000/9000R** may fail, if the target pool size is smaller than 103 GB. To avoid this situation, increase the storage pool size to be 103 GB or bigger.
SCB-2479	IBM Storage Enhancements for VMware vSphere Web Client	Service	Creating and mapping a volume on a Spectrum Accelerate Family product via the vWC plug-in may fail if a storage resource is connected to a host outside of a storage system domain. To avoid this situation, verify that all the hosts defined on the vCenter are also defined on the storage systems and are associated with the domain. In addition, make sure that the default storage credentials defined in Spectrum Control Base belong to the domain as well.
SCB-2519	IBM Storage Enhancements for VMware vSphere Web Client	Service	Creating and mapping a volume on a Spectrum Accelerate Family product via the vWC plug-in may fail if ESXi LUNs used by the volumes do not belong to any domain, while the Spectrum Control Base storage credentials are associated with a specific domain. To avoid this situation, verify that volumes outside of a domain are not mapped to the target host.
SCB-3049	IBM Storage Enhancements for VMware vSphere Web Client	Service	A connection session between Spectrum Control Base and vCenter server remains open after Spectrum Control Base has been restarted or the vCenter server has been removed and added again via the Spectrum Control Base GUI. This results in multiple concurrent connection sessions with different IDs between the servers. To resolve this issue, manually remove the redundant session via the vSphere Web Client (**Manage** > **Sessions** > **Terminate Selected Sessions**).
SCB-3456	IBM Storage Enhancements for VMware vSphere Web Client	Service	Resizing a stretched volume on IBM SAN Volume Controller can fail, if the two copies of the volume are not synchronized. To avoid this issue, wait for the synchronization to complete on storage system side. You can use the SVC **`lsvdisksyncprogress`** command to monitor synchronization progress.

Table 5. Known issues in IBM Storage Enhancements for VMware vSphere Web Client (continued)

Ticket ID	Component	Severity	Description
SCB-3637	IBM Storage Enhancements for VMware vSphere Web Client	Service	If a volume is mapped to an ESXi 6.5 host, the size of the volume under the **IBM Storage Volumes** tab does not change after its extension. To resolve this issue, rescan the host manually.
SCB-4176	IBM Storage Enhancements for VMware vSphere Web Client	Service	Cannot rename a volume if its name starts with a number. Currently there is no solution or workaround for this limitation.
SCB-705	IBM Storage Enhancements for VMware vSphere Web Client	Low	A volume, whose deletion fails, disappears from the volume list. The volume reappears in the list after the next population. Currently there is no solution or workaround for this limitation.
SCB-836	IBM Storage Enhancements for VMware vSphere Web Client	Low	If a combination of both iSCSI and FC initiator port types is defined for an ESXi host, mapping volumes to that ESXi host causes both iSCSI and FC to be used for those volumes. To avoid this situation, use the storage system management tools to define only one active protocol type (iSCSI or FC) for the initiators of each ESXi host.
SCB-837	IBM Storage Enhancements for VMware vSphere Web Client	Low	If a volume is mapped to more than one ESXi host while a virtual machine on one of these hosts uses this volume as an RDM LUN, the volume information might not be displayed correctly in vSphere. Currently there is no solution or workaround for this limitation.
SCB-838	IBM Storage Enhancements for VMware vSphere Web Client	Low	If a volume is mapped to two or more ESXi hosts that are managed by more than one vCenter server, volume operations fail. To avoid this issue, do not map a specific volume to ESXi hosts that are not managed by the same vCenter server.
SCB-2488	IBM Storage Enhancements for VMware vSphere Web Client	Low	When provisioning a volume on storage service for XIV storage systems with enabled compression, the provisioning fails, if the volume size is below 51 GB. The generated error message is not sufficiently clear. To avoid this issue, a size of a volume, provisioned on a storage service with enabled compression, must be larger than 51 GB.

Table 5. Known issues in IBM Storage Enhancements for VMware vSphere Web Client (continued)

Ticket ID	Component	Severity	Description
SCB-2718	IBM Storage Enhancements for VMware vSphere Web Client	Low	When delegating a single VVol-type service to several vCenter servers, the service VVols will be exposed to all servers, even though they relate to only one of them. Currently there is no solution or workaround for this limitation.
SCB-2970	IBM Storage Enhancements for VMware vSphere Web Client	Low	Actions are allowed on volumes that are mapped to a disconnected or non-responsive ESXi host. The volume actions will fail due to the host status. Moreover, if the disconnected host is added to another vCenter server, the volume operations will fail on the new server as well. To avoid this situation, verify that the host is connected to the vCenter server. If a disconnected or non-responsive host is connected to a new server, remove it from the original server to allow proper volume performance.
SCB-2974	IBM Storage Enhancements for VMware vSphere Web Client	Low	When a LUN is shared between several ESXi hosts, its number must be the same on all hosts. To avoid this situation, verify that the shared LUN number is available for all hosts.
SCB-2991	IBM Storage Enhancements for VMware vSphere Web Client	Low	If a volume is shared between several datacenters, volume-related objects, such as a datastore or a VM that belong to other datacenters, are missing from the vWC. Currently there is no solution or workaround for this limitation.
SCB-2999	IBM Storage Enhancements for VMware vSphere Web Client	Low	When a disk is removed from a VM created on a VVol-based datastore, but not removed from the datastore, the VM is still listed as a related object on the VVol. Currently there is no solution or workaround for this limitation.
SCB-3014	IBM Storage Enhancements for VMware vSphere Web Client	Low	There is no indication of storage objects that exist on a storage system outside of a domain available for a user certain storage credentials. As a result, such vWC actions as creating and mapping a volume fail if a volume with the same name already exists on a storage system. To avoid this situation, verify that a new volume name is unique on the current storage system. In addition, make sure that ESXi hosts are not mapped to the volumes outside of the user domain.

Table 6. Known issues in IBM Storage Plug-in for VMware vRealize Orchestrator

Ticket ID	Component	Severity	Description
SCB-140	IBM Storage Plug-in for VMware vRealize Orchestrator	Moderate	If the **Map** workflow uses initiators that are not configured on the storage array, the workflow succeeds even though the initiators are silently ignored. Currently there is no solution or workaround for this limitation.
SCB-141	IBM Storage Plug-in for VMware vRealize Orchestrator	Low	Due to a known issue in VMware vRealize Orchestrator, title texts are displayed improperly after clicking the **IBM Storage** tab. Currently there is no solution or workaround for this limitation.

Table 7. Known issues in IBM Storage Management Pack for VMware vRealize Operations Manager

Ticket ID	Component	Severity	Description
SCB-796	IBM Storage Management Pack for VMware vRealize Operations Manager	Moderate	When data collection interval is set to 1 minute, the array IOPS statistics are presented as 0. Currently there is no solution or workaround for this limitation.
SCB-845	IBM Storage Management Pack for VMware vRealize Operations Manager	Moderate	If the vROps server becomes unreachable while Spectrum Control Base is still reporting to it, the reporting ceases when the vROps server becomes reachable again. To resolve this issue, restart the Spectrum Control Base service.
SCB-841	IBM Storage Management Pack for VMware vRealize Operations Manager	Service	The thresholds reported to the vROps server are tailored for XIV microcode version 11.2 or later, but not for earlier XIV microcode versions. To resolve this issue, manually update to the thresholds in vROps to match the XIV microcode that you are using.
SCB-842	IBM Storage Management Pack for VMware vRealize Operations Manager	Service	Duplicate thresholds might appear in vROps if a vROps server was removed from Spectrum Control Base and then re-added. To resolve this issue, delete the duplicate thresholds.
SCB-844	IBM Storage Management Pack for VMware vRealize Operations Manager	Low	If a storage object name contains spaces, it is displayed in the vROps custom view with underlines instead of spaces. Currently there is no solution or workaround for this limitation.

Table 8. Known issues in IBM Storage Enabler for Containers

Ticket ID	Component	Severity	Description
UB-66	IBM Storage Enabler for Containers	Moderate	If a volume is renamed directly on a storage system and removed from a node, it is deleted from the Enabler for Containers database, but remains intact on the storage itself. To avoid this issue, do not rename volumes on a storage system, if the volumes are used by containerized applications.
UB-380	IBM Storage Enabler for Containers	Moderate	When creating a PVC with an underscore, _, in pv-name label, the volume is created on the storage system, but it fails to be created in the Kubernetes environment. Currently there is no solution or workaround for this limitation.
UB-499	IBM Storage Enabler for Containers	Moderate	On the storage systems that run Spectrum Virtualize, volume operations might fail, if a Kubernetes node name starts with a number To avoid this issue, do not use numbers as initial symbols in Kubernetes node names.
UB-579	IBM Storage Enabler for Containers	Moderate	A container might remain in the *ContainerCreating* status for a long period of time. In addition, an unresponsive *sg_inq* process exists on a pod worker node and failed multipath devices are present in the system. To resolve this issue, terminate the unresponsive process, using the *-9* signal, or run the **multipath -F** command to clean the faulty devices, holding the process.
UB-612	IBM Storage Enabler for Containers	Moderate	PVC creation process might remain in the Pending state for more than two minutes. In addition, the following message is stored in the IBM Storage Enabler for Containers pod log `No storage resource that can match the requirements found. Reason is: A volume with this name already exists. Array is: storage_system_name. Requested volume name is: volume_name.`. To resolve this issue: • Delete the pending PVC, using **kubectl delete pvc PVC-<ID>** command. • Create a new PVC. • Contact your storage administrator, requesting to delete the failed PVC volume on the storage system itself. Then, refresh the storage system in the Spectrum Control Base GUI.

Table 8. Known issues in IBM Storage Enabler for Containers (continued)

Ticket ID	Component	Severity	Description
UB-583	IBM Storage Enabler for Containers	Low	There is no indication on which Kubernetes node a persistent volume is mounted after a pod with PVC is created. Currently there is no solution or workaround for this limitation.
UB-585	IBM Storage Enabler for Containers	Low	There is no used capacity indication for a persistent volume after a write operation on the volume. Currently there is no solution or workaround for this limitation.

Related information and publications

You can find additional information and publications related to IBM Spectrum Control Base Edition on the following information sources.

- IBM Knowledge Center (ibm.com/support/knowledgecenter)
- IBM DS8870 on IBM Knowledge Center (ibm.com/support/knowledgecenter/ST8NCA)
- IBM DS8880 on IBM Knowledge Center (ibm.com/support/knowledgecenter/ST5GLJ)
- IBM FlashSystem V9000 on IBM Knowledge Center (ibm.com/support/knowledgecenter/STKMQV)
- IBM SAN Volume Controller on IBM Knowledge Center (ibm.com/support/knowledgecenter/STPVGU)
- IBM Storwize V3500 on IBM Knowledge Center (ibm.com/support/knowledgecenter/STLM6B)
- IBM Storwize V3700 on IBM Knowledge Center (ibm.com/support/knowledgecenter/STLM5A)
- IBM Storwize V5000 on IBM Knowledge Center (ibm.com/support/knowledgecenter/STHGUJ)
- IBM Storwize V7000 on IBM Knowledge Center (ibm.com/support/knowledgecenter/ST3FR7)
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- IBM FlashSystem A9000R on IBM Knowledge Center (ibm.com/support/knowledgecenter/STJKN5)
- Spectrum Control Base-related questions on IBM developerWorks® (developer.ibm.com/answers/topics/spectrum%20control/#)
- VMware Documentation (vmware.com/support/pubs)

- VMware Product Support (vmware.com/support)
- VMware Knowledge Base (kb.vmware.com)
- Microsoft PowerShell (msdn.microsoft.com/en-us/powershell)
- Persistent volumes on Kubernetes (kubernetes.io/docs/concepts/storage/volumes)

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