

IBM Spectrum Protect™ Snapshot for VMware® 4.1.3

Objective of this document

This document provides comprehensive information on the complete environment required to support IBM Spectrum Protect™ Snapshot for VMware based solutions. It helps you to:

- Prepare for implementation - complete this check list prior to implementation start to avoid late issues.
- Identify and involve all responsible organizations required for implementation.
- Identify proper release levels of ancillary software.
- Get the most current tips and hints for installation.

Tip: Beginning with Version 4.1.3, IBM Tivoli Storage FlashCopy Manager is now IBM Spectrum Protect™ Snapshot. Some applications such as the software fulfillment systems and IBM License Metric Tool use the new product name. However, the software and its product documentation continue to use the Tivoli Storage Manager product name. To learn more about the rebranding transition, see <http://www.ibm.com/support/docview.wss?uid=swg21963634>.

Note: This document refers to the FlashCopy® Storage Systems IBM System Storage DS8000, IBM System Storage SAN Volume Controller (SVC), IBM Storwize V7000, IBM FlashSystem™, IBM XIV® Storage System, IBM Spectrum Accelerate™, IBM N Series, and NetApp®.

1. Hardware Requirements (general)

	Prerequisite	checked
1.0.1	A VMware vSphere environment consisting of one vCenter server and one or more ESX/ESXi hosts.	
1.0.2	One Linux server for the IBM Spectrum Protect™ Snapshot for VMware installation. This server can either be a physical server or a virtual machine running within the vSphere environment. SAN connectivity to storage subsystems is not required for this server.	
1.0.3	The Linux server (1.0.2) has a LAN connection to the control interface (or CIM agent) of the storage subsystem or SVC storage cluster.	
1.0.4	LUNs of the VMware datastores to be backed up within one backup run must not be distributed over multiple disk storage subsystems / SVC storage clusters. (DS8000): Only one LUN per VMware datastore is supported	
1.0.5	For IBM Spectrum Protect™ Snapshot operations the LUNs of the disk storage subsystem intended to be used as target volumes must be accessible to the ESX/ESXi host used as auxiliary ESX host (see profile parameter AUXILIARY_ESX_HOST). This applies to DS storage devices and also to SVC and IBM Storwize V7000 if preassigned volumes are used. For XIV, N Series or NetApp, and SVC / Storwize using the dynamic target allocation option, the target LUNs will be created automatically during snapshot process and will be assigned to the auxiliary ESX host. See documentation of profile parameter HOST_NAME_MAPPING in the User's manual for more details. Note: In case of preassigned volumes are used, the AUXILIARY_ESX_HOST parameter needs to be set in the configuration profile so that the forced mount operation can be executed as part of the backup operation.	
1.0.6	A source volume and its corresponding target volume must be of same size (in case of target volumes are created by the user). DS requires source and target volume pairs be located in the same disk storage subsystem. For SVC and IBM Storwize V7000 those can be located in different storage devices within one and the same SVC cluster.	

1.1 Hardware Requirements for DS8000

	Prerequisite	checked
1.1.1	<p>IBM System Storage DS8000 (DS8100, DS8300, DS8700, DS8800 or DS8870) with the Point in Time Copy feature enabled.</p> <p>With DS8000 Release 4.1 (bundle 64.1.16.0) and later the embedded CIM agent in the HMC is enabled and configured by default and can be used with IBM Spectrum Protect™ Snapshot.</p> <p>Note: IBM CIM Agent for DS Open API version 5.4.2 has a known problem with refresh of an incremental FlashCopy using IBM Spectrum Protect™ Snapshot. Therefore make sure that CIM Agent 5.4.2.xx is not used. Please upgrade the DS microcode to a level that provides CIM Agent >= 5.4.3 (for example: DS8000 bundle version 64.30.78.0 comes with CIM Agent 5.4.3.52)</p>	
1.1.2	<p>DS8000 LIC level for FlashCopy to work with IBM Spectrum Protect™ Snapshot:</p> <p>All DS8000 Releases >= R3.1 are supported.</p> <p>For older DS8000 releases, the following minimum microcode levels are required:</p> <p>mcode 6.1.600.52/DSCLI 5.0.5.17, mcode 6.2.400.7x/DSCLI 5.2.400 or higher mcode</p>	
1.1.3	Support is provided for Fibre Channel attached volumes	
1.1.4	The user defined for IBM Spectrum Protect™ Snapshot operations in DS8000 needs to be assigned to the "Administrator" user group.	

1.2 Hardware Requirements for SVC / Storwize

	Prerequisite	checked
1.2.1	<p>(SVC) IBM System Storage SAN Volume Controller versions 6.1, 6.2, 6.3, 6.4, 7.1, 7.2, 7.3, 7.4, and 7.5</p> <p>(Storwize) IBM Storwize V7000 v1 Disk System IBM Storwize V7000 Version 6.4, 7.1, 7.2, 7.3, 7.4 and 7.5 IBM Storwize v3700 Version 6.4, 7.1, 7.2, 7.3, 7.4 and 7.5 IBM Storwize v5000 Version 7.1, 7.2, 7.3, 7.4 and 7.5 IBM Storwize V7000 Unified v1.3 Disk System (block level support only) IBM Storwize V7000 Unified v1.4 Disk System (block level support only) IBM Storwize V7000 Unified v1.5 Disk System (block level support only) IBM Flex System™ v7000 Version 6.4, 7.1 and 7.2 IBM FlashSystem™ V840 IBM FlashSystem™ V9000</p> <p>Note: IBM Spectrum Protect™ Snapshot communicates with the SVC/Storwize only. There is no communication with the storage systems attached to the SVC.</p>	
1.2.2	Support is provided for Fibre Channel and iSCSI attached volumes	
1.2.3	<p>Support for Metro Mirroring and Global Mirroring: The target volumes of the Metro Mirror or Global Mirror relationships are usually located on a separate storage system at a secondary site. This can be the Disaster Recovery site, in Site Recovery Manager (SRM) terms it is called the recovery site. For remote site FlashCopy backups, IBM Spectrum Protect™ Snapshot requires that the remote relationships are created, started, synchronized and added to a unique consistency group. For Global Mirror, IBM Spectrum Protect™ Snapshot relies on Global Mirror with Change Volumes in cycling mode with master and auxiliary change volumes. The use of this SVC / Storwize feature requires SVC / Storwize version 6.3 or higher.</p>	
1.2.4	<p>SVC and Storwize must be configured for https or http communication. By default, SVC/Storwize is configured for HTTPS communication.</p> <p>Note: This does not apply when configuring the storage for dynamic target allocation (new type SVCDTA). In this case IBM Spectrum Protect™ Snapshot communicates with the storage-system via ssh.</p>	
1.2.5	For SVC and Storwize, the user defined for IBM Spectrum Protect™ Snapshot operations in SVC/Storwize needs to be assigned to the "Administrator" user group.	
1.2.6	Use of dynamic target allocation (new type SVCDTA) requires SVC / Storwize version 6.3 or higher.	

Note: Starting with SVC 6.1, the CIM agent can be restarted using the Service Assistant for 6.1.0
- <http://clusterip/service> go to the Restart Service navigation item and select the CIMOM.

1.3 Hardware Requirements for XIV

	Prerequisite	checked
1.3.1	<p>IBM XIV Storage System Hardware: Supported system versions are 10.0.0.b or later 10.x levels, 11.x levels</p> <p>IBM XIV Storage System Software: IBM XIV Management Tools 3.x for all IBM XIV® Generations IBM XIV Management Tools 4.2.x for all IBM XIV® Generations or XIV CLI 2.3.1 and later 2.x and 3.x levels for IBM XIV 2nd Generation XIV CLI 3.0.1 and later 3.x levels for IBM XIV 3rd Generation XIV CLI 4.2 and later 4.2.x levels for IBM XIV 3rd Generation</p> <p>IBM Spectrum Accelerate™: IBM Spectrum Accelerate™ Version 11.5.x</p>	
1.3.2	Support is provided for Fibre Channel and iSCSI attached volumes	
1.3.3	<p>Support for Synchronous and Asynchronous Mirroring: The target volumes of the remote mirror relationships are usually located on a separate storage system at a secondary site. This can be the Disaster Recovery site, in Site Recovery Manager (SRM) terms it is called the recovery site. For remote site Snapshot backups, IBM Spectrum Protect™ Snapshot requires that the remote relationships are created, started and added to a unique consistency group. For Synchronous Mirroring, the relationships must be synchronized. For Asynchronous Mirroring the relationships must already be copied for the first time, otherwise a time out might occur while waiting for the copy process to complete.</p> <p>Note: IBM Spectrum Protect™ Snapshot requires the usage of mirror consistency groups for synchronous and asynchronous remote mirroring on XIV. This feature is first implemented with XIV 10.2</p>	
1.3.4	The user account that will be used by IBM Spectrum Protect™ Snapshot to log onto the storage system must have "Storage Administrator" privileges	

1.4 Hardware requirements for N Series/NetApp

	Prerequisite	checked
1.4.1	Supported ONTAP versions are 7.3 or later 7.3.x levels and 8.1 or later 8.1.x levels	
1.4.2	Volumes must be attached over SAN, iSCSI or NAS to the ESX hosts	
1.4.3	The user account that will be used by IBM Spectrum Protect™ Snapshot to log onto the storage system must have the permissions / capabilities: api-system-*,api-volume*, login-http-admin, api-lun-list*, api-lun-get-serial-number, api-cg-start, api-cg-commit, and snapshot-list-info	

2. Software Requirements

The following software - if not otherwise specified - is required.

2.1 Software Requirements – VMware

	Prerequisite	checked
2.1.1	<p>A VMware vSphere environment consisting of:</p> <p>VMware vCenter Server 5.0 or 5.1 VMware vCenter Server 5.5 VMware vCenter Server 6.0</p> <p>and ESX hosts in the following versions:</p> <p>VMware ESX/ESXi 5.0 or 5.1 VMware ESX/ESXi 5.5 VMware ESX/ESXi 6.0</p>	

2.2 Software Requirements – Linux

	Prerequisite	checked
2.2.1	<p>On the Linux server for the IBM Spectrum Protect™ Snapshot for VMware installation:</p> <p>Red Hat Enterprise Linux 6 x64 Version 6.0 or higher Red Hat Enterprise Linux 5 x64 Version 5.1 or higher SUSE Enterprise Linux 11 x64 and later 11.x levels</p>	

2.3 Software Requirements - Storage Subsystems

XIV

	Prerequisite	checked
2.3.1	<p>XIV CLI 2.3.x or 3.x. or 4.2.x XIV CLI 4.1 is not supported</p> <p>XCLI download page: http://www-01.ibm.com/support/docview.wss?rs=1319&context=STJTAG&dc=D400&q1=ssg1*&uid=ssg1S4000813&loc=en_US&cs=utf-8&lang=en</p>	

SVC / Storwize V7000

	Prerequisite	checked
2.3.2	<p>When dynamic target allocation is used (new type SVCDTA), OpenSSH needs to be installed on the Linux server (1.0.2) where IBM Spectrum Protect™ Snapshot for VMware is installed. In addition, a public/private key pair is required for accessing the SVC CLI via ssh. The public key needs to be imported on the storage device while the private key needs to be imported on the Linux server. See the User's Manual for more details (chapter "Configuring to use the Storwize family and SAN Volume Controller with dynamic target allocation (SVCDTA)).</p>	

3. Environmental Requirements (general)

	Prerequisite	checked
3.0.1	<p>The ulimits of the tdpvmware user on the Linux server (1.0.2) should at a minimum be set to (check with ulimit -a):</p> <pre>data seg size (kbytes) unlimited max memory size (kbytes) 131000 stack size (kbytes) 131000</pre> <p>Depending on the user's shell and OS level, the output of the command ulimit -a can vary.</p>	
3.0.2	Port 9081 of the Linux server (1.0.2) needs to be accessible from all hosts that use vSphere clients to access the Web GUI (stand-alone and/or plugin) delivered with IBM Spectrum Protect™ Snapshot for VMware.	
3.0.3	Internet explorer security settings on all hosts that use vSphere clients to access the GUI plugin delivered with IBM Spectrum Protect™ Snapshot for VMware need to permit access to the Linux server (1.0.2).	
3.0.4	The following characters are allowed in data center, datastore and virtual machine names: [A-Z][a-z][0-9]\${}=~ :#!&+-._(),; and whitespace	
3.0.5	When naming datastores that are going to be backed up, the name length cannot exceed 31 characters. When the snapshot of the datastore is created, an 11-character identifier is appended to the datastore name. VMware requires datastore names do not exceed 42 characters.	
3.0.6	<p>In order to use IBM Spectrum Protect™ Snapshot for VMware to back up and recover virtual machines, you must authenticate to the VMware vCenter server with a user ID which has a role that has sufficient privileges to perform these operations.</p> <p>Please refer to the chapter “VMware vCenter Server user privilege requirements” of the Installation and User's Guide for a detailed list of the required privileges.</p>	

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