



HPE COMPLETE: SIZING GUIDE FOR STORMAGIC SVSAN SOLUTIONS

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INTRODUCTION

This document provides guidance on how to configure an HPE Complete approved StorMagic SvSAN storage solution. For each configuration, component requirements are defined. All components in each category within this document must be met as specified. Various StorMagic SvSAN capacities from 2 TB to unlimited TB are detailed within the later sections of this document and these are further detailed by configuration type including HDD, Hybrid, and SSD covering Low, Medium, and High performance for Storage and Low and High performance for compute.

STORMAGIC SOLUTIONS OVERVIEW

StorMagic SvSAN is a virtual SAN—a software-defined solution designed to run on two or more servers and deliver highly available shared storage. SvSAN simplifies your IT infrastructure. It eliminates the need for a physical SAN, enabling hyperconvergence by virtualizing the internal compute and storage of any x86 server and presenting it via a hypervisor as shared storage. A typical two-node SvSAN configuration, with a centralized management interface and witness, is shown below in Figure 1. The minimum requirements for a StorMagic SvSAN solution are a two-node x86 server deployment and a Witness server.

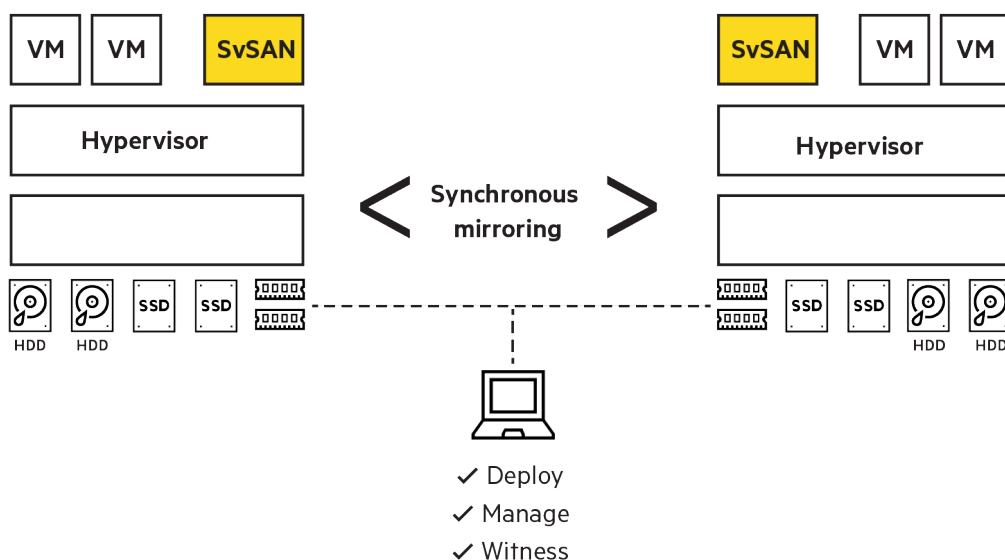


FIGURE 1. StorMagic SvSAN Two-Node Hyperconverged Configuration



HPE COMPLETE—STORMAGIC MINIMUM SYSTEM REQUIREMENTS

TABLE 1. StorMagic SvSAN minimum requirements

Component	Requirement
Processor	One (1) virtual CPU core ¹
Memory	1 GB RAM ²
Disk	Two (2) virtual storage devices used by VSA One (1) 512 MB boot disk One (1) 20 GB journal disk
Network	One (1) x 1 Gb Ethernet Multiple interfaces recommended for resiliency 10 Gb Ethernet is supported Jumbo frames supported

TABLE 2. StorMagic Witness minimum requirements

Component	Requirement
Processor	One (1) virtual CPU core
Memory	1 GB RAM
Disk	One (1) 512 MB boot disk
Network	<ul style="list-style-type: none"> • One (1) x 1 Gb Ethernet • When using the witness over a WAN link use the following recommendations for optimal operation: <ul style="list-style-type: none"> – Latency of 3000 ms, this would allow the witness to be located anywhere in the world – 9 Kbps of available of network bandwidth between the VSAs and the witness (less than 100 bytes of data is transmitted per second)
Operating System	The SvSAN witness can be deployed on a physical server or virtual machine off the cluster with the following: <ul style="list-style-type: none"> • Windows Server 2016 • Hyper-V Server 2016 • Raspbian Jessie • Raspbian Stretch • VMware vCenter Server® Appliance™ • StorMagic SvSAN Witness Appliance

¹ When using StorSecure to encrypt data, 2+ virtual CPUs are recommended

² Additional RAM may be required when caching is enabled



STORMAGIC 2TB SVSAN REQUIREMENTS

The component requirements below must be met for all categories. The minimum requirements for a StorMagic SvSAN solution are a two-node x86 server deployment and a Witness server.

TABLE 3. StorMagic 2TB HDD SvSAN Requirements

Storage Type	2 TB HDD	2 TB HDD
Compute Level	Low compute	High compute
Storage Level	Low storage	Low storage
VMs	~8–16 VMs	~16–32 VMs
Server	HPE ProLiant (DL and MicroServer), HPE Edgeline, or HPE Apollo	
Processor (single or dual socket)	~6–8C < 2 GHz (e.g., Intel® Xeon® Bronze 3204)	~16C < 2 GHz (e.g., Intel® Xeon® Gold 5218)
Memory	~32 GB RAM	~256 GB RAM
Storage Controller	HBA or RAID Card	
Boot storage	≥ 32 GB boot storage (RAID 1 Optional)	
SAN cache storage	NA	
SAN pool storage	2x 2.4 TB SAS 12G Enterprise 10K HDD	
VM Network	≥ 1 Gb NICs	
Storage Network (can be direct connect)	≥ 1 Gb NICs	

TABLE 4. StorMagic 2TB SSD SvSAN Requirements

Storage Type	2 TB SSD	2 TB SSD
Compute Level	Low compute	High compute
Storage Level	High storage	High storage
VMs	~8–16 VMs	~18–36 VMs
Server	HPE ProLiant (DL and MicroServer), HPE Edgeline, or HPE Apollo	
Processor (single or dual socket)	~8C ≥ 2.7 GHz (e.g., Xeon Gold 5217)	~18C ≥ 2.7 GHz (e.g., Xeon Gold 6242R)
Memory	~32 GB RAM	~256 GB RAM
Storage Controller	HBA or RAID Card	
Boot storage	≥ 32 GB boot storage (RAID 1 Optional)	
SAN cache storage	NA	
SAN pool storage	2x 1.92 TB SAS 12G Mixed Use SSD	
VM Network	≥ 1 Gb NICs	
Storage Network (can be direct connect)	≥ 10 Gb NICs	



STORMAGIC 6TB SVSAN REQUIREMENTS

The component requirements below must be met for all categories. The minimum requirements for a StorMagic SvSAN solution are a two-node x86 server deployment and a Witness server.

TABLE 5. StorMagic 6TB HDD SvSAN Requirements

Storage Type	6 TB HDD	6 TB HDD
Compute Level	Low compute	High compute
Storage Level	Low storage	Low storage
VMs	~8–16 VMs	~16–32 VMs
Server	HPE ProLiant (DL and MicroServer), HPE Edgeline, or HPE Apollo	
Processor (single or dual socket)	~6–8C < 2 GHz (e.g., Xeon Bronze 3204)	~16C < 2 GHz (e.g., Xeon Gold 5218)
Memory	~32 GB RAM	~256 GB RAM
Storage Controller	RAID card with 512 MB or greater cache	
Boot storage	≥ 32 GB boot storage (RAID 1 Optional)	
SAN cache storage	NA	
SAN pool storage	4x 2.4 TB SAS 12G Enterprise 10K HDD (RAID 5)	
VM Network	≥ 1 Gb NICs	
Storage Network (can be direct connect)	≥ 1 Gb NICs	

TABLE 6. StorMagic 6TB Hybrid SvSAN Requirements

Storage Type	6 TB Hybrid	6 TB Hybrid
Compute Level	Low compute	High compute
Storage Level	Medium storage	Medium storage
VMs	~8–16 VMs	~20–40 VMs
Server	HPE ProLiant (DL and MicroServer), HPE Edgeline, or HPE Apollo	
Processor (single or dual socket)	~8C ~2.5 GHz (e.g., Intel® Xeon® Silver 4215)	~18–20C ~2.5 GHz (e.g., Xeon Gold 6240)
Memory	~128 GB RAM	~256 GB RAM
Storage Controller	RAID card with 512 MB or greater cache	
Boot storage	≥ 32 GB boot storage (RAID 1 Optional)	
SAN cache storage	600 GB SSD or PCIe Flash (e.g., 480 GB Mixed Use)	
SAN pool storage	4x 2.4 TB SAS 12G Enterprise 10K HDD (RAID 5)	
VM Network	≥ 1 Gb NICs	
Storage Network (can be direct connect)	≥ 10 Gb NICs	

TABLE 7. StorMagic 6 TB SSD SvSAN Requirements

Storage Type	6 TB SSD	6 TB SSD
Compute Level	Low compute	High compute
Storage Level	High storage	High storage
VMs	~8–16 VMs	~18–36 VMs
Server	HPE ProLiant (DL and MicroServer), HPE Edgeline, or HPE Apollo	
Processor (single or dual socket)	~8C > 2.7 GHz (e.g., Xeon Gold 5217)	~18C > 2.7 GHz (e.g., Xeon Gold 6242R)
Memory	~32 GB RAM	~256 GB RAM
Storage Controller	RAID card with 512 MB or greater cache	
Boot storage	≥ 32 GB boot storage (RAID 1 Optional)	
SAN cache storage	NA	
SAN pool storage	5x 1.92 TB SAS 12G Mixed Use SSD (RAID 5)	
VM Network	≥ 1 Gb NICs	
Storage Network (can be direct connect)	≥ 10 Gb NICs	



STORMAGIC 12TB SVSAN REQUIREMENTS

The component requirements below must be met for all categories. The minimum requirements for a StorMagic SvSAN solution are a two-node x86 server deployment and a Witness server.

TABLE 8. StorMagic 12TB HDD SvSAN Requirements

Storage Type	12 TB HDD	12 TB HDD
Compute Level	Low compute	High compute
Storage Level	Low storage	Low storage
VMs	~8–16 VMs	~16–32 VMs
Server	HPE ProLiant (DL and MicroServer), HPE Edgeline, or HPE Apollo	
Processor (single or dual socket)	~6–8C < 2 GHz (e.g., Xeon Bronze 3204)	~16C < 2 GHz (e.g., Xeon Gold 5218)
Memory	~32 GB RAM	~256 GB RAM
Storage Controller	RAID card with 4 to 8 GB Cache	
Boot storage	≥ 32 GB boot storage (RAID 1 Optional)	
SAN cache storage	NA	
SAN pool storage	7x 2.4 TB SAS 12G Enterprise 10K HDD (RAID 5)	
VM Network	≥ 1 Gb NICs	
Storage Network (can be direct connect)	≥ 1 Gb NICs	

TABLE 9. StorMagic 12TB Hybrid SvSAN Requirements

Storage Type	12 TB Hybrid	12 TB Hybrid
Compute Level	Low compute	High compute
Storage Level	Medium storage	Medium storage
VMs	~8–16 VMs	~20–40 VMs
Server	HPE ProLiant (DL and MicroServer), HPE Edgeline, or HPE Apollo	
Processor (single or dual socket)	~8C ~2.5 GHz (e.g., Xeon Silver 4215)	~18–20C ~2.5 GHz (e.g., Xeon Gold 6240)
Memory	~128 GB RAM	~256 GB RAM
Storage Controller	RAID card with 4 to 8 GB Cache	
Boot storage	≥ 32 GB boot storage (RAID 1 Optional)	
SAN cache storage	1.2 TB SSD or PCIe Flash (e.g., 1.6 TB mixed use)	
SAN pool storage	7x 2.4 TB SAS 12G Enterprise 10K HDD (RAID 5)	
VM Network	≥ 1 Gb NICs	
Storage Network (can be direct connect)	≥ 10 Gb NICs	

TABLE 10. StorMagic 12TB SSD SvSAN Requirements

Storage Type	12 TB SSD	12 TB SSD
Compute Level	Low compute	High compute
Storage Level	High storage	High storage
VMs	~8–16 VMs	~18–36 VMs
Server	HPE ProLiant (DL and MicroServer), HPE Edgeline, or HPE Apollo	
Processor (single or dual socket)	~8C > 2.7 GHz (e.g., Xeon Gold 5217)	~18C > 2.7 GHz (e.g., Xeon Gold 6242R)
Memory	~32 GB RAM	~256 GB RAM
Storage Controller	RAID card with 4 to 8 GB Cache	
Boot storage	≥ 32 GB boot storage (RAID 1 Optional)	
SAN cache storage	NA	
SAN pool storage	6x 3.2 TB SAS 12G Mixed Use SSD (RAID 5)	
VM Network	≥ 1 Gb NICs	
Storage Network (can be direct connect)	≥ 10 Gb NICs	



STORMAGIC UNLIMITED TB SVSAN REQUIREMENTS

The component requirements below must be met for all categories. The minimum requirements for a StorMagic SvSAN solution are a two-node x86 server deployment and a Witness server.

TABLE 11. StorMagic Unlimited TB HDD SvSAN Requirements

Storage Type	Unlimited TB HDD	Unlimited TB HDD
Compute Level	Low compute	High compute
Storage Level	Low storage	Low storage
VMs	~8–16 VMs	~16–32 VMs
Server	HPE ProLiant (DL and MicroServer), HPE Edgeline, or HPE Apollo	
Processor (single or dual socket)	~6–8C < 2 GHz (e.g., Xeon Bronze 3204)	~16C < 2 GHz (e.g., Xeon Gold 5218)
Memory	~128 GB RAM	~256 GB RAM
Storage Controller	RAID card with 4 to 8 GB Cache	
Boot storage	≥ 32 GB boot storage (RAID 1 Optional)	
SAN cache storage	NA	
SAN pool storage (LFF)	12x 14 TB SAS 12G Midline 7.2K (RAID 5 + HS ~127 TB)	
SAN pool storage (SFF)	24x 2.4 TB SAS 12G Enterprise 10K HDD (RAID 5 + HS ~49 TB)	
VM Network	≥ 1 Gb NICs	
Storage Network (can be direct connect)	≥ 1 Gb NICs	

TABLE 12. StorMagic Unlimited TB Hybrid SvSAN Requirements

Storage Type	Unlimited TB Hybrid	Unlimited TB Hybrid
Compute Level	Low compute	High compute
Storage Level	Medium storage	Medium storage
VMs	~8–16 VMs	~20–40 VMs
Server	HPE ProLiant (DL and MicroServer), HPE Edgeline, or HPE Apollo	
Processor (single or dual socket)	~8C ~2.5 GHz (e.g., Xeon Silver 4215)	~18–20C ~2.5 GHz (e.g., Xeon Gold 6240)
Memory	~128 GB RAM	~256 GB RAM
Storage Controller	RAID card with 4 to 8 GB Cache	
Boot storage	≥ 32 GB boot storage (RAID 1 Optional)	
SAN cache storage	2x3.2 TB PCIe Accelerators	
SAN pool storage (LFF)	12x 14 TB SAS 12G Midline 7.2K (RAID 5 + HS ~127 TB)	
SAN pool storage (SFF)	24x 2.4 TB SAS 12G Enterprise 10K HDD (RAID 5 + HS ~49 TB)	
VM Network	≥ 1 Gb NICs	
Storage Network (can be direct connect)	≥ 10 Gb NICs	

TABLE 13. StorMagic Unlimited TB SSD SvSAN Requirements

Storage Type	Unlimited TB SSD	Unlimited TB SSD
Compute Level	Low compute	High compute
Storage Level	High storage	High storage
VMs	~8–16 VMs	~18–36 VMs
Server	HPE ProLiant (DL and MicroServer), HPE Edgeline, or HPE Apollo	
Processor (single or dual socket)	~8C > 2.7 GHz (e.g., Xeon Gold 5217)	~18C > 2.7 GHz (e.g., Xeon Gold 6242R)
Memory	~128 GB RAM	~256 GB RAM
Storage Controller	RAID card with 4 to 8 GB Cache	
Boot storage	≥ 32 GB boot storage (RAID 1 Optional)	
SAN cache storage	NA	
SAN pool storage (LFF)	NA	
SAN pool storage (SFF)	24x 6.4 TB SAS 12G Mixed Use SSD (RAID 5 + HS ~128 TB)	
VM Network	≥ 1 Gb NICs	
Storage Network (can be direct connect)	≥ 10 Gb NICs	



SAMPLE CONFIGURATIONS

StorMagic 2TB HDD SvSAN

TABLE 14. Sample configuration—StorMagic 2TB HDD SvSAN, Low Compute, Low Storage

Component	Quantity	SKU	Product Description
Server	1	872309-B21	HPE ProLiant ML110 Gen10 8SFF Configure-to-order Server
Localization	1	872309-B21 ABA	HPE ML110 Gen10 8SFF CTO Server
Processor	1	P10976-L21	HPE ML110 Gen10 Intel Xeon Bronze 3204 (1.9GHz/6-core/85W) FIO Processor Kit
Memory	2	P00920-B21	HPE 16GB (1x16GB) Single Rank x4 DDR4-2933 CAS-21-21-21 Registered Smart Memory Kit
Boot HDDs	2	872475-B21	HPE 300GB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD
SAN Pool Storage	2	881457-B21	HPE 2.4TB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty 512e Digitally Signed Firmware HDD
Data Storage Controllers	1	804394-B21	HPE Smart Array E208i-p SR Gen10 (8 Internal Lanes/No Cache) 12G SAS PCIe Plug-in Controller
VM and Storage Networks	1	647594-B21	HPE Ethernet 1Gb 4-port 331T Adapter
Power Supplies	2	865408-B21	HPE 500W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit
iLO License	1	BD505A	HPE iLO Advanced 1-server License with 3yr Support on iLO Licensed Features
Power Supply Redundant Kit	1	867875-B21	HPE ML110 Gen10 Redundant Power Supply Enablement Kit
Redundant Fans	1	869489-B21	HPE ML110 Gen10 Redundant Fan with 4 Fans Kit
Support	1	H7J34A3	HPE 3Y Foundation Care 24x7 SVC
Support	1	H7J34A3 X1P	HPE ML110 Gen10 Support
Install Service	1	HA113A1	HPE Installation SVC
Install Service	1	HA113A1 5T6	HPE Installation DL160/DL360e Service

StorMagic 6TB Hybrid SvSAN

TABLE 15. Sample configuration—StorMagic 6TB Hybrid SvSAN, Low Compute, Medium Storage

Component	Quantity	SKU	Product Description
Server	1	P19766-B21	HPE ProLiant DL360 Gen10 8SFF NC Configure-to-order Server
Localization	1	P19766-B21 ABA	HPE DL360 Gen10 8SFF ModX CTO
Processor	1	P02598-L21	HPE DL360 Gen10 Intel Xeon Silver 4215 (2.5GHz/8-core/85W) FIO Processor Kit
Processor	1	P02598-B21	HPE DL360 Gen10 Intel Xeon Silver 4215 (2.5GHz/8-core/85W) Processor Kit
Memory	8	P00920-B21	HPE 16GB (1x16GB) Single Rank x4 DDR4-2933 CAS-21-21-21 Registered Smart Memory Kit
Boot HDDs	2	872475-B21	HPE 300GB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD
SAN Pool Storage	4	881457-B21	HPE 2.4TB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty 512e Digitally Signed Firmware HDD
SAN Cache Storage	1	P09090-B21	HPE 800GB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD
Storage Network	1	652503-B21	HPE Ethernet 10Gb 2-port 530SFP Adapter
Cache Backup	1	P02377-B21	HPE Smart Storage Hybrid Capacitor with 145mm Cable Kit
Storage Controller	1	804338-B21	HPE Smart Array P816i-a SR Gen10 (16 Internal Lanes/4GB Cache/SmartCache) 12G SAS Modular Controller
VM Network	1	665240-B21	HPE Ethernet 1Gb 4-port 366FLR Adapter
Optics	2	455883-B21	HPE BladeSystem c-Class 10Gb SFP+ SR Transceiver
Power Supply	2	865408-B21	HPE 500W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit
iLO License	1	BD505A	HPE iLO Advanced 1-server License with 3yr Support on iLO Licensed Features
Racking	1	867998-B21	HPE 1U Gen10 Bezel Kit
Racking	1	874543-B21	HPE 1U Gen10 SFF Easy Install Rail Kit
Support	1	H1K92A3	HPE 3Y Proactive Care 24x7 SVC
Support	1	H1K92A3 R2M	HPE iLO Advanced Non Blade Support
Support	1	H1K92A3 WAG	HPE DL360 Gen10 Support
Install Service	1	HA114A1	HPE Installation and Startup Service
Install Service	1	HA114A1 5A0	HPE Startup Entry 300 Series OS SVC



StorMagic Unlimited TB SSD SvSAN

TABLE 16. Sample configuration—StorMagic Unlimited TB SSD SvSAN, High Compute, High Storage

Component	Quantity	SKU	Product Description
Server	1	P07246-B21	HPE Apollo 4200 Gen10 48SFF Configure-to-order Server
Processor	1	P12708-L21	HPE Apollo 4200 Gen10 Intel Xeon Gold 6226 (2.7GHz/12-core/125W) FIO Processor Kit
Processor	1	P12708-B21	HPE Apollo 4200 Gen10 Intel Xeon Gold 6226 (2.7GHz/12-core/125W) Processor Kit
Memory	16	P00920-K21	HPE 16GB (1x16GB) Single Rank x4 DDR4-2933 CAS-21-21-21 Registered Smart Memory Kit
Rear 2 SFF Cage	1	P07248-B21	HPE Apollo 4200 Gen10 Rear 2SFF/PCIe Kit
Boot HDDs	2	872475-K21	HPE 300GB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD
SAN Pool Storage	48	P19919-K21	HPE 6.4TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty SSD
Cache Battery Backup	1	P01367-B21	HPE 96W Smart Storage Lithium-ion Battery with 260mm Cable Kit
Storage Controller	1	869083-B21	HPE Smart Array P816i-a SR Gen10 (16 Int Lanes/4GB Cache/SmartCache) 12G SAS Modular LH Controller
VM Network	1	647594-B21	HPE Ethernet 1Gb 4-port 331T Adapter
Storage Network	2	727055-B21	HPE Ethernet 10Gb 2-port 562SFP+ Adapter
Optics	4	455883-B21	HPE BladeSystem c-Class 10Gb SFP+ SR Transceiver
Power Supply	2	830272-B21	HPE 1600W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit
iLO License	1	BD505A	HPE iLO Advanced 1-server License with 3yr Support on iLO Licensed Features
Racking	1	867809-B21	HPE Gen10 2U Bezel Kit
Factory Setting	1	813546-B21	HPE 2nd Cage FIO Controller Mode for Rear Storage
Racking	1	822640-B21	HPE Apollo 4200 Gen9 FIO Strap Shipping Bracket
Racking	1	822731-B21	HPE 2U Shelf-Mount Adjustable Rail Kit
Install Service	1	HA113A1	HPE Installation SVC
Install Service	1	HA113A1 58Y	HPE Apollo 2000/4200 Install Service
Support	1	H1K92A3	HPE 3Y Proactive Care 24x7 SVC
Support	1	H1K92A3 R2M	HPE iLO Advanced Non Blade Support
Support	1	H1K92A3 XMZ	HPE Apollo 4200 Gen10 Support

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