

## SOLUTION BRIEF

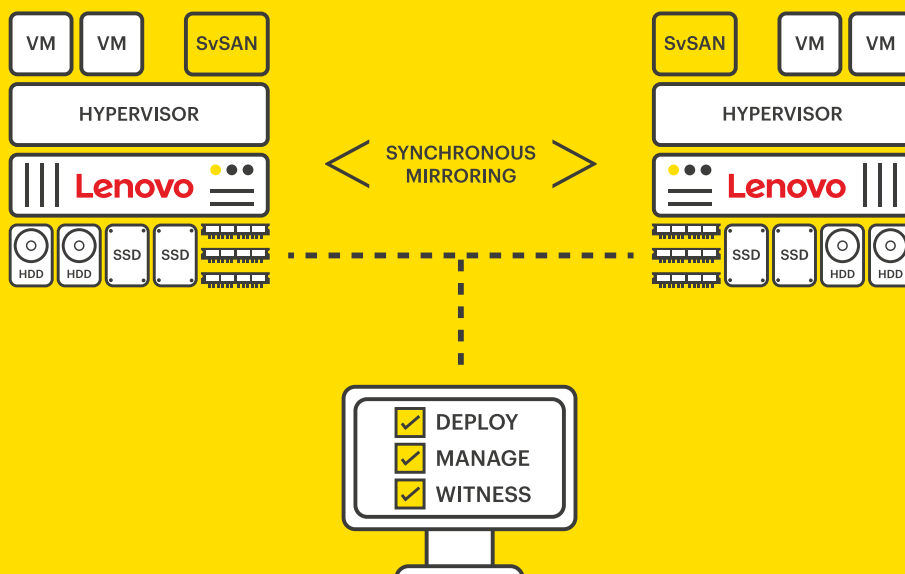
# StorMagic SvSAN WITH LENOVO THINKSYSTEM

### INTRODUCTION

An efficient, low cost storage solution that has the flexibility to scale with demand is something all organizations should be striving to achieve. No-one should be paying more than they need to for their storage infrastructure and its ongoing operation and maintenance, regardless of their performance requirements. It is with this in mind that StorMagic and Lenovo have partnered to provide a range of solutions for the cost-conscious storage architect that don't compromise on performance and enable hyperconvergence. This data sheet details these solutions which leverage Lenovo's ThinkSystem range of rack servers alongside StorMagic SvSAN.

### HIGH PERFORMANCE WITHOUT THE HIGH COSTS

The partnership between StorMagic and Lenovo covers all of Lenovo's ThinkSystem rack servers, however this data sheet deals with the three most commonly deployed models. The joint solution combines Lenovo's renowned server performance and reliability with StorMagic SvSAN's storage high availability and simplicity. The two deliver a full solution which provides low-cost, lightweight storage and is therefore ideally suited for edge computing and remote site locations, or SME data center deployments.



**Fig. 1:** A typical two-node SvSAN configuration

## FUTURE-DEFINED SERVER HARDWARE

ThinkSystem servers are purpose-built to deliver performance, security and agility in an open environment that won't limit options in the future. With developments in IoT and artificial intelligence likely to increase the strain on IT infrastructure outside of the data center, organizations need hardware that can easily meet new challenges. Lenovo rack servers offer the unmatched value, flexibility and industry-leading efficiency to meet mission-critical demands with legendary quality and reliability.

Explore Lenovo's ThinkSystem range in more detail on the [Lenovo website](#).

## SIMPLIFYING STORAGE AT THE EDGE

SvSAN is the virtual SAN that makes the complex world of virtualized storage simple. Perfect for edge computing environments, the technology is based on software-defined storage that eliminates the need for physical SANs. SvSAN is designed to be very simple to install and manage whether deployed as part of a hyperconverged solution or as a storage-only target for any Lenovo server. SvSAN has very low system hardware requirements, centralized management/deployment and an [incredibly lightweight witness](#) that tolerates low bandwidth, high latency links and is completely separate from the server cluster. The witness allows for the creation of genuine 2-node highly available clusters, or 3-node clusters that can withstand an offline server due to either failure or maintenance and still maintain high availability.

The following table illustrates SvSAN's minimum hardware requirements:

CPU	1 x virtual CPU core <sup>1</sup> ● 2 GHz or higher reserved
Memory	1GB RAM <sup>2</sup>
Disk	2 x virtual storage devices used by VSA ● 1 x 512Mb Boot Device ● 1 x 20Gb Journal Disk
Network	1 x 1Gb Ethernet ● Multiple interfaces required for resiliency ● 10Gb Ethernet supported ● Jumbo frames supported

<sup>1</sup> When using SvSAN's data encryption feature to encrypt data, 2+ virtual CPUs are recommended.  
<sup>2</sup> Additional RAM may be required when caching is enabled.

SvSAN is licensed based on the usable VSA (Virtual Storage Appliance) capacity. License tiers are set at 2TB, 6TB, 12TB, 24TB, 48TB and Unlimited TB. SvSAN licenses are perpetual – after a single payment they can be used forever. The only ongoing costs are for support renewal payments.

All of the features necessary for highly available shared storage are included in an SvSAN license. There are also two performance and security-enhancing add-ons available, which are SvSAN's caching and data encryption features. All of SvSAN's features, including caching and encryption, can be explored in more detail on the [StorMagic website](#).

SvSAN's data encryption feature enables organizations to encrypt the data being mirrored by SvSAN. This allows vulnerable edge sites and the data they hold to be protected. It is FIPS 140-2 compliant, eliminates the need for expensive OS or hypervisor-level solutions, and is compatible with any KMS that uses KMIP, including StorMagic's own key manager, [SvKMS](#).

SvSAN Features
Synchronous mirroring / high availability
Stretch / metro clusters
Volume migration
VSA restore (VMware only)
VMware vSphere Storage API (VAAI) support
Centralized management and monitoring
Multiple VSA GUI deployment and upgrade
I/O performance statistics
Witness
PowerShell script generation
Additional add-on features available:
Predictive read ahead caching (SSD and memory)
Write back caching (SSD)
Data pinning
Data encryption

Further details about SvSAN's features, capabilities and requirements can be found in the [product data sheet](#) and [technical overview white paper](#).





## COMMONLY-SEEN DEPLOYMENTS

The three server models on the last page are the most frequently deployed with SvSAN from the Lenovo ThinkSystem range. However, SvSAN is compatible with all Lenovo servers, giving the storage architect a huge range of possibilities.

## MORE INFORMATION AND NEXT STEPS

There is a wealth of information available on the ThinkSystem server range on the [Lenovo website](#), including individual data sheets for each server model. Likewise, StorMagic has a [library of documentation](#) on SvSAN, including installation guides, white papers and data sheets.



*SvSAN makes the complex world of virtualized storage simple.*




StorMagic SvSAN is available on Lenovo's worldwide price list, ensuring any Lenovo salesperson or reseller can create a server configuration with SvSAN included. Combining Lenovo servers with SvSAN software has never been easier. Furthermore, the Lenovo team within StorMagic are ready to provide information and assistance on the partnership and its possibilities. Simply email [sales@stormagic.com](mailto:sales@stormagic.com) to reach out.



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	<b>ThinkSystem SR250</b> 	<b>ThinkSystem SE350</b> 	<b>ThinkSystem ST250</b> 
<b>Overview</b>	The ThinkSystem SR250 is a single-processor rack server that integrates power, reliability, flexibility, and security in a compact 1U form factor suited for the small-to-medium business. It boasts a high price-performance ratio with a combination of high-processing capability and dependability.	The ThinkSystem SE350 is the latest workhorse for the Edge. Designed and built with the unique requirements for Edge servers in mind, it is versatile enough to stretch the limitations of server locations, providing a variety of connectivity and security.	The Thinksystem ST250 harnesses enterprise-level server power with the next-generation Intel® Xeon® E-2200 processors. This capable tower server offers streamlined enterprise business applications including office automation, web serving and near-side data backup.
<b>Example deployment</b>	Remote healthcare clinics with small hardware requirements but a need for highly available patient care applications and secure storage for patient data.	Isolated small energy facility keeping monitoring and control systems online. Very limited space and security, poor network connectivity, and sub-optimal conditions – high heat, humidity and dust.	A branch office environment where space is limited and IT hardware running typical office applications is located alongside workstations and employees.
<b>Form factor/ height</b>	<ul style="list-style-type: none"> <li>1U rack</li> <li>Height: 43mm</li> <li>Width: 434.6mm</li> <li>Depth: 497.8mm (19.6")</li> </ul>	<ul style="list-style-type: none"> <li>1U, half width, short depth</li> <li>Height: 40mm (1.75")</li> <li>Width: 215mm (8.1")</li> <li>Depth: 376mm (14.9")</li> </ul>	<ul style="list-style-type: none"> <li>4U chassis</li> <li>Height: 430mm (16.9")</li> <li>Width: 175mm (6.9")</li> <li>Depth: 566mm (22.3")</li> </ul>
<b>Processor (max)/cache (max)</b>	<ul style="list-style-type: none"> <li>1-socket Intel® Xeon® E-2100 processors, up to 6 cores at 95W</li> </ul>	<ul style="list-style-type: none"> <li>1-socket Intel® Xeon® D-2100, up to 16 cores</li> </ul>	<ul style="list-style-type: none"> <li>1x Intel® Xeon® E-2200 processors, up to 8 cores at 95W</li> </ul>
<b>Memory</b>	<ul style="list-style-type: none"> <li>to 64GB of 2666MHz TruDDR4 ECC UDIMMs (4 slots)</li> </ul>	<ul style="list-style-type: none"> <li>Up to 256GB in 4x slots, using 64GB DIMMs</li> <li>2133/2400/2666MHz TruDDR4</li> </ul>	<ul style="list-style-type: none"> <li>Up to 128GB in 4x DIMM slots using 32GB DIMMs</li> <li>2666MHz TruDDR4</li> </ul>
<b>Expansion slots</b>	<ul style="list-style-type: none"> <li>1 x 16-lane or 2x 8-lane PCIe 3.0 slots</li> <li>4-lane PCIe Gen3, x8 internal RAID slot</li> </ul>	<ul style="list-style-type: none"> <li>1x PCIe 3.0 x16 75W or 4x 22110 / 2280 M.2 PCIe</li> <li>1x PCIe network card expansion: <ul style="list-style-type: none"> <li>4x 1GbE RJ45 PCIe</li> <li>2x 10GBASE-T PCIe</li> <li>2x 10/25GbE SFP28 PCIe</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>x1 lane PCIe Gen3 in x1 slot</li> <li>x16 lane PCIe Gen 3 in x16 slot (for GPU)</li> <li>x4 PCIe Gen3 in x4 slot</li> <li>x4 PCIe Gen3 in x8 slot</li> </ul>
<b>Drive bays</b>	<ul style="list-style-type: none"> <li>4x 3.5" simple- or hot-swap SATA drives</li> <li>4x 2.5" simple-swap SATA/SAS drives</li> <li>10x 2.5" hot-swap SATA/ SAS/ SSD drives</li> <li>8x 2.5" hot swap SATA/SAS/ SSD drives + 2 x 2.5" NVMe drive</li> </ul>	<ul style="list-style-type: none"> <li>2x M.2 2280 SATA boot drives + 8x M.2 22110 NVMe data storage drives</li> <li>2x M.2 2280 SATA boot drives + 4x M.2 22110 NVMe/SATA data storage drives</li> </ul>	<ul style="list-style-type: none"> <li>Up to 8x 3.5" simple-swap and hot-swap SATA/SAS bays</li> <li>Up to 16x 2.5" hot-swap SATA/ SAS</li> <li>2x 5.25" media bay (for optical drive or tape)</li> <li>1x M.2 support</li> </ul>
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	ThinkSystem SR250	ThinkSystem SE350	ThinkSystem ST250
HBA/RAID support	<ul style="list-style-type: none"> <li>Software RAID supports simple swap and hot swap</li> <li>Multiple RAID configurations (common with ThinkSystem)</li> </ul>	<ul style="list-style-type: none"> <li>Software RAID available</li> <li>Hardware RAID 0/1 for M.2 SATA Boot SSDs</li> <li>Hardware RAID 0/1 for M.2 SATA Storage SSDs</li> </ul>	<ul style="list-style-type: none"> <li>Intel VROC Software RAID support</li> <li>Multiple hardware RAID configurations supported</li> </ul>
Network interface	<ul style="list-style-type: none"> <li>2x 1GbE ports embedded</li> <li>1x 1GbE dedicated management</li> </ul>	<ul style="list-style-type: none"> <li>2x10GbE (SFP+)</li> <li>2x 10/100MB/1GbE</li> <li>2x 1GbE management</li> <li>2x10GbE (SFP+)</li> <li>4x switch 10/100MB/1GbE</li> <li>2x 1GbE management</li> <li>Four wireless SMA connectors for LTE &amp; Wi-Fi</li> <li>Wi-Fi 64/128-bits encrypted WEP, WPA, WPA2, 802.11 a/b/g/n/ac</li> <li>3G/4G Cellular LTE 3GPP Release 12 450Mbps DL/50Mbps UL</li> <li>5G ready</li> </ul>	<ul style="list-style-type: none"> <li>2x 1GbE ports standard</li> <li>1x 1GbE dedicated management port</li> </ul>
Power	<ul style="list-style-type: none"> <li>Fixed power supply unit 300W Gold, dual redundant AC (450W, Platinum)</li> </ul>	<ul style="list-style-type: none"> <li>Dual-redundant external power supplies 100-240V AC</li> <li>Single DC supply: -48VDC (-40VDC to -75VDC)</li> </ul>	<ul style="list-style-type: none"> <li>Dual-redundant 80 PLUS power supply unit (PSU) 550W fixed PSU 250W</li> <li>Power efficiency up to Platinum</li> <li>Energy Star 2.1 compliant</li> </ul>
Systems management	<ul style="list-style-type: none"> <li>Lenovo XClarity, Administrator with mobile option, optional National Z TPM 2.0</li> </ul>	<ul style="list-style-type: none"> <li>Lenovo XClarity Administrator with mobile option</li> </ul>	<ul style="list-style-type: none"> <li>Lenovo XClarity Controller; TPM 1.2 embedded (optional to TPM 2.0)</li> </ul>
Operating systems supported	<ul style="list-style-type: none"> <li>Microsoft, Red Hat, SUSE, and VMware ESXi</li> </ul>	<ul style="list-style-type: none"> <li>Microsoft Windows Server, SLES, Ubuntu, RHEL, VMware ESXi</li> </ul>	<ul style="list-style-type: none"> <li>Microsoft, SUSE, Red Hat, VMware vSphere.</li> <li>Microsoft Windows Client OS – Win10 tested</li> </ul>
Limited warranty	<ul style="list-style-type: none"> <li>1-year or 3-year warranty</li> </ul>	<ul style="list-style-type: none"> <li>1-year, 3-year warranty extendable to 5-year</li> <li>Next business day 9x5</li> <li>Optional service upgrades</li> </ul>	<ul style="list-style-type: none"> <li>1- and 3-year customer replaceable unit and onsite service</li> <li>Next business day 9x5</li> <li>Optional service upgrades</li> </ul>

