



SPC BENCHMARK 1™

EXECUTIVE SUMMARY

LENOVO THINKSYSTEM DE6000H

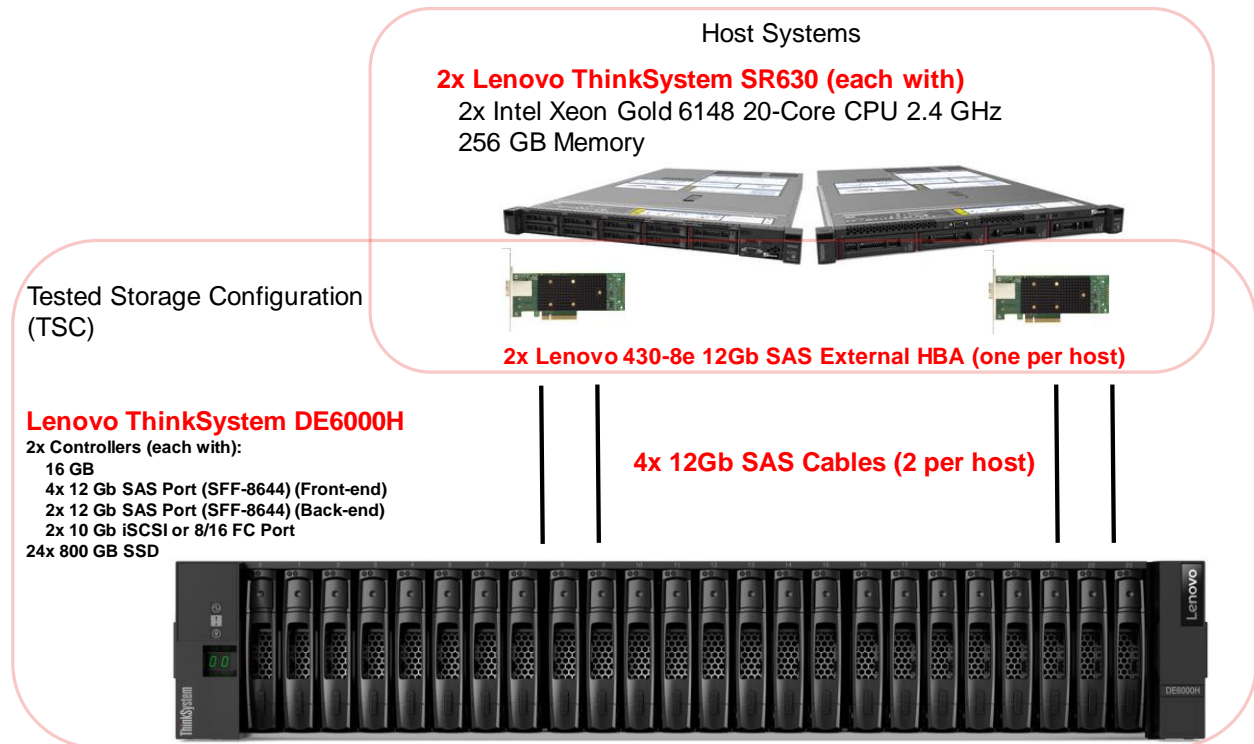
SPC-1 IOPS™	460,011
SPC-1 Price-Performance™	\$91.76/SPC-1 KIOPS™
SPC-1 IOPS™ Response Time	0.411 ms
SPC-1 Overall Response Time	0.252 ms
SPC-1 ASU Capacity	9,448 GB
SPC-1 Space Effectiveness Ratio	NA
SPC-1 ASU Price	\$4.47/GB
SPC-1 Total System Price	\$42,207.87
Data Protection Level	Protected 1 (RAID-10)
Physical Storage Capacity	19,200 GB
Pricing Currency / Target Country	U.S. Dollars / USA

SPC-1 V3.8

SUBMISSION IDENTIFIER: A32008

SUBMITTED FOR REVIEW: NOVEMBER 9, 2018

Benchmark Configuration Diagram



Tested Storage Product Description

Lenovo ThinkSystem DE6000H is a scalable, hybrid mid-range storage system that is designed to provide high performance, simplicity, capacity, security, and high availability for medium to large businesses. The ThinkSystem DE6000H delivers enterprise-class storage management capabilities in a performance-optimized system with a wide choice of host connectivity options, flexible drive configurations, and enhanced data management features. The ThinkSystem DE6000H is a perfect fit for a wide range of enterprise workloads, including big data and analytics, video surveillance, technical computing, backup and recovery, and other storage I/O-intensive applications.

ThinkSystem DE6000H models are available in a 2U rack form-factor with 24 small form-factor (2.5-inch SFF) drives (2U24 SFF) or a 4U rack form-factor with 60 LFF drives (4U60 LFF) and include two controllers, each with 16 GB cache for a system total of 32 GB. Universal 10 Gb iSCSI or 8/16 Gb Fibre Channel (FC) ports provide base host connectivity, and the host interface cards provide additional 12 Gb SAS, 10/25 Gb iSCSI, or 8/16/32 Gb FC connections.

The ThinkSystem DE6000H Storage Array scales up to 240 drives with the attachment of Lenovo ThinkSystem DE240S 2U24 SFF and DE600S 4U60 LFF Expansion Enclosures. It also offers flexible drive configurations with the choice of 2.5-inch (SFF) and 3.5-inch (LFF) form factors, 10 K rpm SAS and 7.2 K rpm NL SAS hard disk drives (HDDs), and SAS solid-state drives (SSDs).

For more details, visit:

<https://www.lenovo.com/us/en/data-center/storage/storage-area-network/thinksystem-de-series/c/thinksystem-de-series>

Priced Storage Configuration Components

2 x ThinkSystem 430-8E SAS HBA
1 x ThinkSystem DE6000H, with:
2 x Storage Controllers, each with:
16 GB cache
2 x 12 Gb Front End Ports
2 x 12 Gb Back End Connections (not used in this test)
24 x 800 GB SAS SSD

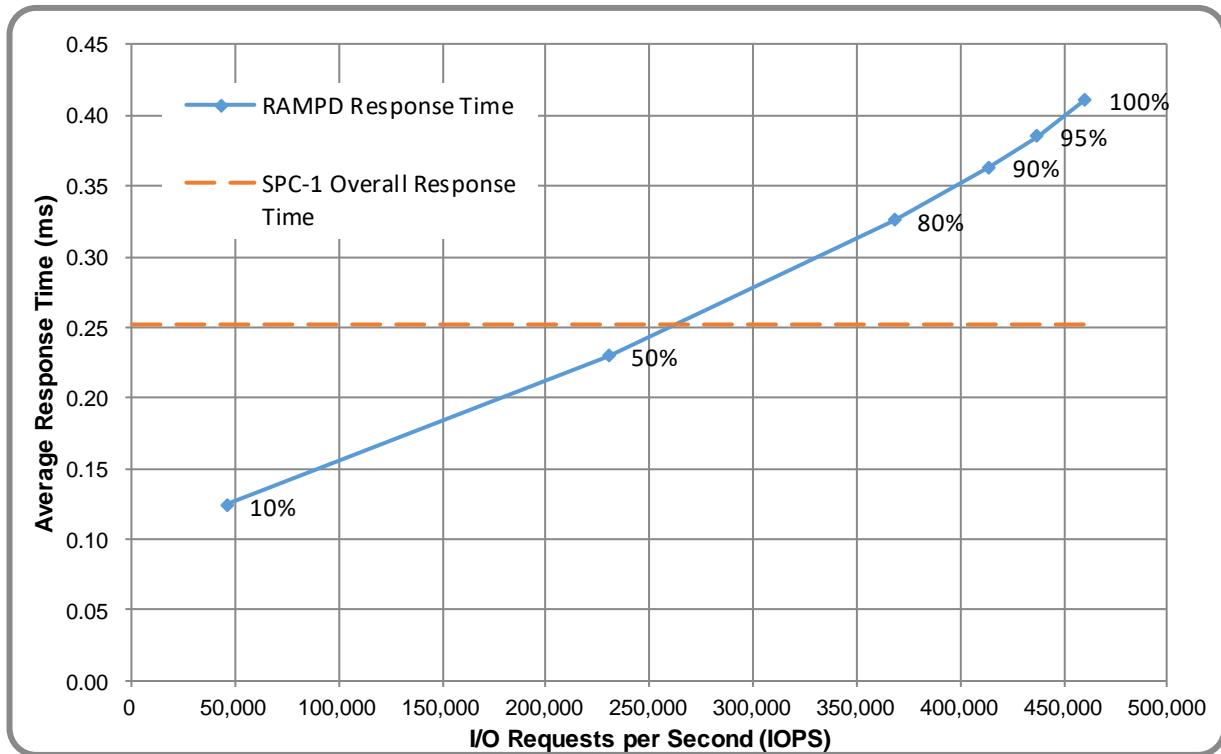
Storage Configuration Pricing

Part No.	Description	Source	Qty	Unit Price	Ext. Price	Disc.	Disc. Price
Hardware & Software							
7Y78A000WW	Lenovo ThinkSystem DE6000H SAS Hybrid Flash Array SFF	1	1	24,999.00	24,999.00	47%	13,249.47
4XB7A14105	Lenovo ThinkSystem DE Series 800GB 3DWD 2.5" SSD 2U24	1	24	2,499.00	59,976.00	55%	26,989.20
00YL847	0.5m External MiniSAS HD 8644/MiniSAS HD 8644 Cable	1	4	49.00	196.00	50%	98.00
7Y37A01090	ThinkSystem 430-8E SAS HBA	1	2	499.00	998.00	45%	548.90
Hardware & Software Subtotal							40,885.57
Support & Maintenance							
5PS7A21772	Essential Service - 3Yr 24x7 4Hr Response + YourDrive YourData	1	1	1,889.00	1,889.00	30%	1,322.30
Support & Maintenance Subtotal							1,322.30
SPC-1 Total System Price							42,207.87
SPC-1 IOPS™							460,011
SPC-1 Price-Performance™ (\$/SPC-1 KIOPS™)							91.76
SPC-1 ASU Capacity (GB)							9,448
SPC-1 ASU Price (\$/GB)							4.47

Discount Details: The discounts shown are based on the storage capacity purchased and are generally available.

Availability Date: November 9, 2018.

Response Time and Throughput Graph



Contact Information	
Test Sponsor Primary Contact	Lenovo – www.lenovo.com Vincent Kao – vkao@lenovo.com
SPC Auditor	InfoSizing – www.sizing.com Doug Johnson – doug@sizing.com

Revision Information	
SPC Benchmark 1™ Revision	V3.8
SPC-1 Workload Generator Revision	v3.0.2-1-g823a
Publication Revision History	Initial Publication