



SPC BENCHMARK 1™

EXECUTIVE SUMMARY

FUJITSU LIMITED ETERNUS DX8900 S4

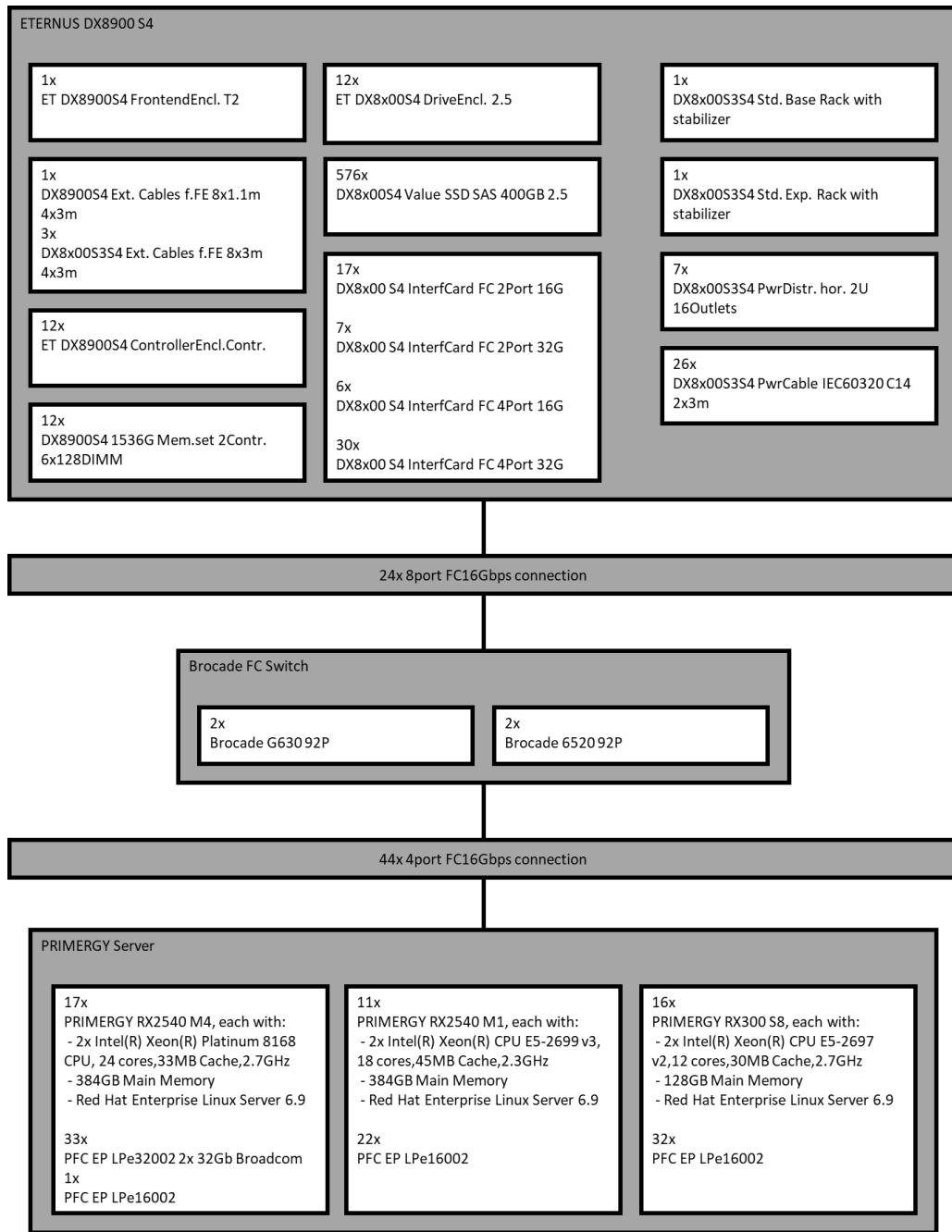
SPC-1 IOPS™	10,001,522
SPC-1 Price-Performance™	\$644.16/SPC-1 KIOPS™
SPC-1 IOPS™ Response Time	0.418 ms
SPC-1 Overall Response Time	0.249 ms
SPC-1 ASU Capacity	90,452 GB
SPC-1 Space Effectiveness Ratio	NA
SPC-1 ASU Price	\$71.23/GB
SPC-1 Total System Price	\$6,442,522.88
Data Protection Level	Protected 2 (RAID1)
Physical Storage Capacity	230,400 GB
Pricing Currency / Target Country	U.S. Dollars / USA

SPC-1 V3.8

SUBMISSION IDENTIFIER: A32009

SUBMITTED FOR REVIEW: MARCH 23, 2019

Benchmark Configuration Diagram



Tested Storage Product Description

FUJITSU Storage ETERNUS DX8900 S4 is the perfect platform to consolidate storage in data centers by providing leading performance headroom, business continuity and automated operation capabilities. It facilitates the transition to full flash-configurations and allows the efficient management of flexible data service levels in terms of capacity, speed and costs.

For more details, visit:

<http://www.fujitsu.com/global/products/computing/storage/disk/eternus-dx/dx8900/>

Priced Storage Configuration Components

<p>2x Emulex LPe16002 dual port 16Gb Fiber Channel HBAs per Host System (used in PRIMERGY RX2540 M1, PRIMERGY RX300 S8)</p> <p>2x Emulex LPe32002 dual port 32Gb Fiber Channel HBAs per Host System (used in 16 of the PRIMERGY RX2540 M4)</p> <p>1x Emulex LPe16002 dual port 16Gb Fiber Channel HBA</p> <p>1x Emulex LPe32002 dual port 32Gb Fiber Channel HBA (used in 1 of the PRIMERGY RX2540 M4)</p> <p>All LPe16002s and LPe32002s were connected at a link speed of 16Gbps (176 ports total)</p>
<p>1x DS8900 S4, with:</p> <p> 12x Controller Module Enclosures– 2.5” – 2RU, each with:</p> <p> 24x 400GB SSD Storage Devices</p> <p> 2x Control Modules (CM), each with:</p> <p> 768 GB cache (1,536 GB total)</p> <p> 2x Channel Adapters (CA) with 4x 16Gbps or 32Gbps host ports</p> <p> Or</p> <p> 4x Channel Adapters (CA) with 2x 16Gbps or 32Gbps host ports</p> <p> All CMs have 8 ports linked at 16 Gbps (192 ports total)</p> <p> 12x Drive Enclosures, each with:</p> <p> 24x 400GB SSD Storage Devices</p> <p>(576 SSDs total)</p>
<p>2x Brocade G630 Fiber Channel Switches, each with:</p> <p> 96 FC ports of which 92 ports are populated with 16Gbps SFP</p> <p>2x Brocade 6520 Fiber Channel Switches, each with:</p> <p> 96 FC ports of which 92 ports are populated with 16Gbps SFP</p> <p>(368 16Gbps ports total)</p>

Storage Configuration Pricing

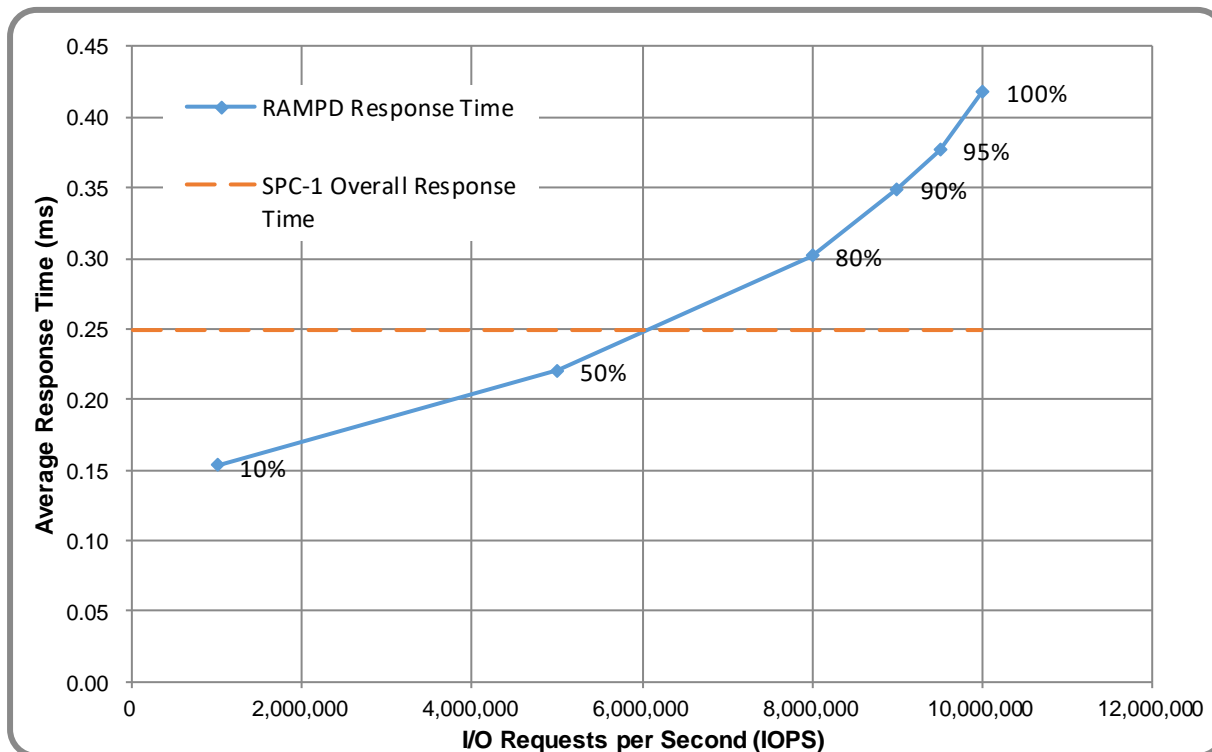
Part No.	Description	Source	Qty	Unit Price	Ext. Price	Disc.	Disc. Price
Hardware & Software							
ET8945BU	ET DX8900S4 FrontendEncl. T2	1	1	169,850.00	169,850.00	75%	42,462.50
ETTCAU	ET DX8900S4 ControllerEncl. Contr. x2	1	12	196,800.00	2,361,600.00	75%	590,400.00
ETTEADU	ET DX8x00S4 DriveEncl. 2.5 x1	1	12	9,320.00	111,840.00	75%	27,960.00
ETSKC30U	DX8x00S3S4 PwrCable IEC60320 C14 2x3m	1	26	300.00	7,800.00	75%	1,950.00
ETTHFCA	DX8x00 S4 InterfCard FC 2Port 16G x1	1	17	5,430.00	92,310.00	75%	23,077.50
ETTHFDA	DX8x00 S4 InterfCard FC 2Port 32G x1	1	7	14,150.00	99,050.00	75%	24,762.50
ETTHFCB	DX8x00 S4 InterfCard FC 4Port 16G x1	1	6	10,790.00	64,740.00	75%	16,185.00
ETTHFDB	DX8x00 S4 InterfCard FC 4Port 32G x1	1	30	28,190.00	845,700.00	75%	211,425.00
ETTMB15	DX8900S4 1536G Mem.set 2Contr. 6x128DIM	1	12	538,320.00	6,459,840.00	75%	1,614,960.00
ET TSA4N	DX8x00S4 Value SSD SAS 400GB 2.5 x1	1	576	15,860.00	9,135,360.00	75%	2,283,840.00
ETSRASU	DX8x00S3S4 Std. Base Rack with stabi.	1	1	25,840.00	25,840.00	75%	6,460.00
ETSRBSU	DX8x00S3S4 Std. Exp. Rack with stabi.	1	1	15,040.00	15,040.00	75%	3,760.00
ETSPDJU	DX8x00S3S4 PwrDistr. hor. 2U 16Outlets	1	7	5,080.00	35,560.00	75%	8,890.00
ETTKA11	DX8900S4 Ext. Cables f.FE 8x1.1m 4x3m	1	1	5,780.00	5,780.00	75%	1,445.00
ETSKA30	DX8x00S3S4 Ext. Cables f.FE 8x3m 4x3m	1	3	6,020.00	18,060.00	75%	4,515.00
ETSKA1X	DX8x00S3S4Ext. Cables f.FE 8x10m 4x10m	1	8	27,600.00	220,800.00	75%	55,200.00
BR-G630-48-R-M	Brocade G630, 48x PoD, w/o SFP+ modules	1	2	125,157.54	250,315.08	72%	70,088.23
XBR-MENT24PTPOD-	S/W, POD license, 24-port, 24 x 32G SWL SFP+	1	4	56,190.38	224,761.54	72%	62,933.24
BR-6520-48-16G-R-M	Brocade 6520, 48x PoD, with 48x SFP+ modules	1	2	106,154.00	212,308.00	72%	59,446.24
XBR-ENTPOD-16G	24 Port on Demand for 6520, with 24x SFP+ modules	1	4	43,142.31	172,569.23	72%	48,319.39
XBR-000193	16Gb/s SFP+ modules, 8-pack for G630	1	24	7,885.00	189,240.00	72%	52,987.20
CBL-MLLC10	FC cable MMF 10 m, Connector LC-LC, OM2	1	368	120.00	44,160.00	76%	10,598.40
S26361-F4044-L502	PFC EP LPe32002 2x 32Gb Broadcom	1	33	4,895.00	161,535.00	76%	38,768.40
S26361-F4994-L502	PFC EP LPe16002	1	55	2,815.00	154,825.00	76%	37,158.00
Hardware & Software Subtotal							5,297,591.60
Support & Maintenance							
ET8900-W004360-AAN	ETERNUS DX8900 S4 Warranty Uplift, 36 Months, Enhanced Plus Level, 24x7 4hr Onsite, Prepaid billing	1	1	3,535,477.59	3,535,477.59	70%	1,060,643.28
G630-SVS-P4OS-3	PREMIER 4HR ONSITE SUPPORT, G630 Switch	1	2	25,286.00	50,572.00	0%	50,572.00
6520-SVS-P4OS-3	PREMIER 4HR ONSITE SUPPORT, BR-6520-48-16G, BR-6520-96-16, BR-6520-48-8G	1	2	16,858.00	33,716.00	0%	33,716.00
Support & Maintenance Subtotal							1,144,931.28
SPC-1 Total System Price							6,442,522.88
SPC-1 IOPS™							10,001,522
SPC-1 Price-Performance™ (\$/SPC-1 KIOPS™)							644.16
SPC-1 ASU Capacity (GB)							90,452
SPC-1 ASU Price (\$/GB)							71.23

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

Warranty: The 3-year maintenance and support included in the above pricing meets or exceeds a 24x7 coverage with a 4-hour response time.

Availability Date: Currently available.

Response Time and Throughput Graph



Contact Information	
Test Sponsor Primary Contact	Fujitsu Limited – http://www.fujitsu.com/services/computing/storage/ Kun Katsumata – kkatsumata@us.fujitsu.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