SPECsfs97 Result

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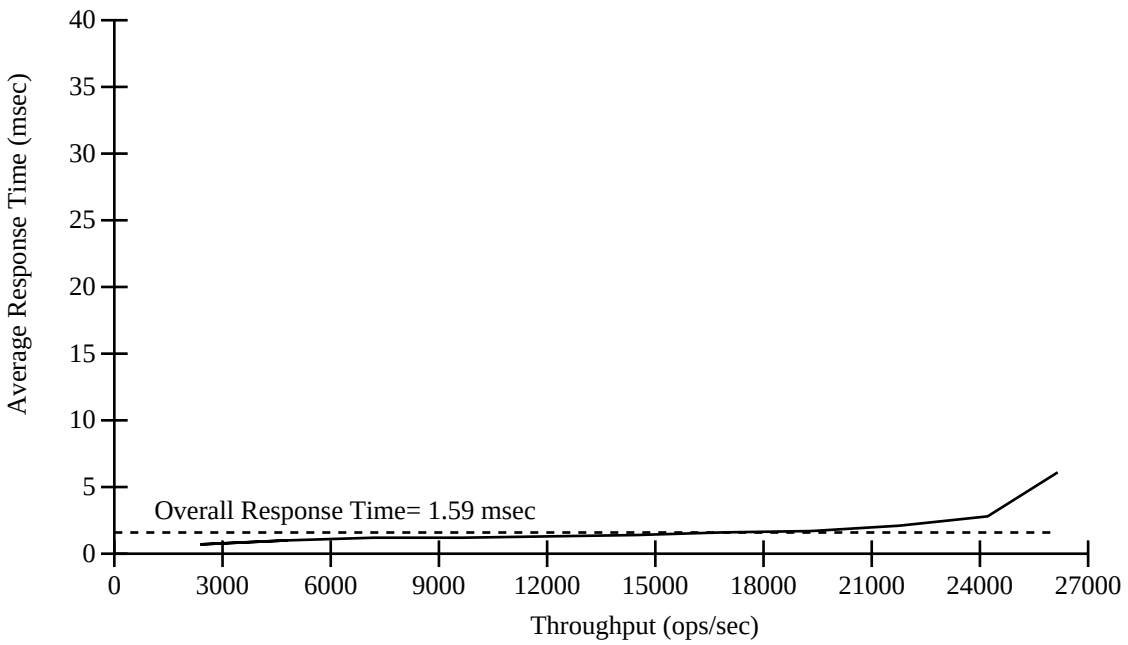
EMC Corp.
Celerra 514x1+1 Failover Cluster / Symmetrix DMX1000-P

SPECsfs97_R1.v3 =
26156 Ops/Sec (Overall Response Time = 1.59 msec)

Tested: November 2003	By: EMC Corp.	License #: 47	Hardware Avail: November 2003	Software Avail: November 2003

Throughput (ops/sec)	Average Response (msec)
2385	0.7
4805	1.0
7193	1.2
9650	1.2
12041	1.3
14472	1.4
16907	1.6
19330	1.7
21759	2.1
24213	2.8
26156	**6.1**



CPU, Memory and Power

Model Name:	Celerra 514x1+1 Failover Cluster / Symmetrix DMX1000-P
Processor:	1.6 GHz Pentium 4
# of Processors:	2
Primary Cache:	16KBI+16KBD on chip
Secondary Cache:	512KB(I+D) on chip
Other Cache:	N/A
UPS:	N/A
Other Hardware:	N/A
Memory Size:	4 GB
NVRAM Size:	N/A
NVRAM Type:	N/A
NVRAM Description:	N/A

Server Software

OS Name and Version:	Dart 5.1.20.99
Other Software:	Redhat Linux 7.2 on Control Station
File System:	fs1
NFS version:	3

Network Subsystem

Network Type:	Jumbo Gigabit Ethernet
Network Controller Desc.:	Intel 4-port card
Number Networks:	1
Number Network Controllers:	2
Protocol Type:	TCP
Switch Type:	Cisco 6509 Gbit Switch
Bridge Type:	N/A
Hub Type:	N/A
Other Network Hardware:	N/A

Server Tuning

Buffer Cache Size:	Dynamic
# NFS Processes:	4
Fileset Size:	253.1 GB

Disk Subsystem

Number Disk Controllers:	1 (2 ports)
Number of Disks:	68
Number of Filesystems:	1
File System Creation Ops:	N/A
File System Config:	Striped across 66 disk LUNs with 32K stripe unit
Disk Controller:	Emulex LP9000DC Fibre Channel
# of Controller Type:	1
Number of Disks:	68
Disk Type:	Seagate Cheetah 146GB 10K RPM
File Systems on Disks:	OS and UxFS log (2) Filesystem fs1 (66)
Special Config Notes:	32GB memory on Symmetrix DMX1000-P

For More Information contact
SPEC
info@spec.org
http://www.spec.org/

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Load Generator (LG) Configuration

Number of Load Generators:	6
Number of Processes per LG:	24
Biod Max Read Setting:	5
Biod Max Write Setting:	5

LG Type:	LG1
LG Model:	Sun Sparc 220R
Number and Type Processors:	2 x 450 MHz Sparc
Memory Size:	512 MB
Operating System:	Solaris 2.8
Compiler:	Sun Forte 6.2
Compiler Options:	None
Network Type:	Intraserver Gbe

LG Type:	LG3
LG Model:	Sun Sparc 220R
Number and Type Processors:	2 x 360 MHz Sparc
Memory Size:	512 MB
Operating System:	Solaris 2.8
Compiler:	Sun Forte 6.2
Compiler Options:	None
Network Type:	Intraserver Gbe

LG Type:	LG2
LG Model:	Sun Sparc 420R
Number and Type Processors:	2 x 450 MHz Sparc
Memory Size:	1 GB
Operating System:	Solaris 2.8
Compiler:	Sun Forte 6.2
Compiler Options:	None
Network Type:	Intraserver Gbe

Testbed Configuration

LG #	LG Type	Network	Target File Systems	Notes
1	LG1	1	/fs1../fs1	N/A
2..5	LG2	1	/fs1../fs1	N/A
6	LG3	1	/fs1../fs1	N/A

Notes/Tuning Information

Other Notes
-Failover is supported by an additional Celerra 514 Data Mover that operates in
-standby mode. In the event of a Data Mover failure, this unit takes over the
-function of the failed unit. The standby Data Mover does not contribute to
-the performance of the system and is not included in the processor, memory,
-or other components listed above.
-
-Server tuning:
-param ufs inoBlkHashSize=170669 (inode block hash size)
-param ufs inoHashTableSize=1218761 (inode hash table size)
-param ufs updateAccTime=0 (disable access-time updates)
-param nfs withoutCollector=1 (enable NFS-to-CPU thread affinity)
-param file prefetch=0 (disable Dart read prefetch)
-file initialize nodes=980000 dnlc=1056000 (Number of inodes, number of) (-dynamic name lookup cache entries)
-nfs start openfiles=722462 nfsd=4 (no. of open files and 4 NFS daemons)
-param kernel outerLoop=8 (8 consecutive iterations of network packets) (processing)
-param kernel maxStrToBeProc=16 (no. of network streams to process at once)
-ians cge0 packetburst=16 (maximum no. of packets to be processed at once)
-ians cge1 packetburst=16 (maximum no. of packets to be processed at once)
-
-Storage array notes:
-The DMX1000-P used for storage exposes LUNs across multiple Fibre ports.
-Each LUN is 11499MB in size and resides on a single disk. Four of the
-fibre ports are connected to the Fibre switch and zoned along with the two
-ports on the node. The filesystem is built on a stripe that spans across
-the filesystem LUNs.
-DMX1000-P was configured with 32GB memory. The memory is backed up with
-sufficient battery power to safely destage all cached data onto the disk
-in the event of a power failure.
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-Client tuning:
-ndd -set /dev/tcp tcp_recv_hiwat 65536
-ndd -set /dev/tcp tcp_xmit_hiwat 65536
-ndd -set /dev/tcp tcp_cwnd_max 2097152
-ndd -set /dev/tcp tcp_max_buf 4194304