SPEC SFS 1 Summary (Side 1 of 2) 097.LADDIS

Auspex Systems, Inc.

NS 7000 NetServer 700

Server Hardware

CPU, Memory, & Power

Model No.	NS 7000 Model 700
CPU	100MHz Dual CPU HyperSPARC
# of CPUs	5
Primary Cache	n/a
Secondary Cache	n/a
Other Cache	1280MB
Memory	5 2MB NVRAM Write Accelerators
UPS	None
Other hardware	None

Server Software

OS Version	1.8.1
Other software	None
File system	Auspex LFS (BSD FFS)

Load Generators (LGs)

Number of Load Generators:	20
Processes Per Load Generator:	5
Biod_Max_Reads:	2
Biod_Max_Writes:	2

Disk Subsystem & Filesystems

(Full Configuration on Side 2)

Num Disk Controllers	5 Storage Processors (SP)
Num Disks	102
Num File Systems	20 (F1 - F20)

Network Subsystem

(Full Configuration On Side 2)

Num Net Controllers	5 Network Processors (NP)
Num Networks	5 (N1 - N5)
Type Network	FDDI

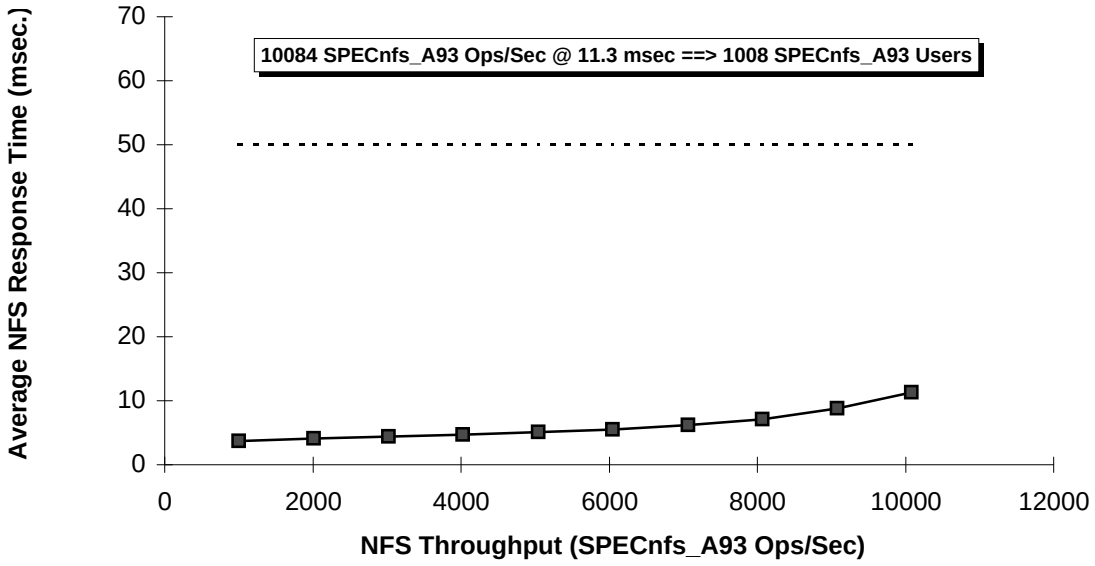
Server Tuning

(Also see Notes/Tuning below)

Buffer Cache Size	900MB (Data Cache)
Num NFS Daemons	240
Fileset Size	54.4GB

NFS Throughput SPECnfs_A93 Ops/Sec	Avg. Response Time (NFS) Milliseconds
998	3.7
2017	4.1
3025	4.4
4027	4.7
5042	5.1
6051	5.5
7063	6.2
8072	7.1
9083	8.8
10084	11.3

Hardware Availability:	Jul-96		**Software Availability:**	Jul-96	
License #:	29	**Tested:** Apr-96	**By:** Auspex	**Of:**	Santa Clara, CA



Notes/Summary Of Tuning Parameters: (Continued on Side 2 of 2)

The adb tool was used to enable UDP checksumming on all load generators

```
adb -w /vmunix /dev/kmem
udp_cksum?W1
udp_cksum/W1
```

The Auspex NetServer responds to checksummed requests with checksummed replies, by default.

The LADDIS Prime-Client was the Server's Host Processor (no router was needed).

The filesystems were mounted across the 5 NP's in a round-robin fashion (eg. F1 on NP0, F2 on NP1 etc.)

Network Processors: NP0,NP1,NP2,NP3,NP4; Storage Processors: SP0,SP1,SP2,SP3,SP4

SPEC SFS 1 Summary (Side 2 of 2) 097.LADDIS

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Detailed Server Description

Network Subsystem

Network Processor (Model NP-IV):
- Dual HyperSPARC (100MHz), 256MB
- One processor does Protocol processing, and the other processor does Filesystem processing
- 4MB Static RAM
- 1 FDDI (Cisco MLT-3) Adapter

Number of NP-IV processors: 5

Disk Subsystem & Filesystems

Storage Processor (Model SP-V):
- M68030 (50MHz), 1MB local memory
- 2MB NVRAM Write Accelerator
- 5 SCSI Channels
- 20 data disks (4.29GB Seagate "Barracuda") configured
- 4 Virtual Partitions: Each Virtual Partition stripes across 5 disks (unit=128KB) on 5 different channels
- 4 Filesystems (1 Virtual Partition each)

Number of SP-V processors: 5

SP0: Disks: 2 - 21; Filesystems: 1, 2, 3, 4
SP1: Disks: 22 - 41; Filesystems: 5, 6, 7, 8
SP2: Disks: 42 - 61; Filesystems: 9, 10, 11, 12
SP3: Disks: 62 - 81; Filesystems: 13, 14, 15, 16
SP4: Disks: 82 -101; Filesystems: 17, 18, 19, 20
SP0 also supported Disk0 (OS, Swap space) and Disk1 (LADDIS files).

Detailed Load Generator (LG) Description

Load Gen. Type	*Model*	*# of CPUs*	*RAM*	*OS*	*Compiler*
LG1	Sun SPARCstation 20 (Model 71)	1	64MB	SunOS 4.1.3	/bin/cc

Testbed Configuration

Load Gen. #	*Load Gen. Type*	*Network*	*Target File Systems*	*Notes*
1	LG1	N1	F1, F5, F9, F13, F17	
2	LG1	N1	F2, F6, F10, F14, F18	
3	LG1	N1	F3, F7, F11, F15, F19	
4	LG1	N1	F4, F8, F12, F16, F20	
5	LG1	N2	F1, F5, F9, F13, F17	
6	LG1	N2	F2, F6, F10, F14, F18	
7	LG1	N2	F3, F7, F11, F15, F19	
8	LG1	N2	F4, F8, F12, F16, F20	
9	LG1	N3	F1, F5, F9, F13, F17	
10	LG1	N3	F2, F6, F10, F14, F18	
11	LG1	N3	F3, F7, F11, F15, F19	
12	LG1	N3	F4, F8, F12, F16, F20	
13	LG1	N4	F1, F5, F9, F13, F17	
14	LG1	N4	F2, F6, F10, F14, F18	
15	LG1	N4	F3, F7, F11, F15, F19	
16	LG1	N4	F4, F8, F12, F16, F20	
17	LG1	N5	F1, F5, F9, F13, F17	
18	LG1	N5	F2, F6, F10, F14, F18	
19	LG1	N5	F3, F7, F11, F15, F19	
20	LG1	N5	F4, F8, F12, F16, F20	

Notes/Summary Of Tuning Parameters: (Continued from Side 1 of 2)

All load generators used the same LADDIS mount points list with the same /etc/fstab entries.
Each load generator mounted filesystems from 5 different NPs and 5 different SPs.
On all the load generators, udp_sendspace = 32768 and udp_recvspace = 32768.