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

## EMC Corporation

## Symmetrix Network Storage Director

### Server Hardware

***CPU, Memory, & Power***

| | |
|---|---|
| Model No. | SNFS |
| CPU | 1 - 166MHz Intel Pentium |
| # of CPUs | 14 (Server CPUs - Clustered) |
| Primary Cache | 8KBI+8KBD on chip |
| Secondary Cache | 256KB (I+D) off chip |
| Other Cache | None |
| Memory | 128MB |
| UPS | None |
| Other hardware | 1 Control Station (host Processor) |

***Server Software***

| | |
|---|---|
| OS Version | DARTv1.0.35 Data Access Real Time |
| Other software | UnixWare v2.1 on Control Station |
| File system | UxFS (based on BSD FFS) |

***Load Generators (LGs)***

| | |
|---|---|
| Number of Load Generators: | 28 |
| Processes Per Load Generator: | 28 |
| Biod_Max_Reads: | 2 |
| Biod_Max_Writes: | 2 |

***Disk Subsystem & Filesystems***

(Full Configuration on Side 2)

| | |
|---|---|
| Num Disk Controllers | 8 (C1-C8) |
| Num Disks | 114 |
| Num File Systems | 112 (F1-F112) |

***Network Subsystem***

(Full Configuration On Side 2)

| | |
|---|---|
| Num Net Controllers | 14 (1 per Server CPU) |
| Num Networks | 1 (GIGAswitchFDDI 14 ports) |
| Type Network | FDDI |

***Server Tuning***

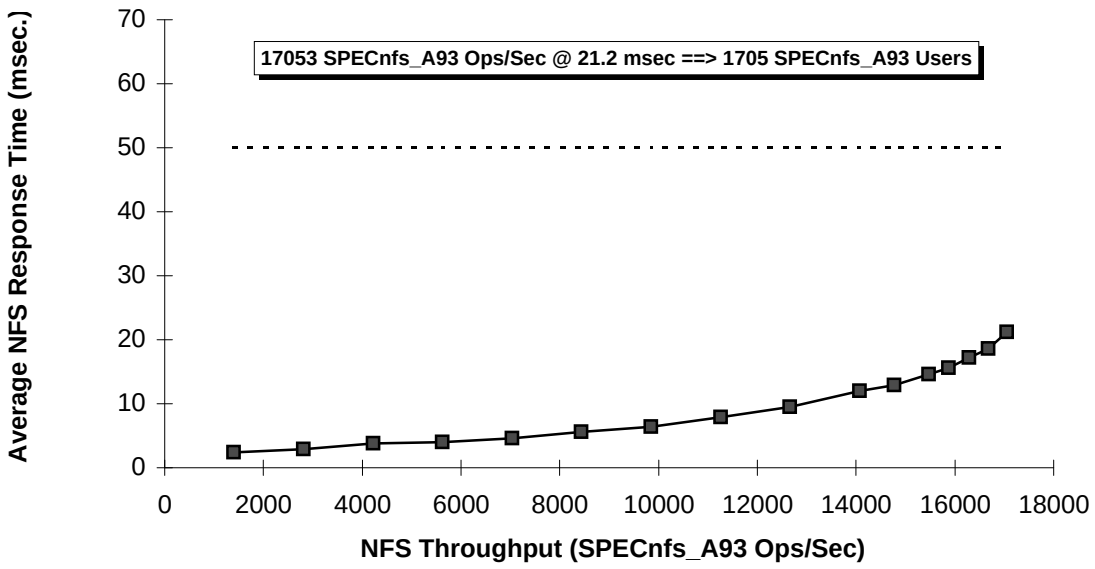
(Also see Notes/Tuning below)

| | |
|---|---|
| Buffer Cache Size | 1.1GB (76.8MB per Server CPU) |
| Num NFS Daemons | 1344 (96 per Server CPU) |
| Fileset Size | 99.8GB |

| NFS Throughput SPECnfs_A93 Ops/Sec | Avg. Response Time (NFS) Milliseconds |
|---|---|
| 1394 | 2.4 |
| 2815 | 2.9 |
| 4220 | 3.8 |
| 5629 | 4.0 |
| 7036 | 4.6 |
| 8437 | 5.6 |
| 9845 | 6.4 |
| 11259 | 7.9 |
| 12661 | 9.5 |
| 14075 | 12.0 |
| 14775 | 12.9 |
| 15473 | 14.6 |
| 15879 | 15.6 |
| 16287 | 17.2 |
| 16676 | 18.6 |
| 17053 | 21.2 |

**Hardware Availability:** Apr-97 **Software Availability:** Apr-97

**License #:** 47 **Tested:** Jun-97 **By:** EMC Corp. **Of:** Hopkinton, MA




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

Each Server CPU has two FWD SCSI controllers Adaptec 2940, one to each Symmetrix ICDA Storage System

Each Server CPU exports eight filesystems, four from each Symmetrix Storage System.

Each LG mounts two filesystems per Server CPU (one from each Symmetrix) total of 28 mounted filesystems.

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## EMC Corporation
## Symmetrix Network Storage Director

### Detailed Server Description

***Network Subsystem***

1 FDDI adapter per Server CPU
1 FDDI adapter per LG
6 Synoptics FDDI Concentrators (Model 2914)
8 Digital Equipment Co. FDDI Concentrators (900MX)
1 DEC GIGAswitchFDDI system (DEFGA-BA)
with 4 4-port FDDI line cards (DEFGL-BA)
(used 14 ports from the GIGAswitch system)
Each GIGAswitch FDDI port connects to a concentrator,
from the concentrator there are three connections -
a Server CPU, and two LG's

***Disk Subsystem & Filesystems***

Disk Storage System 1: Symmetrix 3430-9096 (Model 3430)
Using 58 9GB 3.5" drives (Model 3030-92)
Controllers C1-C4: 4 port F/W/D SCSI controller (Model DP-WSD4)
Storage Cache: 4GB cache memory (Model MEM4096)
C1: F1,F3,F5,F29,F31,F33,F57,F59,F61,F85,F87,F89
C2: F7,F9,F11,F13,F35,F37,F39,F41,F63,F65,F67,F69,F91,F93,F95,F97
C3: F15,F17,F19,F21,F43,F45,F47,F49,F71,F73,F75,F77,F99,F101,F103,F105
C4: F23,F25,F27,F51,F53,F55,F79,F81,F83,F107,F109,F101
Disk Storage System 2: Symmetrix 3430-9096 (Model 3430)
Using 56 9GB 3.5" drives (Model 3030-92)
Controllers C5-C8: 4 port F/W/D SCSI controller (Model DP-WSD4)
Storage Cache: 4GB cache memory (Model MEM4096)
C5: F2,F4,F6,F30,F32,F34,F58,F60,F62,F86,F88,F90
C6: F8,F10,F12,F14,F36,F38,F40,F42,F64,F66,F68,F70,F92,F94,F96,F98
C7: F16,F18,F20,F22,F44,F46,F48,F50,F72,F74,F76,F78,F100,F102,F104,F106
C8: F24,F26,F28,F52,F54,F56,F80,F82,F84,F108,F110,F112

### Detailed Load Generator (LG) Description

| *Load Gen. Type* | *Model* | *# of CPUs* | *RAM* | *OS* | *Compiler* |
|---|---|---|---|---|---|
| LG1 | Sparc 20 | 1 | 64MB | Solaris 5.5 | SUN |
| LG2 | Sparc 20 | 1 | 64MB | SUNOS 4.1.4 | SUN |
| LG3 | Sparc 20 | 1 | 64MB | SUNOS 4.1.3_U1 | SUN |
| LG4 | AlphaStation 250 | 1 | 64MB | DigitalUNIX 3.2D-1 | DEC |
| LG5 | Sparc 20 | 1 | 64MB | Solaris 5.5.1 | SUN |
| LG6 | AlphaStation 3000-600 | 1 | 64MB | DEC OSF/1 v3.1 | DEC |

### Testbed Configuration

| *Load Gen. #* | *Load Gen. Type* | *Network* | *Target File Systems* | *Notes* |
|---|---|---|---|---|
| 1&2 | LG1 | Port 1 | F1-F28 | Default |
| 3&4 | LG1 | Port 2 | F1-F28 | Default |
| 5&6 | LG1 | Port 3 | F1-F28 | Default |
| 7 | LG1 | Port 4 | F1-F28 | Default |
| 8 | LG1 | Port 4 | F29-F56 | Default |
| 9&10 | LG1 | Port 5 | F29-F56 | Default |
| 11&12 | LG1 | Port 6 | F29-F56 | Default |
| 13&14 | LG1 | Port 7 | F29-F56 | Default |
| 15&16 | LG1 | Port 8 | F57-F84 | Default |
| 17&18 | LG1 | Port 9 | F57-F84 | Default |
| 19&20 | LG2 | Port 10 | F57-F84 | Default |
| 21 | LG3 | Port 11 | F57-F84 | Default |
| 22 | LG3 | Port 11 | F85-F112 | Default |
| 23&24 | LG4 | Port 12 | F85-F112 | Default |
| 25&26 | LG5 | Port 13 | F85-F112 | Default |
| 27&28 | LG6 | Port 14 | F85-F112 | Default |

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