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

Digital Equipment Corporation
AdvantageCluster File Server

Server Hardware

CPU, Memory, & Power

Model No.	AdvantageCluster File Serve
CPU	350 MHz 21164
# of CPUs	16
Primary Cache	8KBI+8KBD on chip
Secondary Cache	96KB(I+D) on chip
Other Cache	4MB(I+D) off chip
Memory	2GB
UPS	None
Other hardware	FDDI

Server Software

OS Version	Digital UNIX V3.2E
Other software	OSF patch # OSF32_60
File system	UFS

Load Generators (LGs)

Number of Load Generators:	24
Processes Per Load Generator:	15
Biod_Max_Reads:	64
Biod_Max_Writes:	64

Disk Subsystem & Filesystems

(Full Configuration on Side 2)

Num Disk Controllers	28 (7 per node)
Num Disks	364
Num File Systems	360 (F1 thru F360)

Network Subsystem

(Full Configuration On Side 2)

Num Net Controllers	8 (2 per node)
Num Networks	2 (N1 thru N2)
Type Network	FDDI

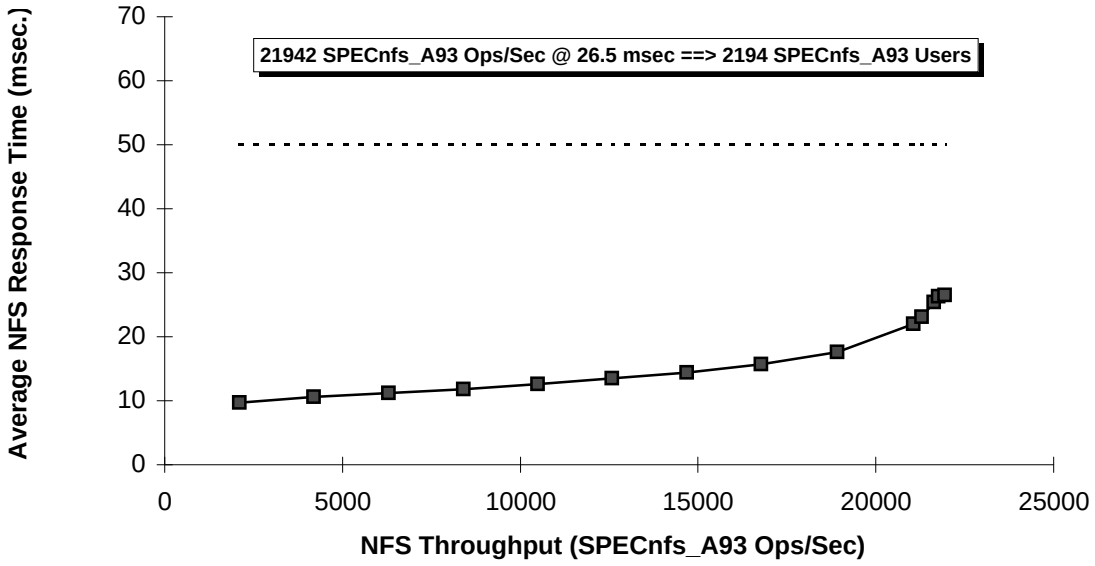
Server Tuning

(Also see Notes/Tuning below)

Buffer Cache Size	Dynamic (UBC Cache)
Num NFS Daemons	128
Fileset Size	117GB

NFS Throughput SPECnfs_A93 Ops/Sec	Avg. Response Time (NFS) Milliseconds
2100	9.7
4199	10.6
6307	11.2
8397	11.8
10486	12.6
12587	13.5
14679	14.4
16783	15.7
18919	17.6
21053	22.0
21286	23.1
21638	25.4
21767	26.3
21942	26.5

Hardware Availability:	Mar-96			**Software Availability:**	Apr-96		
License #:	2	**Tested:**	May-96	**By:**	Digital	**Of:**	Nashua, NH



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

bufcache: 15% (300 MB per node)
ubcbuffers: 1024
maxusers: 3096
ubc-maxdirtywrites: 100
vnode_age: 600
vnode_dealloc_enable: 0
ufs_disable_reada: 1
lad_sync: 1

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

Digital Equipment Corporation
AdvantageCluster File Server

Detailed Server Description

Network Subsystem

8 DEC FDDI Controllers (DEFPA) (2 per node)
networks per node:
1 FDDI (N1): 2 LGs
1 FDDI (N2): 2 LGs
4 DECconcentrator 500s (DEFCN-BC)
(3 clients per concentrator)
4 DEChub900 each with
1 DECconcentrator (DEFHU-MU)
(3 clients per concentrator)
1 Gigaswitch (DEFGA-BA) with
4 2-Port FDDI line Cards (DEFGL-AA)
2 4-Port FDDI line Cards (DEFGL-BA)

Disk Subsystem & Filesystems

24 KZPSA PCI (Fast Wide Differential) disk cntrs (6 per node)
24 HSZ40 Raid Arrays (writeback cache off, battery off)

All Target filesystems are using partition A on RZ29-va disks (4.3GB). Partition A has been increase to be a 1.53GB partition.
(The C# indicates the controller number on the node)
Controller 1: 1 RZ29 (4.3GB) -- OS and Swap

node 1: C2: F1-F15, C3: F16-F30, C4: F31-F45, C5: F46-F60, C6: F61-F75 C7: F76-F90
node 2: C2: F90-F105, C3: F106-F120, C4: F121-F135, C5: F136-F150, C6: F151-F165 C7: F166-F180
node 3: C2: F181-F195, C3: F196-F210, C4: F211-F225, C5: F226-F240, C6: F241-F255 C7: F256-F270
node 4: C2: F271-F285, C3: F286-F300, C4: F301-F315, C5: F316-F330, C6: F331-F345 C7: F346-F360

Detailed Load Generator (LG) Description

Load Gen. Type	*Model*	*# of CPUs*	*RAM*	*OS*	*Compiler*
LG1	AlphaStation 250 4/266	1	64MB	Digital UNIX V3.2D	cc
LG2	AlphaServer 1000 4/266	1	512MB	Digital UNIX V3.2D	cc

Testbed Configuration

Load Gen. #	*Load Gen. Type*	*Network*	*Target File Systems*	*Notes*
1	LG1	N1	F1,F91,F181,F271,F16,F106,F196,F286,F31,F121,F211,F301,F46,F136,F226	nfsv2
2	LG2	N2	F316,F61,F151,F241,F331,F76,F166,F256,F346,F2,F92,F182,F272,F17,F107	nfsv2
3	LG1	N1	F197,F287,F32,F122,F212,F302,F47,F137,F227,F317,F62,F152,F242,F332,F77	nfsv2
4	LG2	N2	F167,F257,F347,F3,F93,F183,F27,F18,F108,F198,F288,F33,F123,F213,F303	nfsv2
5	LG1	N1	F48,F138,F228,F318,F63,F153,F243,F333,F78,F168,F258,F348,F4,F94,F184	nfsv2
6	LG2	N2	F274,F19,F109,F199,F289,F34,F124,F214,F304,F49,F139,F229,F319,F64,F154	nfsv2
7	LG1	N1	F244,F334,F79,F169,F259,F349,F5,F95,F185,F275,F20,F100,F200,F290,F35	nfsv2
8	LG2	N2	F125,F215,F305,F50,F140,F230,F320,F65,F155,F245,F335,F80,F170,F260,F350	nfsv2
9	LG1	N1	F6,F96,F186,F276,F21,F111,F201,F291,F36,F126,F216,F306,F51,F141,F231	nfsv2
10	LG2	N2	F321,F66,F156,F246,F336,F81,F171,F261,F351,F7,F97,F187,F277,F22,F112	nfsv2
11	LG1	N1	F202,F292,F37,F127,F217,F307,F52,F142,F232,F322,F67,F157,F247,F337,F82	nfsv2
12	LG2	N2	F172,F262,F352,F8,F98,F188,F278,F23,F113,F203,F293,F38,F128,F218,F308	nfsv2
13	LG1	N1	F53,F143,F233,F323,F68,F158,F248,F338,F83,F173,F263,F353,F9,F99,F189	nfsv2
14	LG2	N2	F279,F24,F114,F204,F294,F39,F129,F219,F309,F54,F144,F234,F324,F69,F159	nfsv2
15	LG1	N1	F249,F339,F84,F174,F264,F354,F10,F100,F190,F280,F25,F115,F205,F295,F40	nfsv2
16	LG2	N2	F130,F220,F310,F55,F145,F235,F325,F70,F160,F250,F340,F85,F175,F265,F355	nfsv2
17	LG1	N1	F11,F101,F191,F281,F26,F116,F206,F296,F41,F131,F221,F311,F56,F146,F236	nfsv2
18	LG2	N2	F326,F71,F161,F251,F341,F86,F176,F266,F356,F12,F102,F192,F282,F27,F117	nfsv2
19	LG1	N1	F207,F297,F42,F132,F222,F312,F57,F147,F237,F327,F72,F162,F252,F342,F87	nfsv2
20	LG2	N2	F177,F267,F357,F13,F103,F193,F283,F28,F118,F208,F298,F43,F133,F223,F313	nfsv2
21	LG2	N1	F58,F148,F238,F328,F73,F163,F253,F343,F88,F178,F268,F358,F14,F104,F194	nfsv2
22	LG2	N2	F284,F29,F119,F209,F299,F44,F134,F224,F314,F59,F149,F239,F329,F74,F164	nfsv2
23	LG2	N1	F254,F344,F89,F179,F269,F359,F15,F105,F195,F285,F30,F120,F210,F300,F45	nfsv2
24	LG2	N2	F135,F225,F315,F60,F150,F240,F330,F75,F165,F255,F345,F90,F180,F270,F360	nfsv2

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