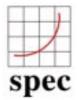
SPEC SFS 2.0 / SFS97

Spencer Shepler

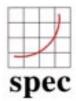
spencer.shepler@eng.sun.com



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SFS 1.1/LADDIS

- 1993 release date
- Measured NFS v2 / UDP only
- Operation mix old and outdated
- File set size 5MB per operation
- File size fixed at ~ 136KB



SFS 2.0

- Released on December 19th, 1997
- www.spec.org/osg/sfs97
- As of March 6th, 9 published results
- SPEC has policy to accept SFS 1.1 results thru June 1998 for publication



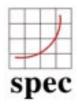
New SFS 2.0 features

- NFS v3 and NFS v2 work loads
- TCP or UDP may be used
- Updated work loads
- CDROM distribution with binaries
- Updated user interface
- Scripts to auto generate output formats



SFS 2.0 work loads

- 2 work loads for benchmark
- SPECsfs97.v2 and SPECsfs97.v3
- Operation mix updated from SFS 1.1
- Operation mix based on data gathered from ~ 1000 servers
- Mix used represents cluster of 60% of data gathered



Connectathon 1998

Operation	SFS 1.1 NFSv2	SPECsfs97 NFSv2	SPECsfs97 NFSv3
READ	22%	14%	18%
WRITE	15%	7%	9%
GETATTR	13%	26%	11%
READLINK	8%	7%	7%
READDIR	3%	6%	2%
CREATE	2%	1%	1%
REMOVE	1%	1%	1%
FSSTAT	1%	1%	1%
SETATTR			1%
READDIRPLUS			9%
ACCESS			7%
COMMIT			5%

SFS 2.0 file set size

• SFS1.1

5 MB of file data per operation - 20% accessed

fixed file size of ~136KB

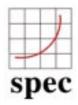
files are selected 'at random'

• SFS 2.0

10 MB of file data per operation - 10% accessed

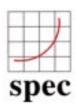
varies file size

file selection is 'best fit'



File size distribution for SFS 2.0

Percentage	Filesize	
33%	1KB	
21%	2KB	
13%	4KB	
10%	8KB	
8%	16KB	
5%	32KB	
4%	64KB	
3%	128KB	
2%	256KB	
1%	1MB	



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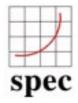


• Metric is

XXX Ops/Sec (Overall Response Time = Y.YY msec)

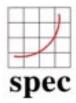
- Ops/Sec is maximum reported
- Overall Response Time calculated

 $ORT = \frac{\left(\sum_{1}^{maxthruput} (((Resp(n) + Resp(n-1))/2) \times (Thruput(n) - Thruput(n-1)))\right)}{Thruput(max)}$ Assumes Thruput(0) == 0, Resp(0) == Resp(1)



SFS 2.0 Results Formatting Scripts

- Combination of shell and perl scripts
- Input of static server config and output of benchmark results
- ASCII, HTML and Postscript generated
- Any public disclosure requires that SPEC's rules be followed



Buy SFS 2.0!!!

- www.spec.org/osg/sfs97 for more info
- info@specbench.org
- SPEC office @ (703)331-0180

