It’s a brave new world…
DREAM MACHINE
VIOLIN 3205A
HP DL580 G7
PHYSICAL MEMORY

- HP DL580 G7 as tested: 512GB
  - 64 8GB DIMMs
- HP DL580 G7 maximum capacity: 1TB
  - 64 16GB DIMMs
- HP DL980 G7 maximum capacity: 2TB
  - 128 16GB DIMMs
METADATA I/O DEVICE
METADATA I/O DEVICE

- Violin 3205A as tested: 5.25TB SLC NAND Flash
  - SLC: single-level cells, NAND: Negated AND logic gate
  - enterprise-grade Flash
- 84 64GB VIMMs
  - VIMM: Violin Intelligent Memory Module
  - VIMMs configured in proprietary RAID groups
- Configurable format density
  - 50%, 65% (default), … 87%
- Direct attachment: PCIe over cable
  - other products available for different connectivity
- Violin optimal performance at 4096-byte transfers
  - mkfs -t xfs -s size=4096 <device>
CPU

Intel Xeon 7500
• Tested four X7542 and X7560 Nehalem CPUs
  • X7542: six cores, 2.66 GHz, 18MB L3, 5.86 GT/s Intel® QPI
  • X7560: eight cores, 2.26 GHz, 24MB L3, 6.40 GT/s Intel® QPI
• More cores might not necessarily be better
CACHE COHERENCY

Acquire and Release 2,000,000 Exclusive Filelocks per Child

1x Intel X5450 (4 cores)
4x Intel X7542 (24 cores)

elapsed time (seconds)

concurrently executing children
MEMORY USAGE

Acquire and Release 2,000,000 Exclusive Filelocks per Child

- 1x Intel X5450 (4 cores)
- 4x Intel X7542 (24 cores)
- 4x Intel X7560 (32 cores)

only the data point for 128 children on the X7560 is estimated
Acquire and Release 2,000,000 Exclusive Filelocks per Child

- 1x Intel X5450 (4 cores)
- 4x Intel X7542 (24 cores)
- 4x Intel X7560 (32 cores)
- 8x AMD 8360SE (32 cores)

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CACHE COHERENCY

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elapsed time (seconds)

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OTHER CONFIGURATION SPECIFICS

• OS
  • SLES 11 SP1 used in configuration as tested
  • XFS Filesystem

• BIOS
  • BIOS HP Power Profile: Maximum Power
  • BIOS HP Power Regulator: Static High Performance
  • hyper-threading disabled (where applicable)

• boot parameters
  • pm-profiler off
  • acpi=off powersaved=off
BENCHMARKS

• Public Perforce benchmarks
  • branchsubmit
  • browse
  • reference01 dataset

• Benchmark Results DataBase (BRDB)
  • http://kb.perforce.com/brdb
SCALABILITY

Scalability of Technology in Branchsubmit Benchmark

commit rate (files/second)

22522
20806
21712
12374

70,000 files
dream
700,000 files
70,000 files
dated
700,000 files

second "runme" phase

PERFORCE SOFTWARE

2011 PERFORCE USER CONFERENCE
Effect of Perforce Server Log Location on Browse Benchmark

- Ramfs: 102 seconds
- Spinning Disk: 195 seconds

Notes:
- Times are for cold cache.
- Machine must have ample physical memory for log to be on ramfs or tmpfs.
Effect of Filesystem Cache State on Browse Benchmark

- Cold cache Violin 3205A: 102 seconds
- Warm cache Violin 3205A: 100 seconds
- Cold cache MSA500 G2: 468 seconds
- Warm cache MSA500 G2: 99 seconds
Effect of CPU Choice on Browse Benchmark

- X7542 cold cache: 102 seconds
- X7560: 122 seconds
- X7542 warm cache: 100 seconds
- X7560: 120 seconds
Overall Effect of Technology on Browse Benchmark

- Dream cold cache: 102 seconds
- Dated: 394 seconds
- Dream warm cache: 100 seconds
- Dated: 358 seconds
COST PENALTIES OF OTHER TECHNOLOGIES

Metadata I/O Device Performance in Browse Benchmark

- Violin: 102 seconds
- SAN: ? seconds
- MSA500 G2: 468 seconds
- SAN: ? seconds
- NAS: 6210 seconds

*times are for cold cache*
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Time that could be saved:

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per eight-hour work day per user
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1TB Violin 3201A expense offset in less than 10 work days!
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offset higher capacity or HA/DR expense in 10 work days!
EMPOWERED ADMINISTRATORS
PRODUCT CONSIDERATIONS

- New releases
- max* parameters
- Client views
- Protections
- Triggers
- Configurables
  - supported listed in p4 help configurables
    - e.g. dbopen.nofsync
  - unsupported listed in p4 help undoc
DON’T BURY BAD USAGE
SUMMARY

• Technology races ahead
• Leverage the latest advancements
  • faster I/O devices for metadata
  • larger physical memory footprint
• Benchmark proposed configuration
  • ensure appropriate for your usage
• Improvement should soon offset expense
Questions?