



Silicon Graphics, Inc.

# XFS Overview & Internals

## 13 - Monitoring

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# Monitoring

- A lot of performance and utilisation data can be collected
  - Generic filesystem and memory statistics
  - Specific XFS metrics
- There are a range of tools that can be used
  - /proc/\*
  - sar
  - vmstat
  - top, topsys
  - Performance Co-Pilot
  - etc.

# Inodes

- `watch grep inode /proc/slabinfo`
- `slabtop -s c`
  - Monitor the slab
- `sar -v`
  - inode statistics collected by sadc

## PCP Inode Metrics

- ig\_attempts # of looks for inode in memory
- ig\_found # of times inode found in memory
- ig\_frecycle # of fails because inode was busy
- ig\_misses # of times had to go to disk for inode
- ig\_dup # times missed but found from another
- ig\_reclaims # of times recycled the inode's memory
- ig\_attrchng # of times changed inode attributes
- iflush\_count # of times inodes are being flushed
- icluster\_flushcnt # of times inodes clustered
- icluster\_flushinode # of times not able to inode cluster

# PCP Directory Metrics

- lookup                           # of file name directory lookups
- create                           # of directory entry creations
- remove                           # of directory entry removes
- getdents                        # of “getdent” operations

# PCP File Attribute Metrics

- attr.get                           # of “get” operations
- attr.set                           # of “set” operations
- attr.remove                        # of “remove” operations
- attr.list                         # of “list” operations

# PCP Allocation Metrics

- allocs.alloc\_extent      # of extents allocated
- allocs.alloc\_block      # of blocks allocated
- allocs.free\_extent      # of extents freed
- allocs.free\_block      # of blocks freed
- alloc\_btree.lookup      # of allocation btree lookups
- alloc\_bteee.compare      # of compares in alloc btree lookup
- alloc\_btree.insrec      # of extent record inserts in btree
- alloc\_btree.delrec      # of extent record deletes in btree

## PCP Block Map Metrics

- `block_map.read_ops` # of block map reads
- `block_map.write_ops` # of block map writes
- `block_map.unmap` # of block delete operations
- `block_map.add_exlist` # of extent list insertions for files
- `block_map.del_exlist` # of extent list deletions
- `block_map.look_exlist` # of extent list lookups
- `block_map.cmp_exlist` # of extent list compares
- `bmap_btree.lookup` # of block map btree lookups
- `bmap_btree.compare` # of block map compares
- `bmap_btree.insrec` # of block map insertions
- `bmap_btree.delrec` # of block map deletions

# PCP Journaling Metrics

- transaction.sync # of transactions waiting to be committed
- transaction.async # of async transactions waiting
- transaction.empty # of transactions that did not do anything
- log.writes # of log buffer writes
- log.blocks # of log blocks written
- log.noiclogs # of log entry attempts during memory flush
- log.force # of calls to xfs\_log\_force
- log.force\_sleep # of calls to xs\_log\_force\_sleep

# PCP AIL Metrics

- push\_ail.pushes # of times the AIL is moved forward
  - push\_ail.success # of times sucessful
  - push\_ail.pushbuf # of times inode locked – pushbuf called
  - push\_ail.pinned # of times pinned
  - push\_ail.locked # of times locked
  - push\_ail.flushing # of times ail was flushing
  - push\_ail.restarts # of log write restarts
  - push\_ail.flush # of times a log was forced

# PCP Quota Metrics

• reclaims	# of disk quota reclaims
• reclaims_misses	# of disk quota reclaim misses
• dquot_dups	# of duplicates
• cachemisses	# of times disk quota misses cache
• cachehits	# of times disk quota in cache
• wants	# of times dqwants called
• shake_reclaims	# of shaked reclaims
• inact_reclaims	# of inactive data reclaims

## xfsstats

- xfsmisc/xfsstats.pl -f

