

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_freecycle	# 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_attrchg	# 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_btree.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 successful
• 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

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