

Lustre[®] Contribution Model: Community Development

LUG 2013

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Topics

- Why we need a single Lustre tree
- Why we need custom Lustre distributions
- Code development and integration process
- Testing
- Code reunification

Why we need a single Lustre tree

- Different environments = different bugs
- Different priorities = different bug fixes / features
- Testing depth
- We all share the rewards

Why we need a custom Lustre distribution

- Different environments = different bugs
- Different priorities = different bug fixes / features
- Some features are hardware-dependent (or not "core Lustre")
 - Hardware CRCs
 - MDRAID zero-copy
 - Samba re-export
 - Tuning for scale
- External gatekeeper
 - Short I/O
 - Pin Idiskfs block bitmaps
- Stability
- Rapid turnaround

Priorities

- Customer bugs
- Sales support
- Future product plans
- Internal feature backlog
- Performance

- Work divided by teams to avoid "crisis mode"
 - Sustaining
 - New features teams

Code Development Process

- What
 - Jira tickets
 - Bug triage
 - Roadmap planning
 - Feature prioritization
- How
 - TSP for new feature development
 - Scrum for sustaining work
 - Code review
 - Automated build and test
- Landing
 - After approvals and testing, landing request
 - Gatekeepers land in maintenance or release branches

Code Review Process

- Patches are submitted to Gerrit for code review
- Gerrit initiates a Jenkins job to build Lustre for the entire coverage matrix
- Jenkins initiates standard integration testing job using Xperior
- Jenkins posts results back to Gerrit
 - Sets “Verified” flag in Gerrit ticket
- Gerrit adds appropriate git comments

- Custom branches can also be submitted for automated build and testing

MRP-691 Idiskfs: hold bitmaps to minimize reads during writes

The patch makes bitmap pages stay in correct LRUs to avoid unnecessary page eviction and possible bitmap read during bulk writes.

Change-Id: I70c2f44707a97822a2f9b13e74fae19753d50792

Signed-off-by: Alexey Lyashkov <alexey_lyashkov@xyratex.com>

Reviewed-on: <http://morpheus.xyus.xyratex.com:8443/gerrit/135>

Tested-by: Jenkins

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Testing with Xperior

- Initiated via Jenkins
- System config in YAML (can be per-test)
- Set up cluster
 - VM or real
- Install any required test packages
- Test(s) description in YAML
- Results in YAML

- Open Source

Xperior plugins

- Plugins
 - code coverage tool
 - static verification tool
 - reformat after every test
 - store console output
 - store lustre-diagnostics output

- Under development
 - Random order test execution with replay
 - MDSIM test execution
 - IPMI support

Cppcheck Result

Errors Trend

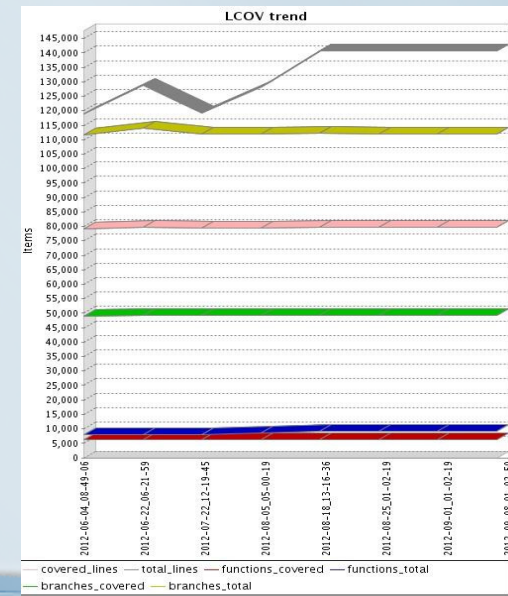
All errors
92

Summary

Total	Severity 'error'	Severity 'warning'	Severity
92	61	0	0

Details

Filename	LineNumber	CppCheckId	Severity	Message
../lustre-wc-rel/lustre/cmm/mdc_device.c	216	nullPointer	error	Possible null pointer dereferen
../lustre-wc-rel/lustre/cmm/cmm_object.c	515	nullPointer	error	Possible null pointer dereferen
../lustre-wc-rel/lustre/cmm/cmm_object.c	533	nullPointer	error	Possible null pointer dereferen
../lustre-wc-rel/lustre/fid/fid_handler.c	82	nullPointer	error	Possible null pointer dereferen
../lustre-wc-rel/lustre/client/glimpse.c	0	toomanyconfigs	information	Too many #ifdef configurations
../lustre-wc-rel/lustre/client/common_cl.c	0	toomanyconfigs	information	Too many #ifdef configurations
../lustre-wc-rel/libcfs/libcfs/linux/linux-debug.c	0	toomanyconfigs	information	Too many #ifdef configurations
../lustre-wc-rel/libcfs/libcfs/linux/linux-proc.c	549	syntaxError	error	Invalid number of character {{
../lustre-wc-rel/libcfs/libcfs/linux/linux-proc.c	549	syntaxError	error	Invalid number of character {{
../lustre-wc-rel/libcfs/libcfs/linux/linux-proc.c	549	syntaxError	error	Invalid number of character {{
../lustre-wc-rel/libcfs/libcfs/util/parser.c	583	doubleFree	error	Memory pointed to by 'line' is f
../lustre-wc-rel/libcfs/libcfs/util/parser.c	646	doubleFree	error	Memory pointed to by 'line' is f
../lustre-wc-rel/libcfs/libcfs/winnt/winnt-proc.c	500	nullPointer	error	Possible null pointer dereferen
../lustre-wc-rel/lustre/liblustre/super.c	1903	nullPointer	error	Possible null pointer dereferen
../lustre-wc-rel/lustre/liblustre/tests/replay_ost_single.c	126	bufferAccessOutOfBounds	error	Buffer access out-of-bounds: b
../lustre-wc-rel/lustre/liblustre/tests/replay_ost_single.c	138	bufferAccessOutOfBounds	error	Buffer access out-of-bounds: b
../lustre-wc-rel/lustre/liblustre/tests/replay_ost_single.c	127	bufferAccessOutOfBounds	error	Buffer access out-of-bounds: b



Code Reunification

- Cherry-picking of bug fixes and features
 - Risk/reward of selected new features only
- Regularly integrated into our maintenance branch
- Every bug fix and feature we develop is pushed upstream
 - File a Jira ticket with Intel for each issue
 - Include Xyratex-bug-id to patches and tickets for easy reference
 - Attach patches, respond to inspections, update code
 - Sometimes there are conflicts
 - Priorities
 - Code conflicts
- We publish our tree at Github

Thank You

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