EMC Contributions: Mainlining Lustre Client & Patches

EMC Contributions to OpenSFS
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LUG Meeting
April 2013, San Diego
Lustre Client for Linux Kernel

• A collaboration of EMC with Intel/Whamcloud
• Other contributors
  – Intel, Cray, ORNL, LLNL, SUSE, Gentoo
• EMC contribution in 2012
  – 10+ LU tickets (LU-709, LU-1347, LU-1337, LU-1214, LU-1756, LU-1113, LU-1994, LU-2850, LU-2335, etc.)
  – 80+ patches merged
  – 20+ pending review (Please help!)
  – ~20K LOC touched
Lustre Patches/Fixes by EMC
Peng Tao and Xuezhao Liu; EMC China

• Over 50 patches to mainline since LUG 2012
  – libcfs cleanup: 2 patches
  – server/client split: 5 patches
  – compat25.h cleanup: 7 patches
  – auto-configure macro cleanup: 16 patches
  – Linux Next 3.9 kernel support: 22 patches
Current Status of Lustre Client to Linux next

• So far
  – Coding style change (done with checkpatch.pl.)
  – Server/client code split (done)
  – Ptlrpc cleanup (done)
  – Obsolete macro cleanup (done)
  – Ported to latest upstream kernel (done)
  – Old code removal (done with Coan scripts)
  – Kernel Kbuild/Kconfig support (done with scripts)
  – Client kernel code extraction (done with scripts)

• Remaining
  – Libcfs cleanup (half done)
  – Obdclass cleanup (half done)
  – Other minor cleanups
Availability

• Lustre master branch
  – Apply patches in LU-2335
  – Build lustre client code as external modules –or-
  – Copy Lustre client code into kernel tree

• Git
  – Latest Linux kernel tree patched with Lustre client source
  – git clone git://github.com/bergwolf/linux.git
  – git checkout –b 3.9-rc3-lustre
  – export CONFIG_LUSTRE_FS; make
LSF-2012 Recommendations

Peng Tao (Bergwolf) - EMC made the case

• Check in staging area to clean ready
  – Greg KH offered help
  – Must be compliant
  – Must be properly approved

• Recommended Steps (Intel Linux team support):
  – Huge patches merged in staging tree first
  – Put Lustre code in fs directory and depend on staging
  – Small and incremental patches to cleanup
  – New feature patches are allowed (flash support)
  – Each patch properly signed-off by key reviewers
  – Merge code into main stream Linux kernel
Future Work
Need Support of Lustre Community

• Submit code to staging tree
• Continued maintenance and hardening
  – Need to merge patches between upstream and Lustre master back and forth.
• Splitclient utility build
  – Or an option to build utility only
    • i.e. without building client/server kernel modules
Questions?

• Visit EMC booth for more info about this and our other Lustre/HPC initiatives
  – Burst buffer appliances for Lustre acceleration
  – vHPC for virtual storage and advanced HPC scheduling
  – Burst buffer research with DAOS for DOE FastForward
  – Massive small file parallel IOPS for Lustre
  – Umbrella file systems for MDS balancing
  – Suitability of ATMOS for long-term archival storage
  – Contributions to Openbenchmark
  – pNFS Lustre layout draft submitted to IETF

THANK YOU
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