PATH FORWARD FOR LUSTRE COMMUNITY

HPCFS AT ORLANDO LUG 2011

BILL BOAS
SFW AND LUSTRE

Focus on Engineering Services, I/O Performance, Integration
- Over 50 assignments in last 8 years
- Integration of OFED for Range of Storage and File System Products
- Custom System Integration, “Green Beret” services

Delivering Products and Solutions in HPC, Virtualization, Private Clouds, Enterprise Data Centers with 10/40 GbE, InfiniBand

Customers are Leaders in their Markets – Research, Defense, Finance, Service Provider

Focus is Highly Efficient Computing, Low Latency Networks and Storage, Lustre

Pro-Buono work - Officers of OpenFabrics Alliance, InfiniBand Trade Association, High Performance Cluster File System Foundation

Lustre and Related Experience
- Managed Lustre Program at LLNL 2002-6, Consultants to NRL JCTD 2006-9
- Engineering Srvcs for CFS, Cray, DDN, LBL, LSI, Microsoft, MLNX, NGA, NRL, Oracle, Sun
- Deployment Srvcs at BOM Australia, Hitachi, LANL, NRL, Raytheon, Sandia, Sun
The Lustre Market, Potential Resources exist

- Customers/users and vendors need to believe there are a long term, sufficient technical resources, funded and equipped to sustain and evolve Lustre so there is a viable market.

- Today the market includes the fabric/network, OSS, disk controllers and actual storage (disk+flash+HSM hardware).

- Assuming 500 user sites of Lustre spending $2M per year on this hardware is $1Billion.

- A 1% share of that for on-going Lustre development yields $10M/year within their budgets that could be available if customers asked their hardware vendors to allocate funds.

- Some of the h/w vendors: Bull, Cray, Dell, DDN, Fujitsu, HP, Hitachi, LSI, MLNX, NEC, Oracle, QLogic, RAID, SGI, Terascale, Xiotech, Xyratex – there are many others.

- Note that no software or support revenue is counted here.

- Can customers start expressing this case to their h/w vendors?

- No consideration of what customers are spending themselves.
LUSTRE-SOURCE.ORG WE CAN ALL AGREE ON

- Single set of Working Groups collaborating internationally to make technical decisions on direction, master feature content and tree
- Technical Respect the basis for gatekeepers, release and bug management
- Encouraging participation from all vendors and all users at any level
- Community Repository at neutral site, Core Tree, Bugs DB
- Build on 2.1 work being driven by Whamcloud, sites and vendors can specialize from the core and contribute back select code
- Contributors keep copyright in code, binds the code together
- Collaborative testing amongst all in community
- Commitment to GPL v2 license, ensures long term
- Community agrees not to assert any patent claim in the code
- A single client implementation that interoperates across all networks and OSSs
Working Items We Can All Agree On

► What is in this release
► How is a release candidate chosen, who gatekeeps and who release manages
► What’s in the next release
► How the core tree is set up
► How the core tree is released and advances
► How sites and vendors use the core tree plus to meet their needs
► What is the bug fixing and patching process
► How do we specify stability and performance criteria
► Building a single repository in neutral territory
► Building a collaborative testing process
► At the margin, vendors and sites have differing needs
► Lustre needs “marketing and promotion” to prospects and customers
If we have these substantial areas of agreement

Can we project these to the market place
And
Implement them
Is there a Lustre Market?

► Yes, let’s consider who are the customers, suppliers and size
► Customers are those that use Lustre, how many are there 3-500
► The market has Suppliers of Hardware, Software, Support Services and Consulting including OEMs, System Integrators and resellers
► Suppliers are Bull, Cray, Dawning, DDN, Dell, Fujitsu, HP, IBM, LSI, NEC, Seagate, SGI, SFW, Terasca,
► How many petabytes of storage space for Lustre do customers deploy per year? 100-200?
► What is the street price, incl. OSS, Controllers., network, etc. for a petabyte? $1MM
► Leads to an estimate of $1-200MM per year for storage hardware
► Customers have average of ½ FTE, FTE costs $200k with burden
► Estimate customers are spending $3-50MM self support
Leaders in High Performance, Low Latency Data Motion

“Fabric Computing that Works”

Trusted Strategic Advisors

Reliable Implementation Partners