



Lustre Users Group **CFS Support & QA Update**

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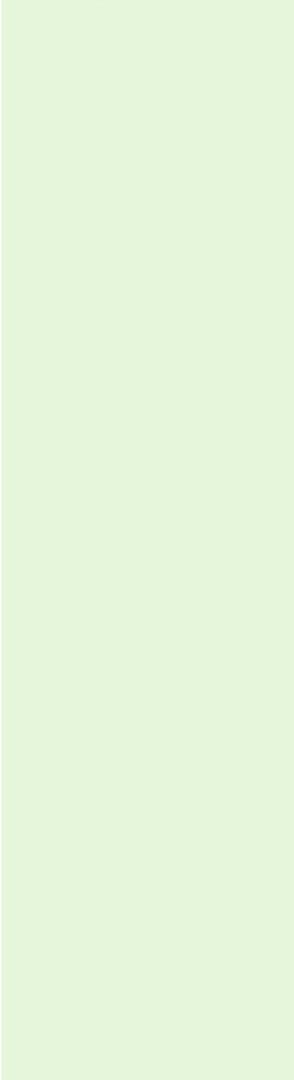
Topics

- Near-Term Lustre Roadmap
- CFS Engineering Organization
- Practices
 - Software Engineering Practice
 - Customer Support Practice
 - Testing Practice

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Near-Term Lustre Roadmap



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Recent Releases

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- Luster 1.4.6
 - Most recent major release
 - Introduces new Luster Networking (LNET)
 - New features: Quotas, ACLs
- Maintenance Releases (1.4.6.1, 1.4.6.2, 1.4.6.3)
 - Keeping closely in step with kernel updates from Red Hat and Novell
- Luster 1.6.0 beta2
 - Released today

Upcoming Releases

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- Lustre 1.4.7
 - NFS support, Open file handle cache
- Lustre 1.4.8
 - Patchless client, tier 1 metadata performance improvements, large ext3 partitions (at least 8TB)
 - End of line for 1.4 branch
 - QOS
 - We are contemplating going straight to 1.6.0, but this will be based on largely on at-scale testing and quality in May/June timeframe
- Lustre 1.6.0
 - Introduces new mount-based configuration system (mountconfig)
 - Will be identical to 1.4.8 in every other way
 - Linux 2.6 only; marks the end of support for Linux 2.4

User Manual / Course Material

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- Introduced with Lustre 1.4.6
- Methodology: audience, tasks, concepts
- Process, involving senior engineers
- Updates every 2-3 weeks, announced on lustre-announce
- Send updates, omissions and other requests to doc-request@
- Course material is often ahead of the manual, but less sufficiently detailed

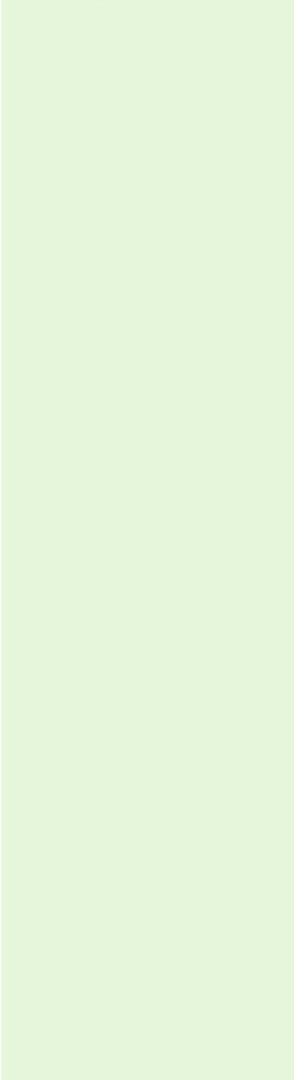
User Manual / Course Material

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- Audiences
 - Cluster architects
 - System administrators / Level 1 support engineers
 - *Level 2 support engineers*
 - Lustre users
- Major components
 - Concepts - understanding Lustre, cluster architecture
 - Administration - configuration, maintenance
 - *Troubleshooting and tuning (IOkit)*
 - Lustre for users
 - Reference (man pages, specifications, etc.)
 - *Lustre internals*
- *O'Reilly Lustre in a Nutshell?*



CFS Engineering Organization



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Team Organization



- About 50+ people; mostly engineering staff
- Koala - customer support, defect fixing, releases
- Chameleon - testing, quality assurance
- Squirrel - documentation, training
- Moose - infrastructure support, admin, processes
- Other development groups
 - Colibri - Pathforward
 - Spider - Ports, security (GSS/Kerberos)
 - Zebra - Linux Software RAID, Lustre RAID (LAID)

Where We Operate

- Much of engineering staff spread out, globally
 - We go where the unique talent lives
 - Being in many time zones is valuable for customer support
- Building pockets of concentration
 - In Eastern Ontario/Quebec, Calgary, Portland, Boulder, Ukraine, Moscow, Beijing
- Brick and mortar office in Beijing
 - Access to a highly skilled workforce
 - Mostly advanced development projects and administrative support; little customer-facing activity
- Infrastructure concentrated in co-lo in Boulder, CO

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Practice Areas

Software Engineering Practice

- We introduced rigorous software engineer processes early in 2005
 - Software Engineering Institute (SEI) Carnegie Mellon University (<http://www.sei.cmu.edu/tsp>)
- Software engineers educated in Personal Software Process (PSP)
 - manage the quality of their projects, make commitments they can meet, improve estimating and planning, reduce defects in their products
- Engineering teams follow the Team Software Process (TSP)
 - ensure quality software products, create secure software products, improve process management in an organization
- Results
 - Our development teams follow this methodology for everything we produce
 - Pathforward (CMD2) built this way, and was delivered just a little late for such a massive project -- we couldn't have done this before
 - Support team is dealing with disproportionately many more customers (quality of Lustre is improving)

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Software Engineering Practice

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colibri_sum_wk4.xls														
	A	B	C	D	E	F	G	H	I	J	K	L	M	
1			colibri		Week 4 (2006-4-9 to 2006-4-15)									
2														
3														
4	WEEK			HOURS						EV				
5		Name	Schedule hours for this week				Earned value for this week							
6			Plan	Actual	Diff	A/P	Plan	Actual	Diff	A/P				
7		huanghua	25.00	28.05	3.05	1.12	5.09	5.09	0.00	1.00				
8		nikita	25.00	30.68	5.68	1.23	3.94	0.00	-3.94	0.00				
9		tappro	25.00	38.80	13.80	1.55	4.75	2.91	-1.84	0.61				
10		umka	25.00	22.23	-2.77	0.89	4.44	3.93	-0.51	0.89				
11		wangdi	25.00	28.12	3.12	1.12	0.00	2.06	2.06	0.00				
12		team	125.00	147.88	22.88	1.18	3.61	2.74	-0.87	0.76				
13														
14														
15	TO DATE			HOURS						EV				
16		Name	Schedule hours this cycle to date				Earned value this cycle to date							
17			Plan	Actual	Diff	A/P	Plan	Actual	Diff	A/P				
18		huanghua	100.00	114.56	14.56	1.15	15.27	14.95	-0.32	0.98				
19		nikita	100.00	121.48	21.48	1.21	13.56	6.93	-6.63	0.51				
20		tappro	100.00	131.81	31.81	1.32	13.49	11.65	-1.84	0.86				
21		umka	100.00	94.28	-5.72	0.94	15.87	14.72	-1.15	0.93				
22		wangdi	100.00	92.65	-7.35	0.93	8.82	9.33	0.51	1.06				
23		team	500.00	554.78	54.78	1.11	13.33	11.41	-1.92	0.86				
24														
25														
26	ESTIMATION													
27		Name	Estimated/Actual for completed tasks											
28			Plan	Actual	Diff	A/P								
29		huanghua	94.00	111.06	17.06	1.18								
30		nikita	47.16	42.68	-4.48	0.91								
31		tappro	81.48	131.82	50.34	1.62								
32		umka	92.46	94.28	1.82	1.02								
33		wangdi	63.52	78.50	14.98	1.24								
34		team	378.62	458.34	79.72	1.21								
35														
36														
37	TASKS DONE THIS WEEK													
38		Task			Eng	P_Hour	A_Hour	A/P	EV					
39	NA	Mountconf adding MDT HLDI			umka	2.00	0.50	0.25	0.32					
40	NA	Mountconf adding MDT DLDI			umka	2.00	0.50	0.25	0.32					
41	NA	FID DLD			umka	16.66	20.73	1.24	2.65					
42	NA	Mountconf adding MDT CODE			umka	4.00	0.50	0.13	0.64					
43	NA	FLD PROTO			wangdi	14.00	28.12	2.01	2.06					
44	NA	CMM PROTO4			tappro	20.37	38.81	1.91	2.91					
45	NA	Mountconf adding MDT CODE			huanghua	2.00	2.18	1.09	0.32					
46	NA	Mountconf adding MDT UT			huanghua	8.00	9.20	1.15	1.27					
47	NA	Mountconf adding MDT IT			huanghua	6.00	6.00	1.00	0.95					
48	NA	MDT HLD			huanghua	16.00	10.67	0.67	2.54					
49														
50														
51	TASKS DUE NEXT WEEK													
52		Task			Status	Eng	P_Hour	A_Hou	Start_Date	EV				
53	NA	FID DLDR			NEW	umka	17.85	0.00	4/16/06	2.84				

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Customer Support Practice

- Request Tracker (RT) Deployment
 - New email-centric request tracking system
 - Support@ rolled out last week
 - Bug tracking transition in coming weeks, but involves much more work and communication with customers
- Processes
 - Improving existing processes to make them more consistent, measurable, slip-proof (handling support incidents)
 - Putting formal processes in place for things we do more frequently (cluster configuration assessment, installations)
- Site-wide Lustre Deployment Guidance
 - Working with customers who need to deal with large integration issues, such as global file systems

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Testing Practice

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- Many testing projects in progress
 - NFS exports
 - Patchless client
 - Mountconfig
 - Linux Software RAID
- New test cluster in Boulder
 - Binaries now built based on target distro, including correct compiler
- Itest
 - Expansion to strategic platforms and partners (XT3, LLNL)
 - Enhancements to better support variety in configurations (e.g. different nodes can now run different branches for NFS server exports, patchless client testing)
- Discussions with partners about harmonizing quality practices: the first frontier of collaboration

Summary

- Some compelling new features coming down the pipe in the short-term road map
- This will be a year that Lustre really matures as a product
- Process-oriented engineering organization, committed to continual improvement
- We will work closely with partners and customers for large-scale testing and other important quality initiatives

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