

Lustre Users Group Miami, April 2007

Peter J. Braam, PhD Founder, CEO & President Cluster File Systems, Inc.



Welcome



■ To our LUG sponsor DDN DataDirect

Our customers

Our partners – many are here!



5 LUGs so far!



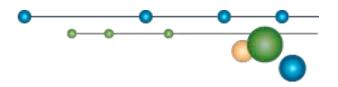
This is our 5th LUG

- 2003 PNNL
- 2004 Maui
- 2005 Snowbird, Utah
- 2006 Hilton Head, SC
- 2007 Miami

Choice of LUG locations is hard

So hard that it delays Lustre development





Agenda for this LUG - Today

	9:00- 9:30	Welcome & Introduction
		Dr. Peter Braam – CFS Founder, President & CEO
	9:30-10:00	CFS Corporate Update
		Kevin Canady – CFS VP of Business Development
Ξ ,	10:00-10:30	Lustre Engineering & QA Update
		Peter Bojanic – CFS VP of Engineering
, ,	10:30-11:00	Break Break
	11:00-12:00	Lustre: Architecture & Roadmap
1		Dr. Peter Braam – CFS Founder, President & CEO
ch	12:00-13:00	Lunch
3,1	13:00-14:00	Lustre 1.6 Features & Benefits
3		Nathan Rutman – CFS Principal Engineer
1	14:00-14:30	Lustre Center of Excellence Reports
4		TBD – Oak Ridge National Lab
	15:00-15:30	Break Break
	15:30-16:00	Large HPC Installations
		Larry McIntosh – SUN
	16:00-16:30	Texas Advanced Computing Center (TACC)
		Karl Schulz - TACC
	18:00-19:30	Evening Reception-Sponsored by DDN



Agenda- Day 2

	0.00	
	9:00- 9:30	Lustre Center of Excellence Reports
		Stephane Thiell - CEA
	9:30-10:00	Lustre Deployments Lessons Learned:
		Steve Simms – Indiana University
× .	10:00-10:30	Lustre Deployments Lessons Learned: Oil & Gas Industry
7)		Keith Gray - BP
Ψ	10:30-11:00	Break
7	11:00-12:00	Lustre Tuning Tutorial
ىئ	11.00-12.00	Nathan Rutman – CFS Principal Engineer
•	40-00 40-00	
S	12:00-13:00	Lunch
3	13:00-14:00	Lustre Troubleshooting Tutorial
		Nathan Rutman – CFS Principal Engineer
	14:00-14:30	TBD CONTROL OF THE CO
4		Guido Juckeland - Dresden Technical University
	15:00-15:30	Break Break
	15:30-16:00	TBD
		Dave Fellinger – DDN
	16:00-16:30	Lustre Networking: Features & Benefits
	10.00 10.00	Dr. Peter Braam – CFS Founder, President & CEO
	16:30-17:00	· · · · · · · · · · · · · · · · · · ·
	10:30-17:00	Lustre Center of Excellence Reports
		Mark Gary – Lawrence Livermore National Lab



Agenda – Day 3

	9:00-10:30	Lustre Requirements Session Dr. Peter Braam – CFS Founder, President & CEO
t-re-	10:30-11:00	Break
	11:00-11:30	Lustre Requirements Session Part II (Voting)
	11:30-12:00	CFS Wrap-Up & Thanks
ý		
7		
4		

u-S-t-re-

CFS presence



CFS LUG presence

- Kevin Canady, VP of Business Development
- Peter Bojanic , VP of Engineering
- Mike McClain, Director of Business Development
- Don Schulte, Director of Sales
- Bryon Neitzel, Project Manager
- Nathan Rutman, Principal Developer

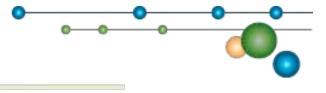
CFS executive team

- Braam, Canady, Bojanic and
- Cindy Price, VP of Finance
- Nicole Brown, Senior Director of Operations

CFS Board of Directors

- Peter Braam
- Bill Blake
- Michael Levine





Flashback

	1999	Accidental initial talk about Lustre
		Seagate funds Lustre research
	2001	CFS is founded
	2003	Lustre in producton on the LLNL MCR Cluster
Ξ ,		12GB/sec on Tungsten Cluster at NCSA
a		Lustre 1.0 released
1	2004	2.5GB sec throughput on Bull servers
. 7.	2005	15,000 MD ops/sec (Bull), 40,000 MDS/sec with clustered MD code
1		CFS patners: Cray, Dell, DDN, Hitachi, HP, LNXI, LSI, SUN
S		LLNL Bluegene, week 1: 175TB written in 75M files
-	2006	biggest computer on each continent runs Lustre
		6 of world's top 10 computers run Lustre
		15% of top500.org computers run Lustre
		130GB/sec IO record
	2007	CFS has 95 staff, growing faster than ever
		A challenge to our users – 1M metadata operations /sec!!
	*	>40% year on year growth
		6 years of consistent profitability
		well over 200 supported clusters
		10,000's of software downloads monthly (>1TB)
		many open source users, companies supporting Lustre



tustre.

CFS' markets

Extremely high end

- We have leadership here
- Complex relationships
- Direct relationships
- Lustre adapts to new environments every year

Large and very large clusters

- Rapidly growing business segment for CFS
- Partner driven
- Stability under heavy load, excellent performance

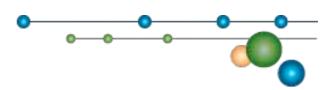
Emerging opportunities

- Lustre will spread over the WAN
- Our past accomplishments instil faith



Lu-S-t-re-

The product roadmap

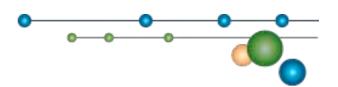


- Today we are releasing Lustre 1.6.0
 - Much more stable
 - Infinitely easier to use
 - Significantly faster
- Highlights of recent additions
 - Backup tools
 - Scalability improvements for comfort on 25,000 clients
 - Extensive statistics for profiling applications
- Soon to come
 - LNET diagnostic self test
 - Server side cache
 - A new block allocator with amazing small file performance
- More in our Architecture & Lustre 1.6 presentations



WS-tre

Theme of our user group



The LUG is a forum for discussion

- Topics can cover
 - Operational issues
 - Strategic issues
 - Lustre Community
- Theme for this year:
- Lustre beyond traditional Clusters
 - Multi cluster & site wide file systems
 - Workgroup and enterprise scale Lustre
 - Lustre as a global file system
 - What qualities and capabilities are required?
 - What applications will lead to optimal utilization?



Thank you!

