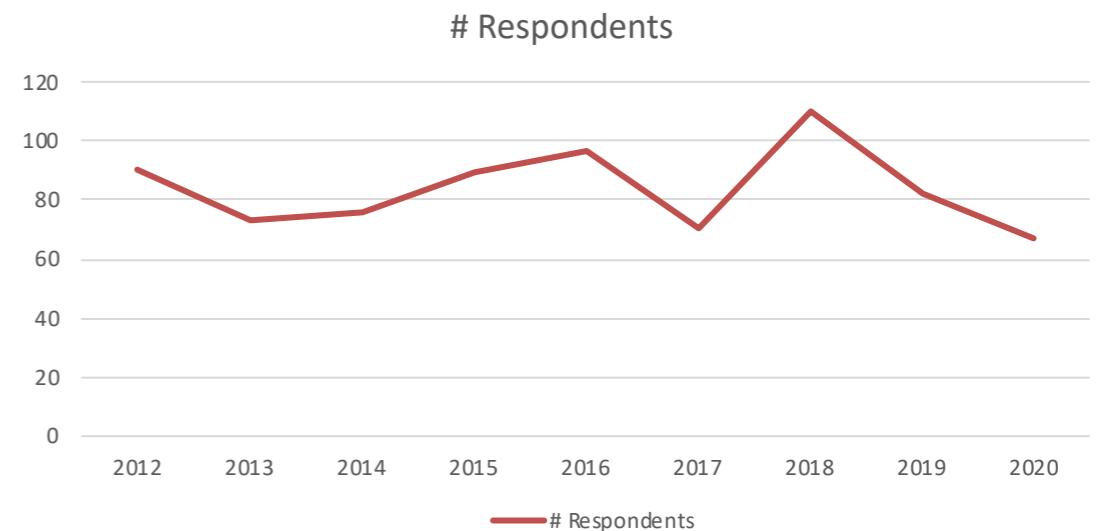# Community Release Update

June 17th 2020

Peter Jones, Whamcloud
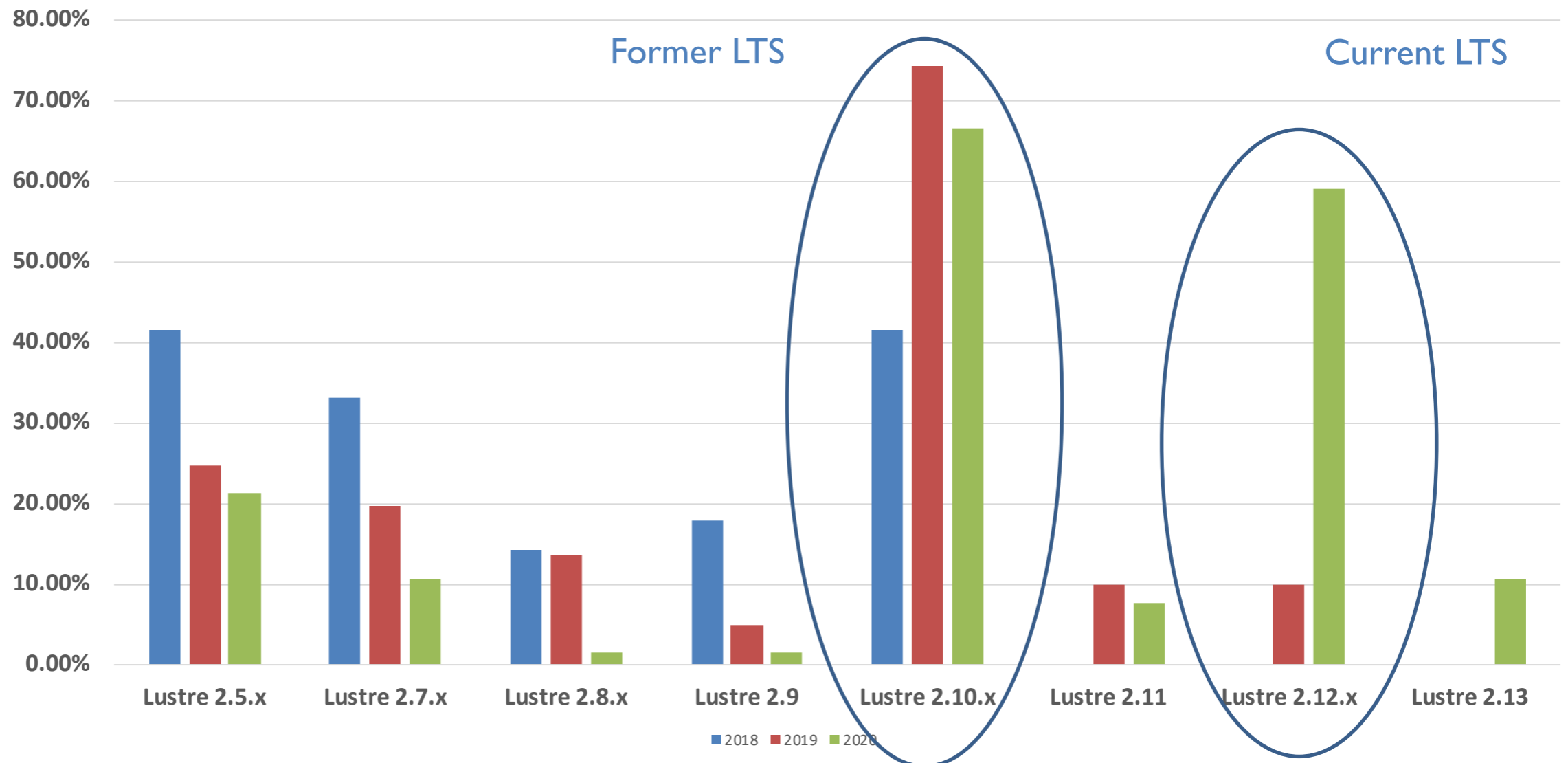
OpenSFS Lustre Working Group

OpenSFS Lustre Working Group

- Has been operating as the single forum for planning activities for the community releases for a decade
- Lead by Peter Jones (Whamcloud) and Dustin Leverman (ORNL)
- All welcome to attend and/or join the mailing list
- For more information visit the wiki
- http://wiki.opensfs.org/Lustre_Working_Group

- LWG issues survey annually in March to track trends in Lustre usage
- Full details available at http://wiki.opensfs.org/Lustre_Community_Survey

Respondents

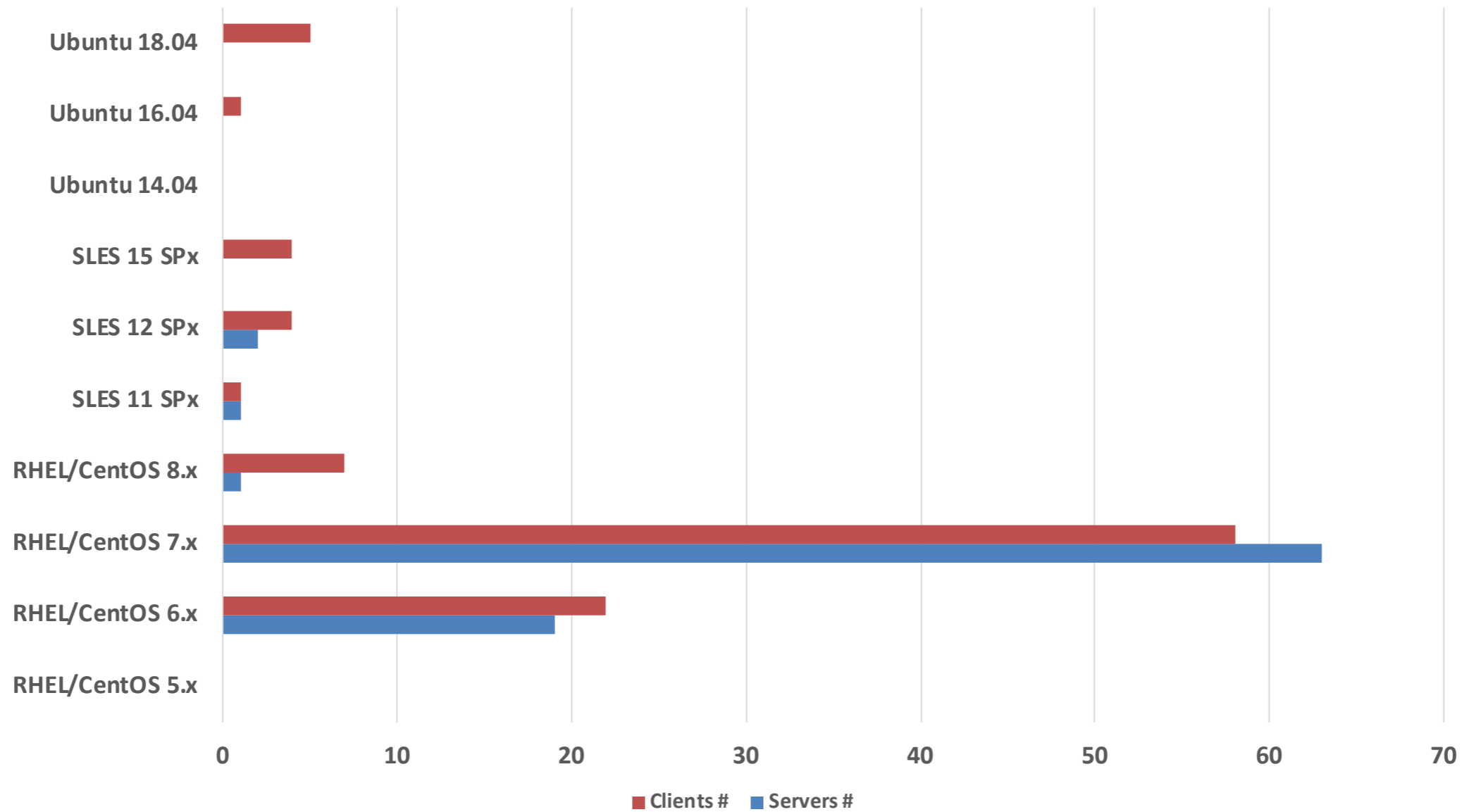# Community Survey - Versions

Which Lustre versions do you use in production? (select all that apply)

- Usage coalescing around LTS releases
- Lustre 2.12.x LTS has the fastest adoption rate for production usage

Community Survey - Linux distros
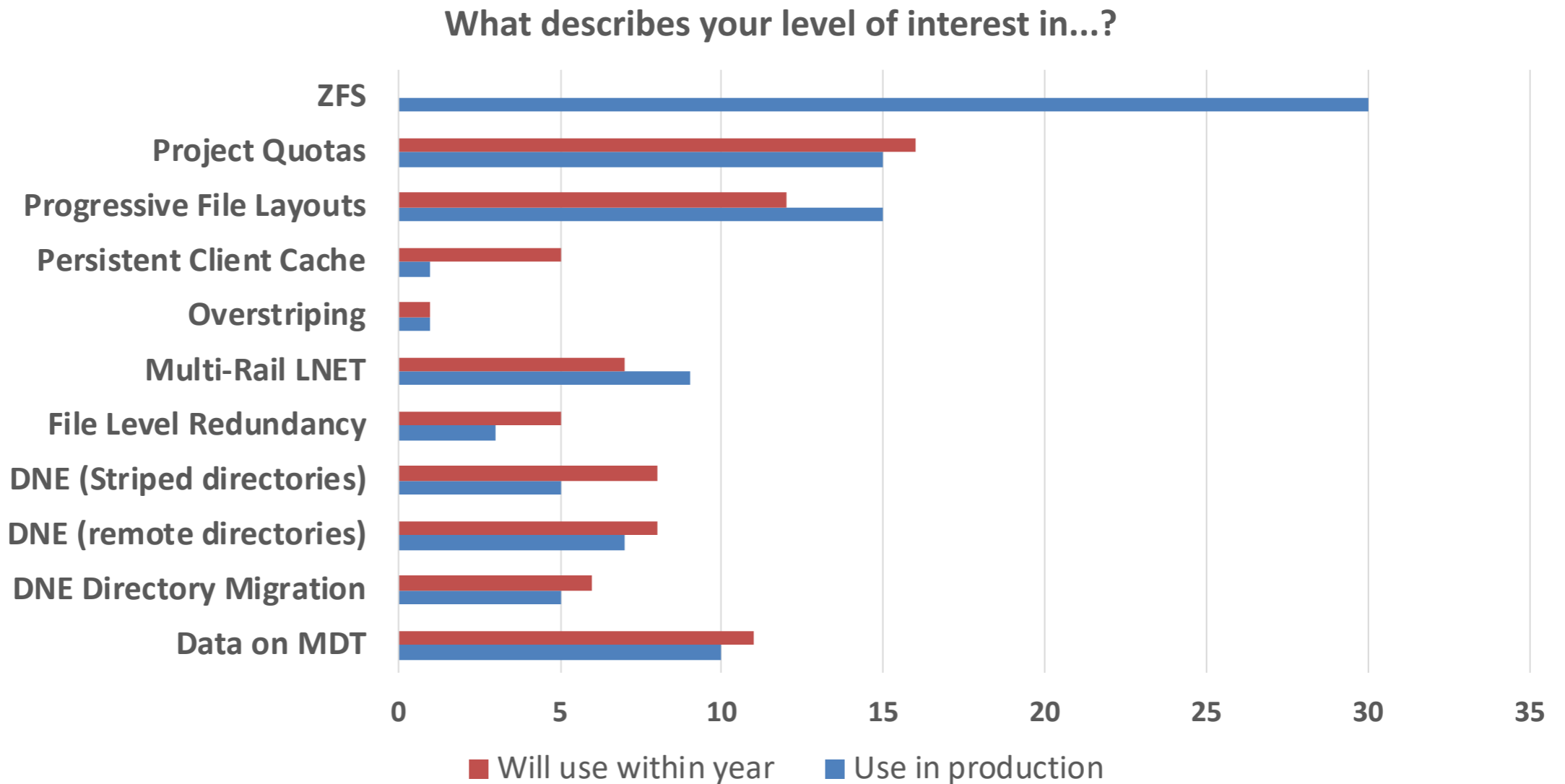

What Linux distributions do you use in production?

RHEL/CentOS 7.x remains most widely-used Linux distribution

Community Survey – Feature Usage

What describes your level of interest in...?
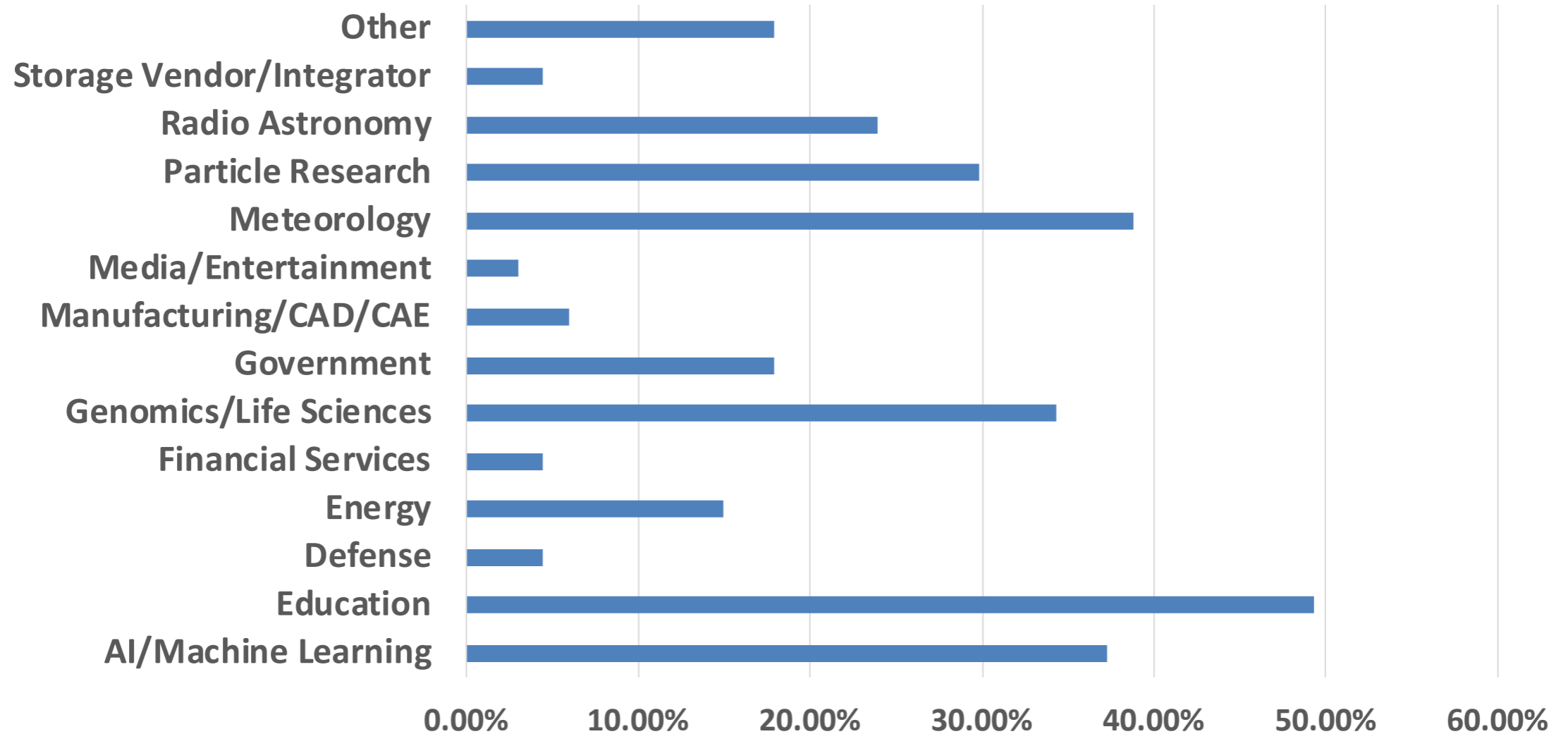

ZFS Production usage seems to have plateaued (no "within a year")
DNE Striped Directories usage finally starting to get traction
Strong interest in using Project Quotas, PFL and Data on MDT

Community Survey – Primary Usage

How would you characterize your primary usage of Lustre?

- Education, AI/ML, Life Sciences and Meteorology leading categories

Lustre 2.12.x LTS

- Lustre 2.12.5 went GA on June 8th
  - RHEL 7.8 server and client support
  - RHEL 8.2 and SLES12 SP5 client support
  - MOFED 4.9 (though MOFED 5.x expected to work)
  - ZFS 0.7.13
  - Bug fixes from production 2.12.x deployments
  - http://wiki.lustre.org/Lustre_2.12.5_Changelog
- Lustre 2.12.6 will be released when warranted
- No decision on the next LTS release has been made yet

Lustre 2.13

- GA Dec 2019
- OS support
  - RHEL 7.7 servers/clients
  - RHEL8.0/SLES12 SP4/Ubuntu 18.04 clients
- Interop/upgrades from latest Lustre 2.12.x
- Shipped with ZFS 0.7.13 by default
- Number of useful features
  - Persistent Client Cache (LU-10092)
  - Overstriping (LU-9846)
  - Self Extending Layouts (LU-10070)
- http://wiki.lustre.org/Release_2.13.0

Lustre Version Statistics

Version	Commits	LOC	Developers	Organizations
1.8.0	997	291K	41	1
2.1.0	752	92K	55	7
2.2.0	329	58K	42	10
2.3.0	586	87K	52	13
2.4.0	1123	348K	69	19
2.5.0	471	102K	70	15
2.6.0	885	147K	76	14
2.7.0	742	201K	65	15
2.8.0	995	147K	92	17
2.9.0	737	74K	121	16
2.10.0	732	108K	85	14
2.11.0	860	134K	87	18
2.12.0	697	82K	90	19
2.13.0	1042	160K	85	25

A Decade of Community Development

- Prior to OpenSFS designating the canonical release and the kernel-style contribution model, external contributions were rare
  - Lustre 1.8 (2009) had no external contributions
  - Lustre 2.13 (2019) had contributions from 85 developers from 25 organizations
- Over the last ten years we have had Lustre code contributions from
  - 45 distinct organizations
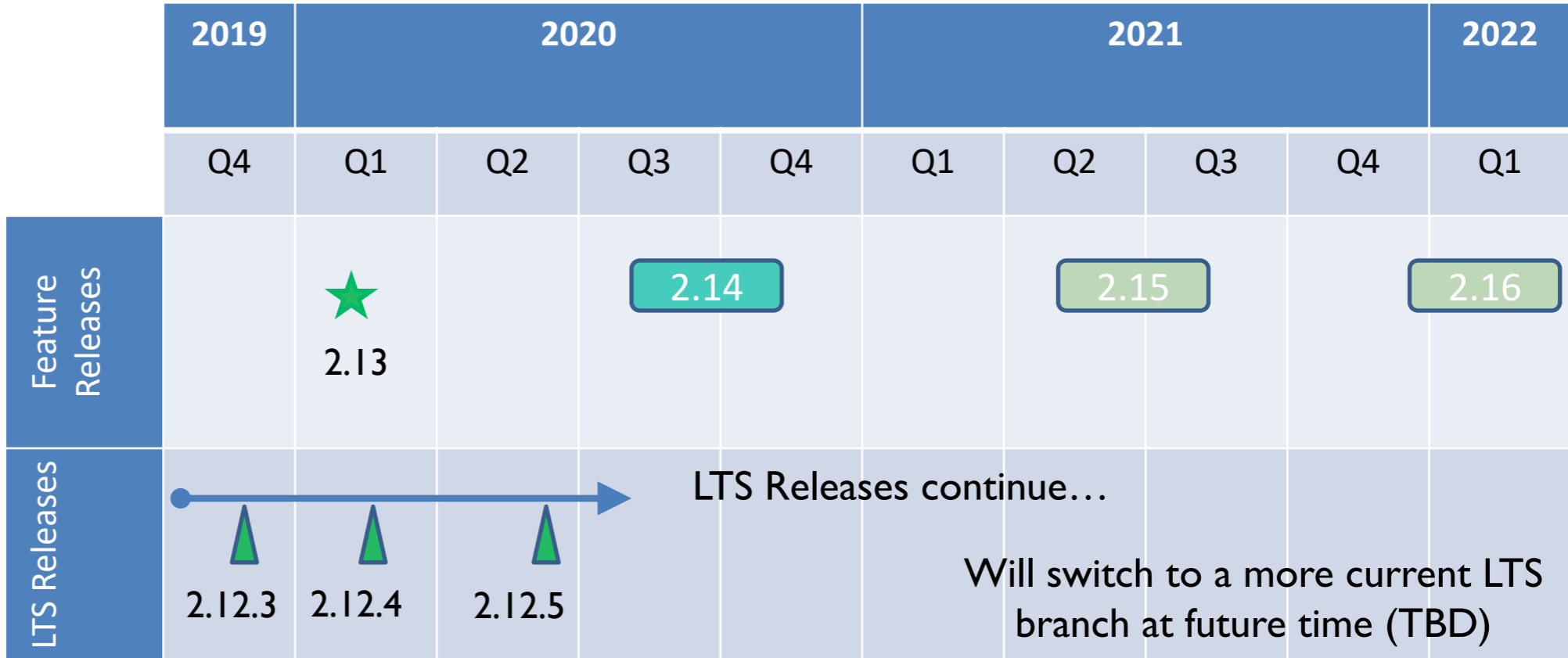 - 217 individual developers

James Simmons (ORNL)
Top contributor of the decade
in terms of Lines of Code

Data courtesy of Dustin Leverman (ORNL)

Lustre 2.14

- Targeting Q3 release
- OS support
  - RHEL 8.2 servers/clients
  - RHEL 8.2/SLES15 SP1/Ubuntu 20.04 clients
- Interop/upgrades from 2.13 and latest Lustre 2.12.x
- Will ship with ZFS 0.8.4 by default
- Number of useful features
  - Client-side Data Encryption (LU-12275)
  - OST Quota Pools (11023)
  - DNE Auto Restriping (LU-11025)
- http://wiki.lustre.org/Release_2.14.0

Lustre Community Roadmap

	2019	2020				2021				2022
	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1
Feature Releases		★ 2.13		2.14			2.15			2.16
LTS Releases	●	2.12.3 ▲	2.12.4 ▲	2.12.5 ▲	→ LTS Releases continue… Will switch to a more current LTS branch at future time (TBD)					

LEGEND: ▬ Completed   ▬ Expected Timeline   ▬ Timeline TBD   ●→ LTS Branch

2.13
- **Persistent Client Cache**
- **Multi-Rail Routing**
- **Overstriping**

2.14
- **Client Data Encryption**
- **OST Quota Pools**
- **DNE Auto Restriping**

2.15
- **FLR Erasure Coding**
- **Client Directory Encryption**
- **LNet IPv6 Addressing**

2.16
- **FLR Immediate Mirror**
- **Metadata Writeback Cache**

* Estimates are not commitments and are provided for informational purposes only
* Fuller details of features in development are available at http://wiki.lustre.org/Projects

OpenSFS

Release Testing

- Release testing practices continue to evolve
- Functional testing
  - Switched to new POSIX validation test from https://github.com/pjd/pjdfstest
  - Added new test groups focused on security
    - review-dne-ssk, review-dne-selinux, review-dne-selinux-ssk, review-dne-selinux
  - Introduced sanity-lnet test group
- Performance testing
  - IO-500 used for performance comparison between releases
- Gatekeeper pre-landing tests
  - *-next "boiling pot" using debug kernels with pathological usage patterns
    - Spotlights new crashes
  - "Gatekeeper helper"
    - Smatch static code analysis on every patch submission
    - Spotlights new test failures
- https://www.eofs.eu/_media/events/lad19/oleg_lad2019.pdf

Lustre in Linux Kernel

- SUSE/ORNL working on getting Lustre client into Linux kernel
  - https://github.com/neilbrown/lustre
  - Patches pushed for review on lustre-devel mailing list
  - IPv6 support (LU-10391) seen as last major area of development needed before resubmitting upstream
- Major ldiskfs patches merged into upstream ext4/e2fsprogs
  - Now much easier to keep Lustre e2fsprogs current

Summary

- LTS model has been well adopted; focus switched to 2.12.x LTS

- Lustre 2.14 in feature freeze

- Lustre 2.12.5 is GA

- Plenty of options for those interested in contributing to Lustre

- LWG http://wiki.opensfs.org/Lustre_Working_Group

Thank you

Open Scalable File Systems, Inc.
3855 SW 153rd Drive
Beaverton, OR 97006
Ph: 503-619-0561
Fax: 503-644-6708
admin@opensfs.org

www.opensfs.org