



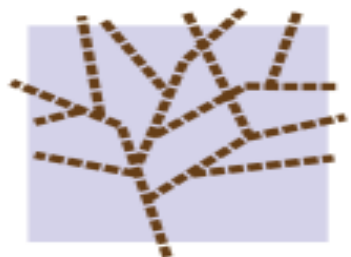
OARC 29th Workshop
Amsterdam, NL
13 October 2018

Systems Engineering Update

Matt Pounsett
Systems Engineer

Introduction

- Change of hands
- New update format
- Full report in meeting materials



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Data Archiving and Analysis

- Annual and incidental DITL (Day in the Life) data collections of Internet DNS traffic
- DSC (DNS Statistics Collector) data submitted by members
- RSAAC 002 Statistics
- ZFR (Zone File Repository) going back to 1993
- Other incidental data

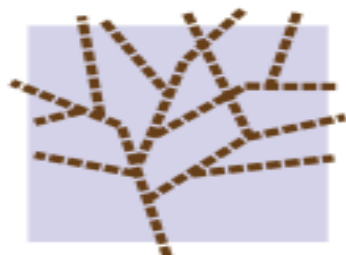


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File Servers and Storage

- Six file servers in two locations
- Five in Fremont, CA
 - Using 358.82TB of 536.27TB
- One in Ottawa, ON
 - Using 117TB of 121TB



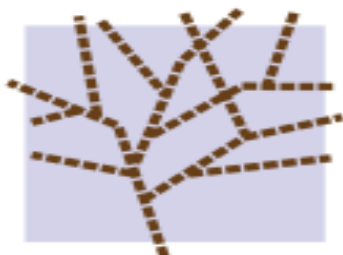
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File Server Capacity

File Server	Used	Available
FS1	117TB	3TB
FS2a	35TB	6TB
FS2b	5TB	120TB
FS3	34TB	8TB
FS4	73TB	11TB
FS5a	68TB	15TB
FS5b	33TB	9TB
FS6	117TB	3TB

Brand new



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New Dataset

- Live DNS query logs
- Syslog-over-TLS
- First dataset available this month: dataplane.org authoritative server query logs
- Contributed by John Kristoff of DePaul University



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KSK Roll DITL Event

- Currently running a Day in the Life data capture for the root KSK roll
- Running until 04:00 UTC on Sunday (06:00 local time)
- As of last night, 5.5 terabytes from 12 contributors
 - 10 root servers
 - 2 TLD operators
- Expecting much more data after the end of the DITL event



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Systems and Service Status



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OS Choice

- Systems converted from Debian 7.x, and 8.x to Devuan 1.0
- Young distribution a poor choice for small shop
- Increased rather than decreased operational workload



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Monitoring

- Poorly maintained
- Using locally developed plugins that poorly duplicate the functionality of standard plugins that are part of the standard tools
- Inconsistent configuration styles
- Broken/missing monitors

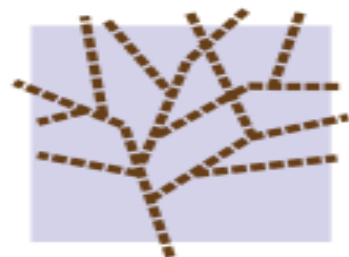


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Backups

- Backup software way out of date
- Not secured
- Backup disks full



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DITL Software

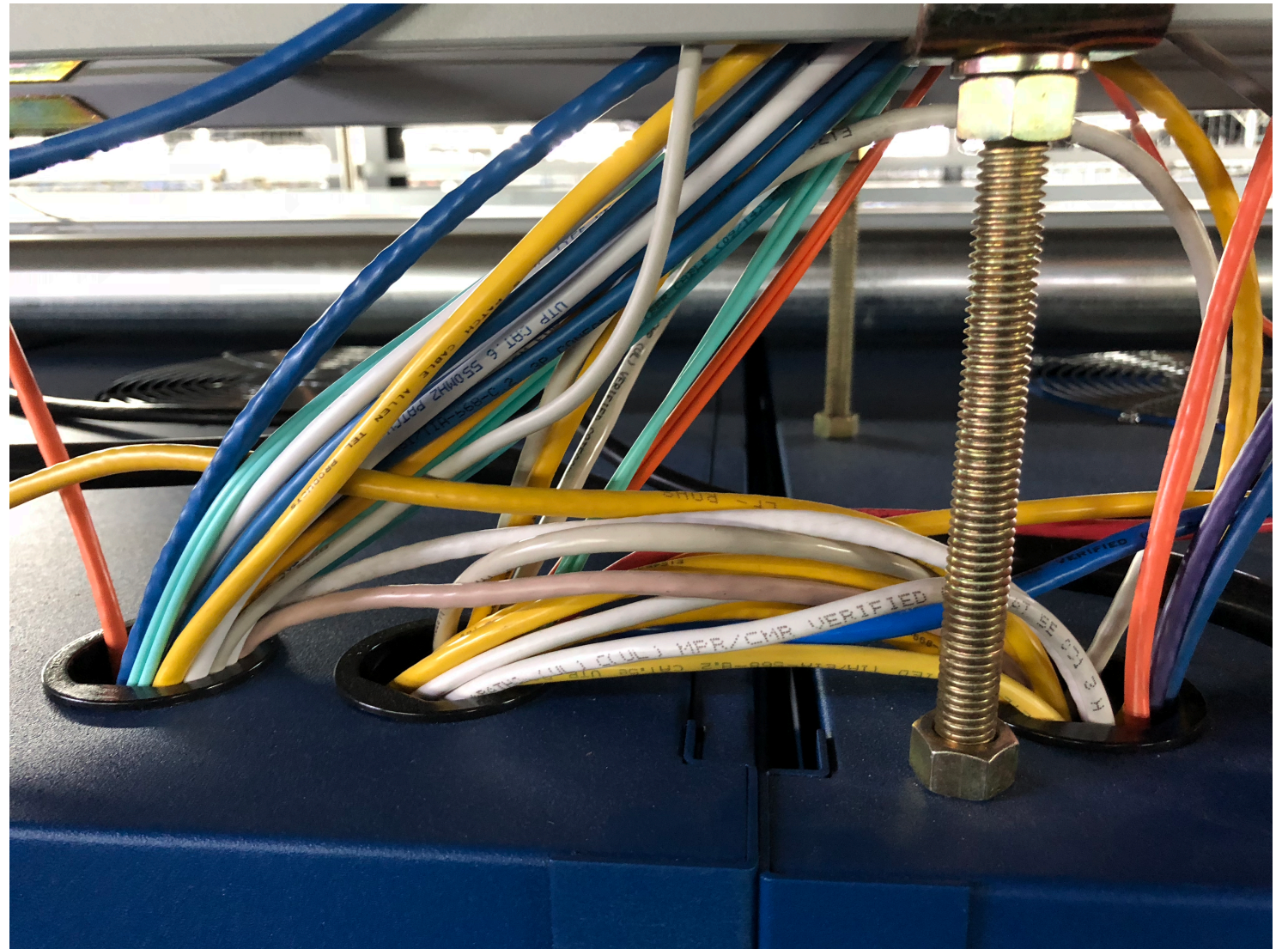
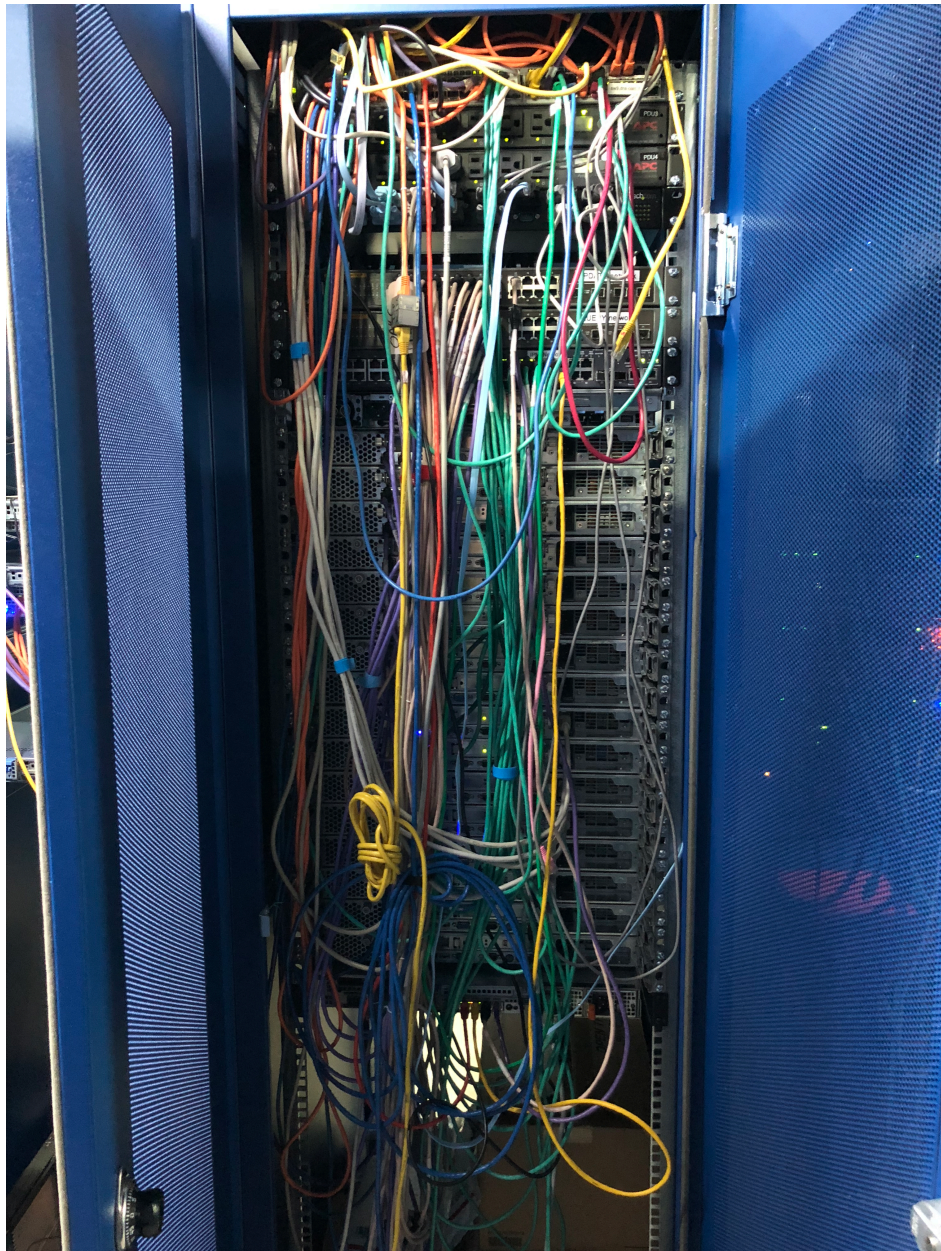
- Lots of manual effort to set up a new collection, and process the collection when it's done
- Extremely hard to produce statistics while DITL is progressing
- Lack of documentation
- Complaints about client-side software too



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Physical Operations



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Analysis Server Resources

- Several outages due to analysis users consuming all disk, memory, CPU
- Implementing simple quotas to protect administration and monitoring



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Election Software

- Open source development ceased in 2011
- Closed source commercial development ceased in 2018
- Now only available as SaaS
- 2011 version dependencies require us to maintain voting on a Ubuntu 14.04 VM



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Addressing Overlap

- Administrative networks in Fremont and Ottawa using the same RFC1918 /24
- Renumbering needed
- Members/users unlikely to notice any effect



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Cat Break



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Recent Work & Changes

The Quick Stuff

- New systems
- Migrated CVS to Gitlab
- TLS certificate update
- DNSSEC validation fixes



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Recent Work & Changes

ZFR Rebuild

- Zone File Repository server failed in June
- Insufficient documentation, missing backups
- Two weeks of investigation (with lots of interruptions for other pressing issues)
- New VM, double the RAM
- Still some issues



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Recent Work and Changes

New Storage

- FS2 got a new filesystem (pool2b)
- 25x 12T disks
 - 20 for the filesystem
 - 4 hot spares
 - 1 on a shelf



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Future Work

One Slide, Many Things

- The Do-Over
 - Reimplementation
 - Containerization
 - Reinstallation
- Config Management
- Log Consolidation

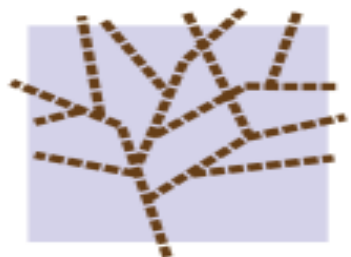


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Potential Projects

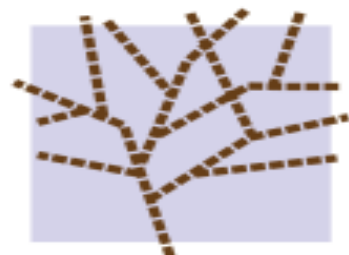
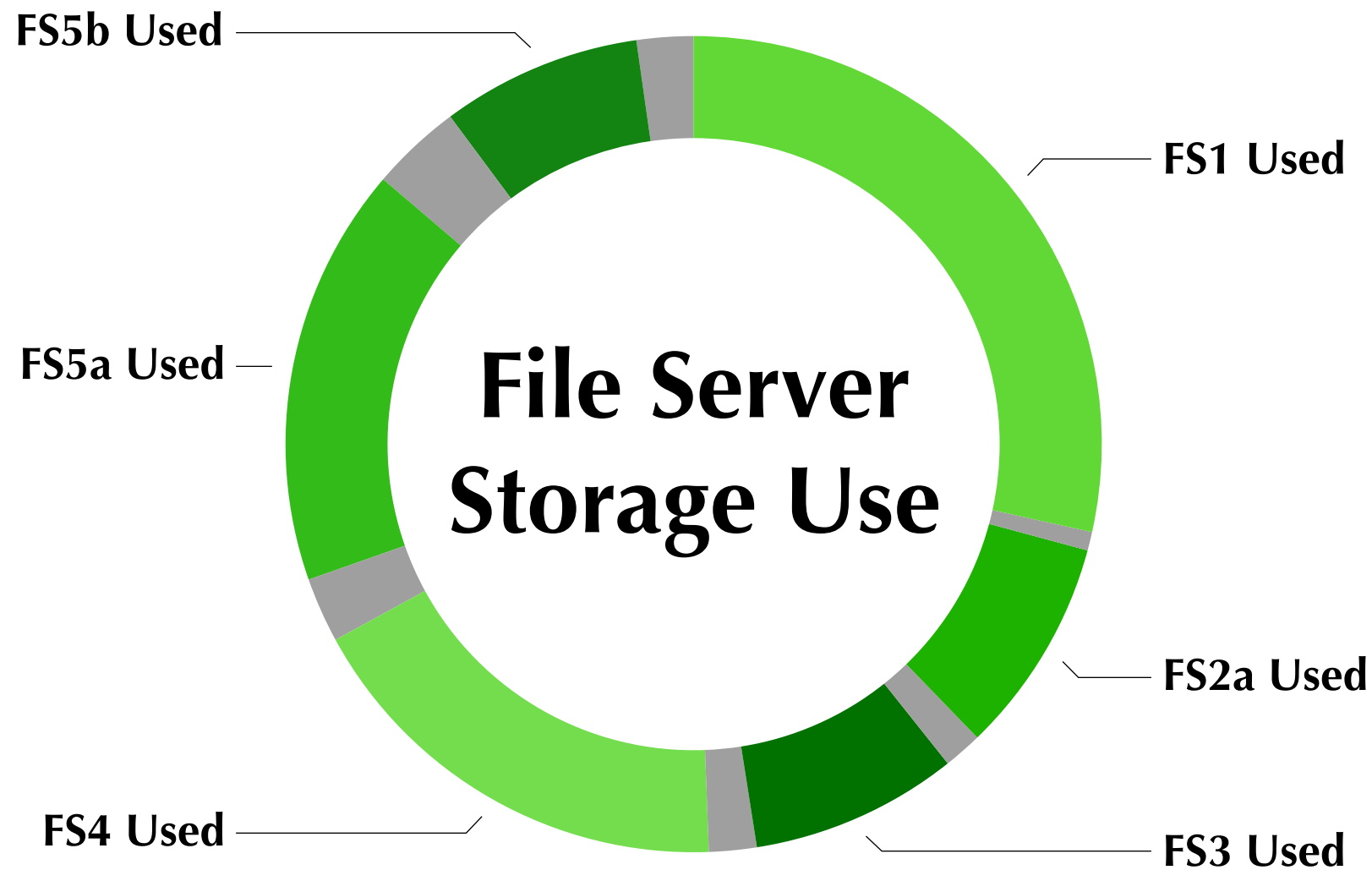
- Ideas for possible future work
- These are not firm plans



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Fileserver Conversion to Clustering



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ELK For Query Analysis

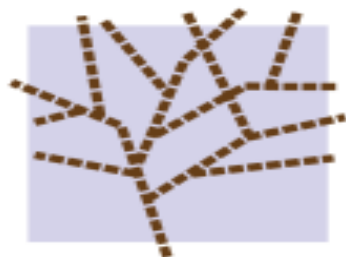


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Conclusions

- Huge opportunities for:
 - Reduction in workload
 - More efficient resource usage
 - Improve services
- Will eventually free up operations time to spend on more new projects



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Questions?

- More in the report! Read it!
- Questions to members@dns-oarc.net, admin@dns-oarc.net, or to me directly at matt@dns-oarc.net



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