



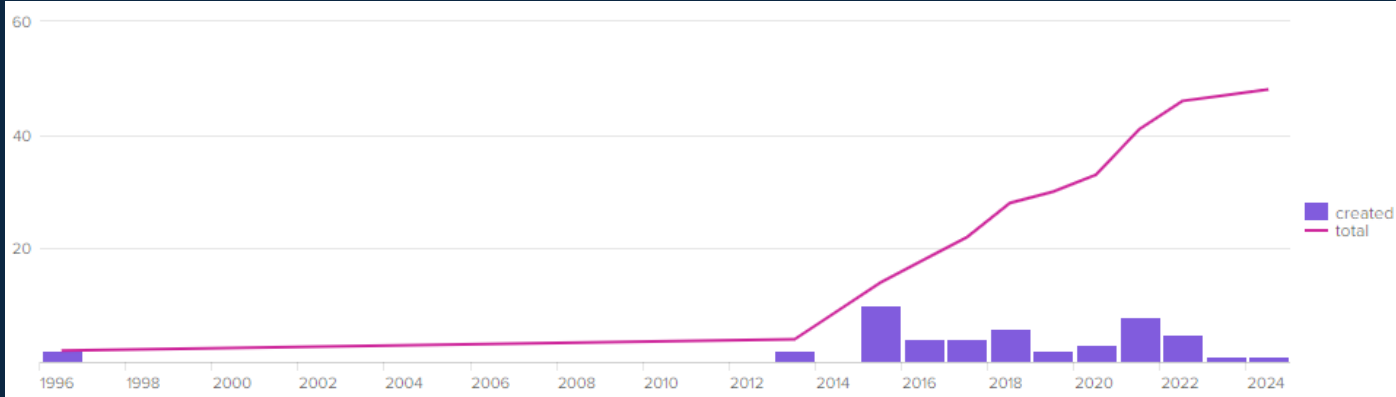
Qualcomm Site Report

OpenAFS Workshop - June 10-11 2024

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Incorporated**

AFS at Qualcomm

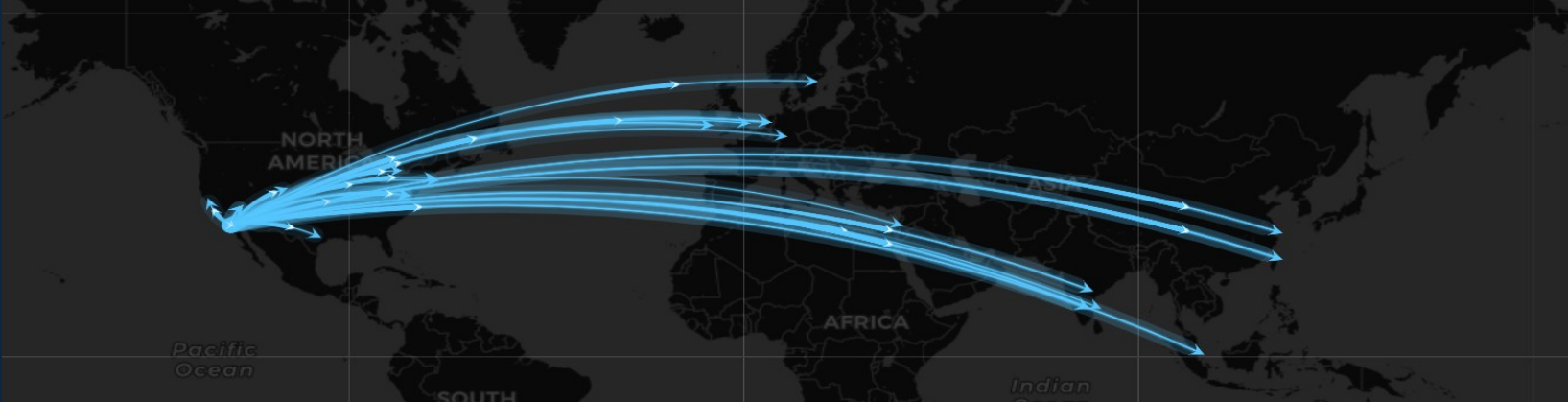
- First cells created in 1996, large growth from 2015 onward



- Key features: High availability, Atomic releases, End-point caching
- Provides Configuration Management source files
- Globally accessible software installations across multiple platforms for our compute grids
 - Over 70TB of tools/software online

At a glance

- 48 cells (global), varying types
- 100K+ clients (RHEL/SUSE/Ubuntu/Solaris)
- 64K+ unique volumes, 6.7M+ globally
- Over 11PB+ of storage available, 4.5PB+ in-use (global)
- Deployed at 21 sites (global)



Architecture

- Full & Partial cell
 - Full – full copy of all volumes from source cell
 - Partial – subset of volumes from source cell (export compliance)
 - 1 Admin Server – Used for restricted administrative activities in the cell as well as our in-house volume synchronization service
 - 3 Database Servers
 - 6 File Servers (or more depending on expected client sizing)
- Mini-cell
 - For small remote sites, boost performance for highly accessed larger volumes, use linked cell for fallback to full cell that is closest geographically
 - 2 File Servers – Both also acting as DB servers, but one is a non-voting clone. Admin services deployed to one node.
- DMZ cell
 - Much smaller subset of volumes targeted for DMZ support
 - Normally VM based
 - 1 Admin Server – Used for restricted administrative activities in the cell as well as our in-house volume synchronization service
 - 3 File Servers – Each with DB services deployed to them as well
- Cells are capped at 20K clients
- Try to maintain a client to server ratio of 1000:1, never more than 1500:1

Hardware / Software (AFS Servers)

- File Servers – 2 x Intel 6326 Gold, 128 GB RAM, 2 x 960GB SSD, 22 x 3.84TB SSD
- Admin / DB Servers – 2 x Intel 6326 Gold, 128 GB RAM, 2 x 1.92TB SSD
- CentOS 7.9 + OpenAFS 1.8.7
 - Several custom patches for server builds
 - Targeting RHEL9 + OpenAFS 1.8.11 for next upgrade cycle

Client base

- Try and stay as current as possible
- RHEL and Ubuntu clients use mainline releases
- SUSE and Solaris clients have several custom patches
- Most of our client base is on 1.8.6+
 - Small percentage on 1.6
 - Handful of stragglers on 1.2 and 1.4

Backups

- FABS - The Flexible AFS Backup System
 - <https://github.com/openafs-contrib/fabs>
 - Developed in partnership with Sine Nomine
- Nightly dumps of changed volumes
- 30 day local retention on NFS shares
- DR syncs kept for 6 months
- Bulk of the volumes are one time install and release, CM related volumes sync from git repos.

Thank you

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