Technology Investigations Update

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Area Coordinator's Meeting - September 20

Highlights

- GRÅCC: Cleanups and more data sources.

- Starting to execute on plan for small, concrete improvements in monitoring.

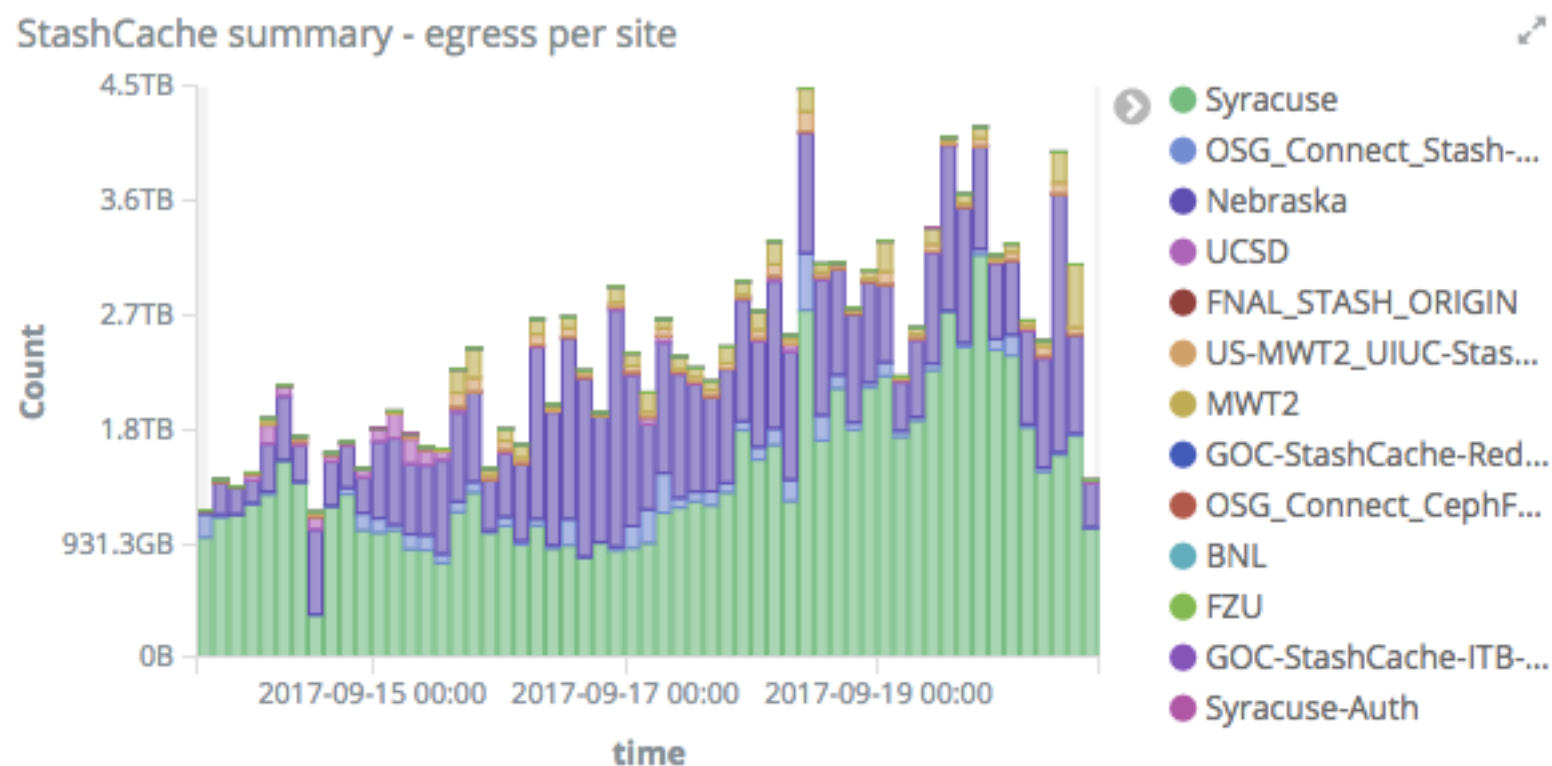- Ongoing Stash-Bonanza at Nebraska.

GRÅCC

- perfSonar data is now archived @ FNAL via GRACC. Appears on the weekly backup summary.

    - Waiting on STOMP endpoint (currently in ITB; waiting for Marian Babik @ CERN to test) for sending network data into GRACC ElasticSearch proper.

- ElasticSearch database backups are mostly in place (this is separate from tape archive of raw records).

- Puppetization and improved check_mk coverage is ongoing.

    - Currently working on nginx / Let's Encrypt.

- Two rounds of "cleaning the crap" over the last month. Cleaned up bad records for VOs and site names.

- Found and re-implemented another piece of hidden Gratia logic. Unfortunately, affected WLCG reports.

    - Working to document cases where workarounds for bug probes were hardcoded into Gratia collector but never fixed in the probe.

- Aiming to improve monitoring around GRACC-to-APEL uploads so we catch these issues first.

Monitoring Improvements

- **GlideInFactory logs into ElasticSearch**:

  - Done in ITB; working to roll out to production.

  - Each log line is augmented with various pilot-related attributes to help support staff search for records.

- **XRootD and GridFTP publishing to GRACC**. No progress to report - focus is on network data right now.

- **GOC historical service status archiving**: Prototype converter done, waiting on GOC to install FileBeats and test.

OSG Storage Progress

- The osgstorage.org CVMFS repositories continue to be used heavily by LIGO and others.

  - In addition to detector data, LIGO is now using CVMFS to distribute non-public results to the rest of the collaboration

- Monitoring improvements: data moved via HTTP in StashCache infrastructure now shows up in monitoring!

StashCache summary - egress per site

Legend:
- Syracuse
- OSG_Connect_Stash-...
- Nebraska
- UCSD
- FNAL_STASH_ORIGIN
- US-MWT2_UIUC-Stas...
- MWT2
- GOC-StashCache-Red...
- OSG_Connect_CephF...
- BNL
- FZU
- GOC-StashCache-ITB-...
- Syracuse-Auth

Sum of link_out

135TB

Stash-Bonanza

- Today & yesterday, Nebraska is hosting a hackathon for doing a write-enabled stashcp *for OSG Connect*. **Basic idea:**

  - OSG-Connect submit host issues a security token.

  - HTCondor brings token along with job, renewing it as necessary.

  - When stashcp is used to stageout, token is sent along with write request.

  - Stash origin server (Xrootd server using HTTPS protocol) is augmented with the ability to authorize requests based on attached token & write into CephFS as the correct user ID.

- Even better: original idea was to have an "OSG-Connect" private CA and use GSI proxies. However: why start a new project based on X509?

  - Instead, this is the inaugural use of SciTokens' OAuth2-inspired token format.

- We have end-to-end working! Components we had to touch:

  - Requires two new plugins to Xrootd.

  - One small patch to Xrootd.

  - Three patches to bugfix HTCondor.

  - stashcp changes.

  - "credmon" plugin for HTCondor.

  - Finish up initial release of SciTokens python library.

- Development! Unit tests! Deployment! Packaging!

Containers / GPUs

- Starting to look at how to best include GPUs in GRACC.

- OSG User Support documentation includes GPU information:

  - How to run TensorFlow on OSG: https://support.opensciencegrid.org/support/solutions/articles/12000028940-tensorflow

  - How to allocate GPUs on OSG: https://support.opensciencegrid.org/support/solutions/articles/5000653025-gpu-jobs

  - Relies on Singularity to manage complexity of library stack of modern ML environments.

- Initial successes running IceCube (via GLOW) on GPUs at Syracuse!

  - At time of writing, 34 jobs running.

- OSG and GLOW VOs should be able to access GPUs at UCSD, Nebraska, and Syracuse.

- Heterogeneity remains a problem - starting to organize thinking on how we do this for RHEL6/7 in order to better tackle GPUs.

Retirements

- HTCondor-CE 3.0.0 should have the **traceability improvements** needed to meet FNAL requirements to switch on singularity.

  - Any updates from FNAL? Gone quiet since release… assuming all is good.

- **GUMS retirement**

  - Nothing to report. Some T3s are showing interest. Need to make a push internal to CMS.

  - What is dead remains dead: Nebraska has been adjusting to the post-GUMS lifestyle.

- **VOMS-Admin retirement**:

  - OSG still needs to help glideinWMS users to sign pilot credentials directly. GLOW remains initial target.

  - This is still a waiting game: need sufficient number of sites to upgrade to OSG 3.4.

Globus Tookit ->
Closed Source

- Reminder: **OSG will support our stakeholder's usage of Globus.** Open-ended for as long as it is needed.

- Another round of meetings hosted by XSEDE (included XSEDE, PRACE, EGI, OSG, Globus).

- Starting to understand each stakeholder's needs — but no one appears to be "cutting metal" yet.

Concerns

- **Lack of progress for Globus Toolkit migrations**! Need to get the ball rolling on this.

- **Blueprints**: Need to get these back on track. At least made a list of desired topics at the OSG Staff Retreat.

- **Effort**: Will continue to need time from Dave Dykstra and Kevin Retzke @ FNAL.