OSG Area Coordinators

Network Monitoring Update: **April 19, 2017**

Shawn McKee

Big News: perfSONAR v4.0 Out

- As of this Monday, April 17, 2017 perfSONAR v4.0 is out
  - Lots of changes and updates to the Toolkit
  - OSG's near-term goal will be to get all instances updated and running correctly
- A normal install should have auto-updates enabled and should already be updated
  - As of this morning **161** instances were updated, **41** were still running old versions and about **63** instances have issues/are down
  - Therefore we has some issues(41+63) to iron-out!

pS 4.0 Release Implications for OSG

- Now that perfSONAR 4.0 is out OSG needs:
  - Updated documentation
  - Updated OSG network service components
  - *A campaign to recruit non-WLCG sites*
  - Implementation of MCA as production
  - Improved/updated monitoring (ETF)
  - Finalize (user-subscription) alerting system
- I will cover each of these items today

Updating Documentation

- Our existing documentation at https://twiki.opensciencegrid.org/bin/view/Documentation/NetworkingInOSG needs:
  - Streamlining
  - Updating for v4.0
  - Migration to GitHub? (What is the new location?)
- The perfSONAR developers provide excellent documentation on installation and configuration of perfSONAR
  - We need to point to that and provide details on the few specific things we need to worry about for OSG/WLCG installations
    - Firewalls configured allowing our access to the data
    - Configuration for auto-mesh and information about MCA
    - Information about OSG network services
    - Information about OSG and WLCG support
  - **Timeline: guessing about 2 weeks to get to final version**

Updating VMs/Services

- This is a big job because not only has the release of perfSONAR 4.0 provided new versions of perfSONAR components and tools we have other software (check_mk, postgresql, MCA, etc) that need updating
- Fortunately we have modified the status of our "production" instances to be "development" status, allowing us to easily work on them.
- The following slides provide some details…

Needed Updates

- **OSG network services (both ITB and Production):**
  - Remove perfsonar-itb (see following slides)
  - Re-distribute CPU/memory resources based upon monitoring history
  - Update (via RPM) perfSONAR related items
  - Postgresql will need some 'manual' intervention to get from 9.4 to 9.5 or 9.6 since our existing data must be migrated between PSQL versions
  - New version of MaDDash on psmad.grid.iu.edu
- Update mesh-config service (currently in MyOSG/OIM) to the new MCA standalone versions
  - The tricky part is ensuring that existing mesh-configurations on the many perfSONAR hosts worldwide still work.
  - Will likely require some Apache rewrite/redirect rules on the current MyOSG/OIM side? (Initial email sent a couple weeks ago)
  - Needs to be carefully coordinated.
  - Would like to see this in place in ~2 weeks
  - Dependent on replicating existing meshes from MyOSG/OIM into meshconfig.grid.iu.edu

Recruiting non-WLCG Sites

- One passed set of milestones was to recruit 10 (or more) non-WLCG sites who have perfSONAR instances to "join" OSG
  - This means they use the OSG mesh-configuration to define tests
  - OSG will gather metrics from their instances
  - Our dashboard and check_mk will display their metrics and monitor their perfSONAR services
- Previously delayed: waiting for the standalone meshconfig and perfSONAR v4.0
  - Those are both (mostly) ready NOW.
- We need a targeted email campaign soon.
  - Operations + User Support help?
  - Suggestions needed and welcome.

Standalone Mesh-config (MCA)

- Soichi was approved Nov 16 to work 20% on this for 4 months followed by 10% for 2 months
  - Started in January
  - We now have created a production instance at **meshconfig.grid.iu.edu** (Not yet "loaded" with meshes)
- Documentation at http://docs.perfsonar.net/mca and at https://github.com/soichih/meshconfig-admin
- Issues tracked at https://github.com/soichih/meshconfig-admin/issues (8 open, 18 closed)
- OSG ITB instance running at https://meshconfig-itb.grid.iu.edu/ (create an account to play with this)
  - Now 265 hosts imported from OIM/GOCDB
  - New API available https://meshconfig-itb.grid.iu.edu/apidoc/
- **Production instance should be operational next week**
- NOTE: MCA being handed off to perfSONAR by end of May

Replacing/Updating OMD/Check_mk

- We have been using **OMD/Check_mk** to monitor both **perfSONAR** services and host status.
- WLCG has built an improved system (**ETF**=Experiments Testing Framework) which we have leveraged to create a perfSONAR specific implementation of.
  - It is distributed as a Docker image and requires a CentOS 7.x base OS with Docker to use.
- Our plan is the following:
  - Remove the perfsonar-itb instance (we have etf.aglt2.org for testing and psomd.grid.iu.edu for production)
  - Create a new appropriately provisioned psomd.grid.iu.edu as CentOS 7.3 with Docker installed
  - Deploy the 'etf_ps' instance
- Details at: https://gitlab.cern.ch/etf/docker/blob/master/README.md

Network Alerting

- We have a longer term goal of alerting and alarming on network issues.
- Milestone completed: technical design of a suitable analysis system based upon existing time-series technologies
- Current operating implementation gathers all perfSONAR data OSG sends to CERN and puts it in ElasticSearch.
- Jupyter instance regularly runs cron tasks to analyze data
  - Anyone can subscribe to simple alert-emails.
  - http://tiny.cc/RegATLASAlarm
  - Needs "tuning" of text and user-interface for end-user use.
  - **Have improved User-emails about packet-loss (next)**

Current Example Alerting Email

Dear Shawn McKee,

This mail is to let you know that there are significant changes in packet-loss detected by PerfSONAR for sites you requested alerting about.

The site KISTI-KR (134.75.125.241)'s network paths have improved, the count of src-destination paths with packet-loss went from 10 to 5.

These are the remaining bad src-destination paths for the past hour:

This site ---> CA-MCGILL-CLUMEQ-T2 (132.206.45.252)

This site ---> RRC-KI-T1 (144.206.236.189)

RRC-KI-T1 (144.206.236.189) ---> This site

SARA-MATRIX (145.100.17.8) ---> This site

FZK-LCG2 (192.108.47.12) ---> This site

Best regards,

ATLAS Networking Alert Service

To-Do: Add relevant 'graph' and contact details for further help:

"If you suspect a network problem contact wlcg-network-throughput@cern.ch for help"

Should we also point to GOC?

Status: Plan to Address Storage Space

- Discussed previously: a hardware upgrade plan because we are running out of storage space for the Esmond-based network datastore.
- Disks are now on-site and we just need to deploy them (12 larger disks replacing smaller)
  - Purchased 8TB disks to replace 4TB disks
- Tom, Scott and Shawn need to finalize the plan and do the incremental replacements
  - Rough Plan: migrate data from one of the RAID-10 spaces (corresponding to 4 disks), replace those 4 disks with larger versions and rebuild the RAID-10, migrate data back; **repeat**
  - This should be completed ASAP (before we get all the other updates/changes in place) Comments/concerns??

Concerns

- **Suddenly lots to do**: there are a significant number of updates and changes that we need to implement now that 4.0 is out (see previous AC presentations for items "waiting" on 4.0!!)
  - This will take quite a lot of effort and planning to make the process "smooth"
  - We also have two newly developed items: ETF and MCA
  - Will need help from OSG Operations on the revised VMs/services we need
    - VMs need resource adjustments
    - New versions need to be "captured" by OSG configuration (Ansible/Puppet)
- The release of 4.0, coupled with the corresponding updates and changes we need will make it difficult to **also** support/diagnose/fix the potentially many sites that have issues with the changes.
- We need to start identifying suitable non-WLCG sites to benefit from OSG networking services (need ~10 sites identified to recruit) but we really need to address the above two issues **FIRST**!

Questions or Comments?

Thanks!

URLs of Relevance

- OSG Network Datastore Documents
  - Operations https://docs.google.com/document/d/11144BSo-88M0cLMMjKcKMIE-Q5s21X-w3lYI-0Pn_08/edit#
  - SLA https://twiki.grid.iu.edu/bin/view/Operations/PSServiceLevelAgreement
  - Data lifecycle https://docs.google.com/document/d/1mJ1kf43nZf6gvKoNtiTOc0g0MYDv_wSfSm7YdiMs3Lo/edit#
- Current OSG network documentation https://www.opensciencegrid.org/bin/view/Documentation/NetworkingInOSG
- OSG networking year-5 goals and milestones: https://docs.google.com/document/d/1FzmXZinO4Pb8NAfd5SWUzaAFYOL23dt66hQsDmaP-WI/edit
- perfSONAR adoption tracking: http://grid-monitoring.cern.ch/perfsonar_coverage.txt
- Deployment documentation for both OSG and WLCG hosted in OSG (migrated from CERN) https://twiki.opensciencegrid.org/bin/view/Documentation/DeployperfSONAR
- ATLAS Analytics:
  - Packet-loss: http://tiny.cc/PktLossNoUnknown (6 month view)
  - perfSONAR dashboard: http://tiny.cc/pSDash
  - perfSONAR link details: http://tiny.cc/pSLink
- Mesh-config in OSG https://oim.grid.iu.edu/oim/meshconfig
- Pre-Production Meshconfig https://meshconfig-itb.grid.iu.edu/meshconfig/
- MadAlert: http://madalert.aglt2.org/madalert/diff.html
- perfSONAR homepage: http://www.perfsonar.net/