



# OSG Area Coordinators

Network Monitoring Update: **June 14, 2017**

Shawn McKee

# OSG Network Services Update

- Since the last meeting ALL VMs running OSG network services have been updated to use the most recent perfSONAR v4 RPMs
- The postgresql DB (part of ESmond) was also updated to use 9.6 instead of 9.4
- No significant issues discovered and all services are running well after the update.

# Virtualization Resource Balancing

- Once all VMs were update in terms of software we let them run for a few days to get a baseline of resource use
- We had a number of cases where we had mismatches in CPU or RAM for VMs.
  - Fortunately it was roughly balanced so that systems need more CPUs could use the ones released from others and similarly for memory.
  - The check\_mk monitoring was really important for identifying the right resource requirements
  - One small tweak (adding back some “stolen” memory) was needed on a couple VMs
- System now seems balanced for the current workload
  - Have to watch over time and adjust as required.

# 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: STILL guessing about 2 weeks to get to final version once things settle down.**
  - **This work has been lagging because of other issues; waiting for other work to converge and gaining some feedback/experience on v4.0 so documentation reflects identified “best practices”**

# Hardware Update / Data loss

- Since the beginning of the year we have been waiting to update the storage (disks) in use for the network datastore
  - **8TB replacements for 4TB disks have been on-hand for months**
- At the end of April we attempted to do incremental updates to RAID-10 (4-disk) sections of the hardware
  - **PROBLEM: VMs running Postgresql and Cassandra were not shutdown while the storage was changed and we lost/corrupted the postgres DB**
  - **Attempted recovery** (3 days of work) only recovered 5-7% of the Postgres metadata.
    - Consulted experts but nothing to be done
    - Cassandra retained all the data but “index” for it missing in postgres
- Two changes: Postgresql DB should now have daily backups (need to confirm this is in place with Scott) and future procedures will shutdown VMs if their storage is modified

# OSG Network Data Distribution

- Since early May our OSG network data is also being replicated to FNAL where it goes to tape (a little late to help with the data loss but great to have for the future)
- Given that many perfSONAR nodes have local copies of data for up to 1-year, Edgar is also running “long-term” query out to toolkits to capture any data still available.
- Updates to production perfSONAR RSV yesterday now support posting data to CERN’s ActiveMQ, the OSG RabbitMQ (goes to FNAL) and to ESmond
- **Concern:** may need to modify how RSV perfSONAR probe gathers data. Need to do “small” requests or risk time-outs when gathering a large time-span of data
  - Have issue with FNAL perfSONAR ([psonar3/4.fnal.gov](http://psonar3/4.fnal.gov)) that needs debugging: **psetf** can get data but **psds0** (RSV) **can’t**

# Standalone Mesh-config (MCA)

- We (OSG networking/Soichi) have finally finished the standalone mesh config administrator (GUI)!
  - As of May 31, 2017 the code and responsibility for maintenance and future upgrades was give to the perfSONAR developers team.
- 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> (14 open, 17 closed)
- OSG ITB instance running at <https://meshconfig-itb.grid.iu.edu/> (create an account to play with this)
- **Production instance is operational**  
<https://meshconfig.grid.iu.edu/>
  - Old URLs using my
- **Some small issues (see issue tracker) but it is working well**

# Updated Net Service Monitoring

- 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.
- We requested a new VM (psetf.grid.iu.edu) and 'root' access for Marian and I
  - We deployed Marian's etf\_ps docker instance and tested and tweaked
  - Once working we requested the psomd.grid.iu.edu DNS alias be switched to psetf.grid.iu.edu from perfsonar1.grid.iu.edu
  - We then had Tom shutdown perfsonar1.grid.iu.edu (we want to keep the VM image for 6 months in case we need any data off from it)
- Have a look [https://psomd.grid.iu.edu/etf/check\\_mk/](https://psomd.grid.iu.edu/etf/check_mk/)
  - NOTE: Apache redirect requested for (ticket #34087) [https://psomd.grid.iu.edu/WLCGperfSONAR/check\\_mk](https://psomd.grid.iu.edu/WLCGperfSONAR/check_mk) but not yet in place
- Docs and details at:  
<https://gitlab.cern.ch/etf/docker/blob/master/README.md>



# Network Alerting Reminder

- 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.

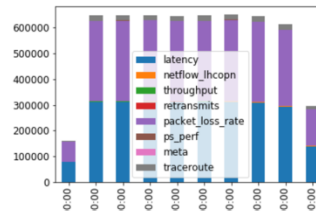
# Current Example Alerting Email

- Last time I showed an text example email
- We updated the format:



## Alert on Elastic indexing rate [PerfSonar]

Dear Shawn McKee, this mail is to let you know that there is an issue in indexing Perfsonar data in UC Elasticsearch. These document types have zero documents indexed: link\_utilization



### PacketLoss Ingress

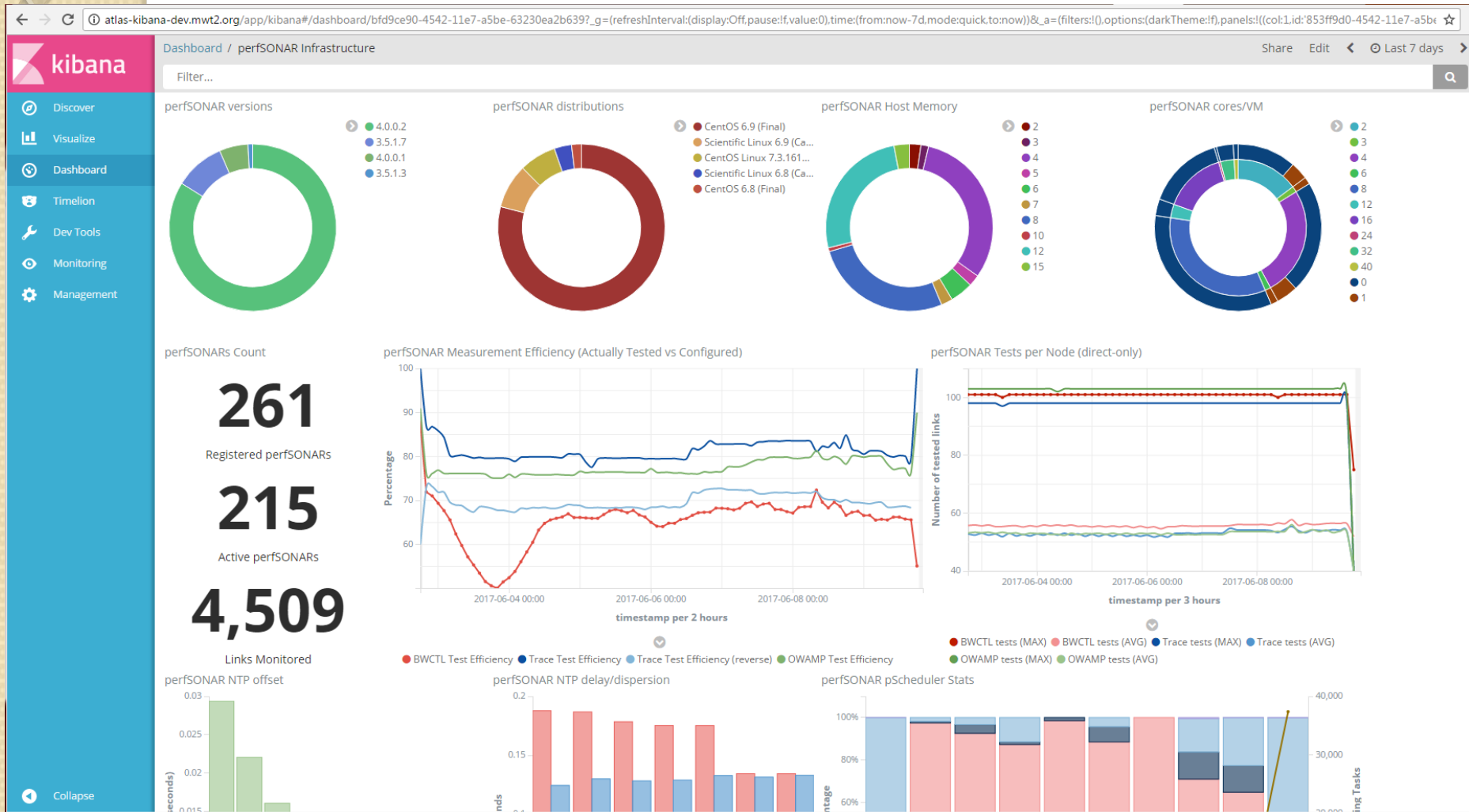
This plot shows number of documents indexed in last 9 hours per document type.  
Bins are 1h.

- Working to customize by alert type

# Network Analytics

- Because our perfSONAR data is published to CERN and gets to the U Chicago Elasticsearch analytics platform we have a number of nice dashboards constructed to see the (meta)data
- In the next few slides I will flip through a few of them showing what we currently have
- The dashboards are only available right now on development systems (hidden behind user/pw credentials) but we are working to publish (readonly) versions of them for general use

# Kibana perfSONAR Infrastructure



# Grafana Dashboard (ESnet sites)



# Grafana (Site to 2 Destinations) (CERN to BNL and TRIUMF)



# Concerns

- **While we have made very good progress in updating things there is still much to do**
- Need updated documentation reflecting the right best practices
  - Need to include public version of dashboards
- **Must recruit additional non-WLCG sites using our developing capabilities as a “carrot”**
- Some services need minor fixes (perfSONAR RSV, MCA) and host admins may need to do some work to fix toolkit issues we are seeing with their sites

# Questions or Comments?

Thanks!



# URLs for Reference

- OSG Network Datastore Documents
  - Operations [https://docs.google.com/document/d/11144BS0-88M0cLMMjKcKMIE-Q5s2IX-w3IYl-0Pn\\_08/edit#](https://docs.google.com/document/d/11144BS0-88M0cLMMjKcKMIE-Q5s2IX-w3IYl-0Pn_08/edit#)
  - SLA <https://twiki.grid.iu.edu/bin/view/Operations/PSServiceLevelAgreement>
  - Data lifecycle [https://docs.google.com/document/d/1mJlkf43nZf6gvKoNtiTOc0g0MYDv\\_wSfSm7YdiMs3Lo/edit#](https://docs.google.com/document/d/1mJlkf43nZf6gvKoNtiTOc0g0MYDv_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-VW/edit>
- perfSONAR adoption tracking: [http://grid-monitoring.cern.ch/perfsonar\\_coverage.txt](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://meshconfig.grid.iu.edu/>
- Pre-Production Meshconfig <https://meshconfig-itb.grid.iu.edu/>
- perfSONAR homepage: <http://www.perfsonar.net/>