



OSG Area Coordinators

Network Monitoring Update: **Nov 11 2015**

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Networking Area Goals Year 4

- We will put the OSG network datastore into production. Data from all registered perfSONAR instances in OSG and WLCG will be continuously gathered and reliably stored.
 - **Done as of September 14, 2015 and announced.**
- The USATLAS and USCMS sites will be used to demonstrate a robust network monitoring infrastructure from OSG. We will use the data collected to identify networking issues between USATLAS and/or USCMS sites and document how we resolve those issues.
 - **In progress (50%).** Problems with OU, Langston and UM identified and fixed using OSG perfSONAR dashboard and metrics.
- We will produce Release 1.0 of the datastore API providing access to all the perfSONAR metrics we gather: traceroute, bandwidth, latency and packet-loss. In addition this API may contain additional derived and transformed data as requested by our client users.
 - **In progress (15%).** Starting from Esmond. Publishing to **AMQ**

Networking Stretch Goals Year 4

- We will create a network cost-matrix (rows: sources, columns: destinations) containing estimated bandwidth values between our USATLAS and USCMS sites.
 - **In progress (50%):** Jorge Batista and Ilija Vukotic are working with me on producing a bandwidth estimate using Mathis's Formula (which relates packet-loss and round-trip-time to bandwidth)
- We will prototype various alarming and alerting components for use in OSG
 - **Options being thought out. No really started yet.**

Key Initiatives in Network Area

- Improving perfSONAR-PS toolkit for OSG
 - Track adoption at http://grid-monitoring.cern.ch/perfsonar_coverage.txt
 - Version 3.5 has had minor fixes (3.5.0.6) based upon OSG
- OSG modular dashboard service / OSG network service
 - Last meeting of “OSG Datastore to Production” group was Monday. Now moved to OSG Operations/Production
- Outreach and community interaction
 - LHCONe/LHCOPN meeting 2 weeks ago I presented perfSONAR for WLCG/OSG. Lots of good discussions.
 - Ongoing meetings/interactions with perfSONAR developers
 - PuNDIT continues testing on perfSONAR testbed in OSG.

Recent Accomplishments

- OSG Network Datastore into production (lots of corresponding fixes)
- MadAlert continuing development can now pick perfSONAR meshes from MaDDash instances and analyze them or difference them.
- OSG perfSONAR data now published to CERN Active MQ bus (both testing and production)
- OSG perfSONAR data pipeline into ElasticSearch providing an Analytics Platform
- Significant effort to debug remaining problematic perfSONAR toolkit instances by WLCG Network and Transfer Metrics WG
 - OSG sites focused on include: Indiana, U Florida, MIT,, UCSD, Boston, Michigan State
- Documentation updates for v3.5 and minor clarifications
- Updates to our OMD/Check_mk probes (handling HTTPS only, new checks comparing OSG central datastore vs remote MA datastore):

perfsonar02-iep-grid.saske.sk		
State	Service	Status detail
WARN	OSG Datastore Freshness Latency Direct	WARNING Found 15 stale hosts for certain events
WARN	OSG Datastore Freshness Latency Reverse	WARNING Found 92 stale hosts for certain events
OK	perfSONAR 3.4+ Toolkit Version	OK toolkit version found 3.5.0.6
WARN	perfSONAR esmond Freshness Latency Direct	WARNING Found 3 stale hosts for certain events
WARN	perfSONAR esmond Freshness Latency Reverse	WARNING Found 92 stale hosts for certain events
OK	perfSONAR esmond Measurement Testing	OK esmond probeable

Project Update: MadAlert

- Recap: Gabriele Carcassi (original author of GUMS) is working with me at Michigan on a new project for one of our OSG Networking Goals: **alerting on problems**
- Updates since last time
 - Can now select MaDDash servers and meshes
<http://madalert.aglt2.org/madalert/report.html>
 - Can “diff” similar meshes across or within servers:
<http://madalert.aglt2.org/madalert/diff.html>

MadAlert

Madalert
Report
GitHub
Wiki

Server: maddash.aglt2.org
Mesh: USATLAS Mesh Config - USATLAS Latency Mesh Test

Madalert Report

Mesh: [USATLAS Mesh Config - USATLAS Latency Mesh Test](#)

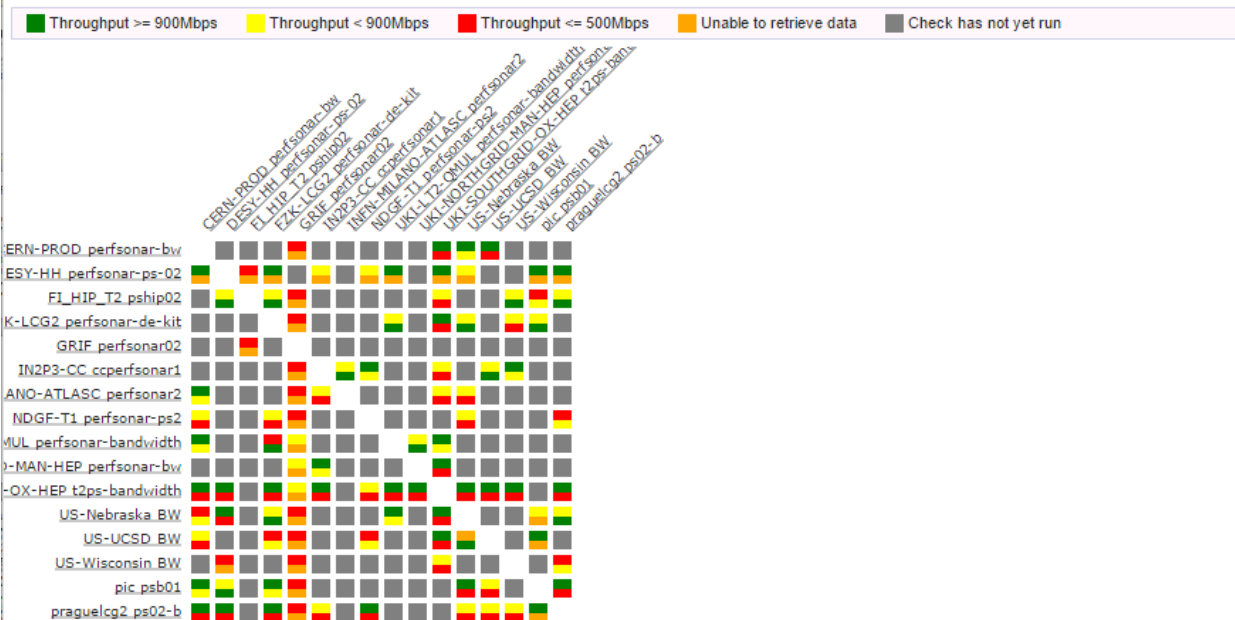
JSON mesh data: <http://maddash.aglt2.org/maddash/grids/USATLAS Mesh Config - USATLAS Latency Mesh Test>

Infrastructure problems

Site	Description
US-MWT2_UIUC LAT	Site is down

Test failures

Site	Description
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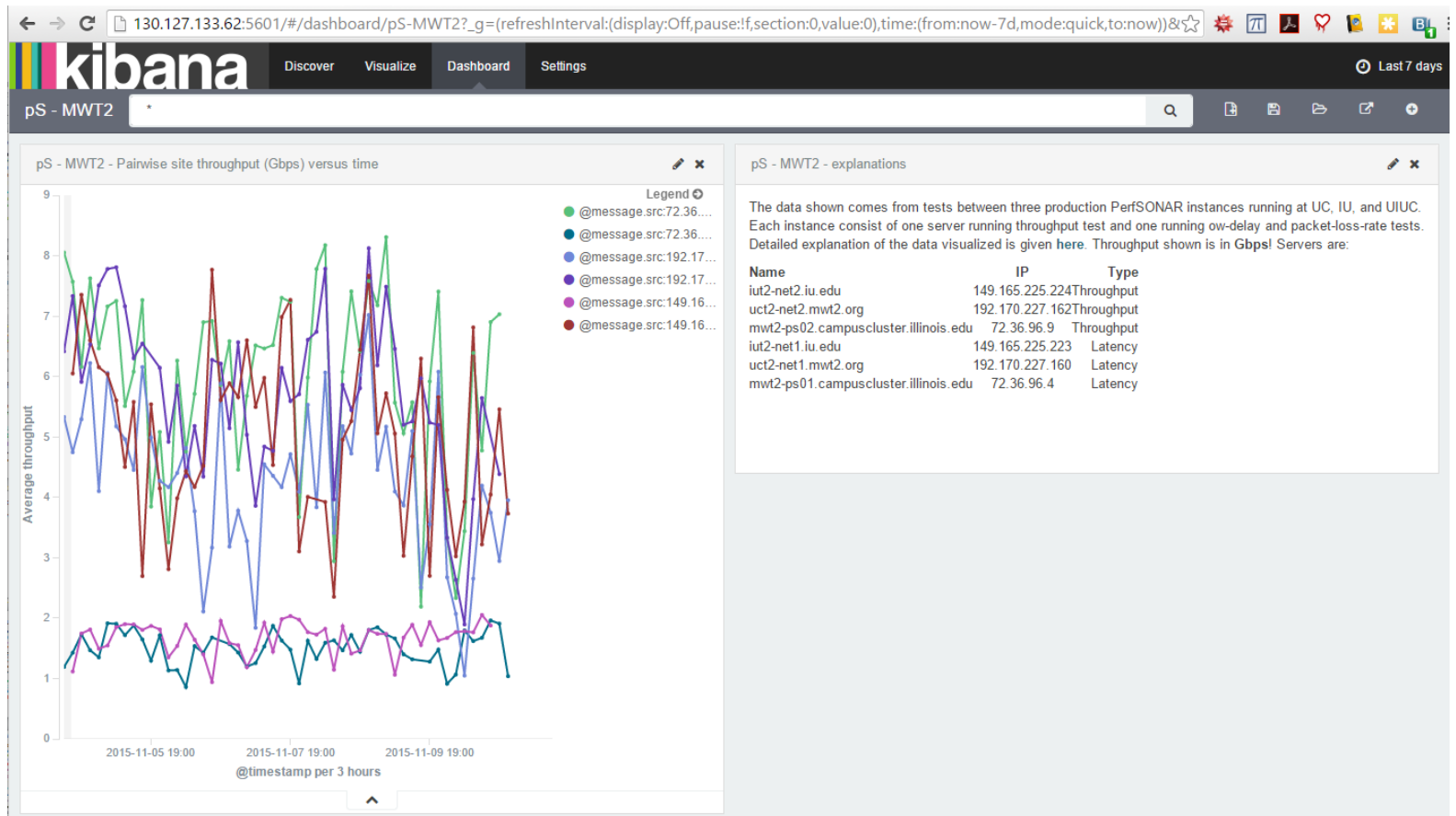


perfSONAR Data Analytics

- I have been working with Ilija Vukotic/UC on getting our perfSONAR data into ElasticSearch for analysis
- Ilija created a pipeline using the published data to CERN ActiveMQ to Flume and into Elastic Search at Clemson
- Now operating in production
 - Used to identify firewall problem at FZK/DE
 - Example “Site” page using MWT2 (next slide)

ElasticSearch Analytics

- Example for MWT2: <http://tinyurl.com/opf4ptv>



Known Issues

- Last known fixes put in place in production datastore yesterday (HTTPS and JSON publishing)...but we are seeing lots more **missing** data since yesterday ☹ Under investigation
- Underpowered perfSONAR instances (≤ 4 GB ram) still having problems. We have changed testing to uni-directional but still issues. Have a possible fix but prefer to have sites get more memory.
- Some sites still showing “strange” issues. Need to track on a case-by-case basis. For example found “duplicate” tests for Taiwan in their GUI which seemed to cause problems with tests from their site to others. Have to work on remaining ~15 problematic instances.

Top Concerns

- OSG Network Datastore is primary concern
 - **Even though it is production, every time we make any change we seem to hit issues that require a bit of work to track-down and fix.**
 - **Problem from yesterday may imply we need more memory on the data collection instance (psds0) to a handle restarts.**
 - **Need to investigate additional checks to help identify the source of problems?**
- **We still must address the data migration process.**
 - How do we move “older” data off the primary system and onto a new location while retaining some means of access? Waiting for process from Esnet...

Questions or Comments?

Thanks!

URLs of Relevance

- OSG Network Datastore Documents
 - Operations https://docs.google.com/document/d/11144BSO-88M0cLMMjKcKMIE-Q5s2IX-w3IYI-0Pn_08/edit#
 - Risk Assessment https://docs.google.com/document/d/182OI8IF_5CLPHKeOioHJjfYjVFC0JkEjL_vD4GUevLU/edit#heading=h.kpx7wu1vzcq7
 - SLA <https://twiki.grid.iu.edu/bin/view/Operations/PSServiceLevelAgreement>
- Network Documentation <https://www.opensciencegrid.org/bin/view/Documentation/NetworkingnOSG>
- Deployment documentation for both OSG and WLCG hosted in OSG (migrated from CERN) <https://twiki.opensciencegrid.org/bin/view/Documentation/DeployperfSONAR>
- perfSONAR-PS Installation Motivation: <https://twiki.grid.iu.edu/bin/view/Networking/WhyPerfSNOAR>
- Esmond install info http://antg-dev.es.net/esmond-docs/rpm_install.html
- Mesh-config in OSG <https://oim.grid.iu.edu/oim/meshconfig>
- perfSONAR homepage: <http://www.perfsonar.net/>