



OSG Area Coordinators

Network Monitoring Update: **February 2014**

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Key Initiatives in Network Area

- OSG modular dashboard service / OSG network service
 - **Original Modular Dashboard orphaned:** still in GitHub: <https://github.com/PerfModDash> but no developers active since Tom Wlodek left.
 - **Replacement prototyped over December holidays (more later)**
 - **OSG has basic network service up, but really needs new capabilities**
 - Need to address data-store issue and how best to deploy prototype in test/production
 - Will require Operations help to integrate the new services as they are ready
- Improving perfSONAR-PS toolkit for OSG
 - We had 3.3.2 released on February 3. Fixed all known issues except intermittent PingER DNS lookup issue (under investigation)
 - Significant security improvements and minor bug fixes.
 - Push within OSG should now start; get ALL OSG sites to install (Rob/Shawn)
- Documentation updates: network tools & troubleshooting
 - New “WhyPerfSONAR” page setup to encourage adoption/installation.
 - Installation guide for perfSONAR-PS Toolkit in place and updated for 3.3.2
<https://twiki.grid.iu.edu/bin/view/Documentation/PerfSONARToolKit>
- Outreach and community interaction
 - Attended LHCONe/LHCOPN and Grid Deployment Board meetings at CERN last week. Presented on perfSONAR deployment and plans.

Top Concerns

- Orphaned modular dashboard needs addressing
 - Had a call of stakeholders Dec 17th.
 - Choose MaDDash for the metrics visualization
 - Choose OMD for basic service monitoring/tests.
 - Prototyped and working but now needs to migrate into OSG
- Getting the OSG Network Service into “production”
 - **Current service in OSG works and gathers data**
 - Misses traceroute and pinger data.
 - Based upon orphaned dashboard code
 - Replacement needs to be implemented and evolved
 - Need OSG “home” to migrate prototype replacements into.
 - Need to determine technology and API for “datastore” component
 - We should start migrating/consolidating into OSG Operations
- Automating generation of the mesh-configs from OIM/GOCDB
 - Need to determine what is missing to do this
- Breadth of deployment: Basically we have only WLCG-OSG sites with deployments. *Need to pursue the rest but now well positioned with 3.3.2 and documentation.*

Recent Accomplishments

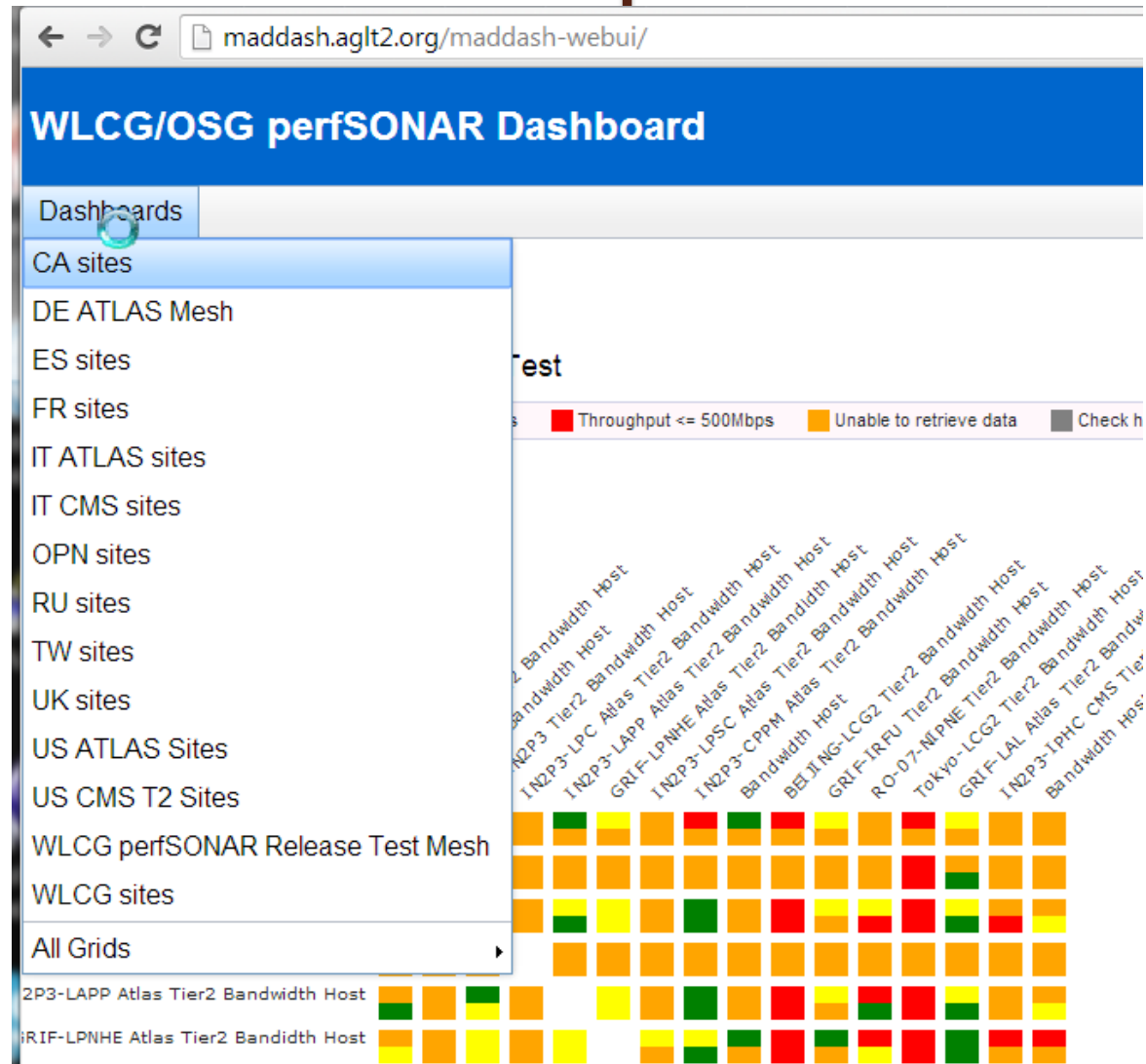
- Prototyping of alternative components for the Modular Dashboard
 - See <http://maddash.aglt2.org/maddash-webui> for MaDDash implementation
 - See https://maddash.aglt2.org/WLCGperfSONAR/check_mk for OMD (login is WLCGps and pw given on call) See following slides
 - ESnet is very supportive. MaDDash will be supported for foreseeable future
- Release and deployment of perfSONAR-PS 3.3.2
 - Security fixes for EGI issue and NTP amplification
 - Improvements in resiliency of services
 - Minor bug fixes
- Updated docs on installing PS (3.3.2), troubleshooting issues
- Engagement with LHCONE/LHCOPN, WLCG and GDB communities at February meetings at CERN
 - Positive feedback.
 - Strong interest in being able to ACCESS the network metrics

Modular Dashboard Replacement

MaDDash (Monitoring and Debugging Dashboard) is a perfSONAR-PS project developed and maintained by ESnet.

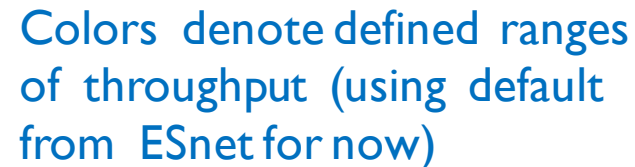
It is **easy to install**, provides drill-down capability and will be supported for the foreseeable future. (Install details at <https://twiki.cern.ch/twiki/bin/view/LCG/MadDashWLCG>)

It doesn't provide any primitive service monitoring nor the ability to create/edit meshes via the GUI.



WLCG/OSG perfSONAR Dashboard

US ATLAS Sites - US ATLAS Cloud BWCTL Mesh Test



Hovering provides results from both Measurement Archives(MAs) involved in the test

Clicking allows you to drill down

MaDDash Drill-down to Graphs

WLCG/OSG perfSONAR Dashboard

Dashboards

ps2.ochep.ou.edu to mwt2-ps02.campuscluster.illinois.edu (Throughput Reverse)

Status: **OK** Last Checked: February 11, 2014 18:47:56 PM Eastern Standard Time Next Check: February 12, 2014 02:47:56 AM Eastern Standard Time

Summary History Check Details

Current Results

Current Status: **OK**

Result of last check: **OK**

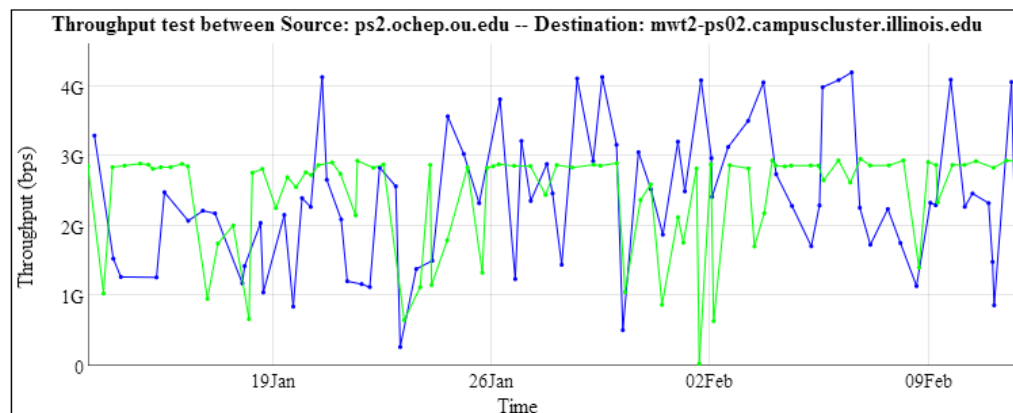
Message For Current Status: Average throughput is 2.887Gbps

Statistics

Graph

perfSONAR BWCTL Graph

perfSONAR



Graph Key

■ Src-Dst throughput
■ Dst-Src throughput

OMD Description and Capabilities

- OMD (Open Monitoring Distribution) was selected to complement MaDDash and replicate the service testing component present in the Modular Dashboard.
 - OMD bundles Nagios/Icinga/Shinken with various tools in a single RPM. Easy to deploy and configure; provides nice features.
- For those familiar with Nagios there is a low barrier to use.
- The Check_MK (rule-based configuration) is a very powerful component we can leverage.
- Installation via yum by : 'yum install omd-1.10' (once repo setup)
- Currently prototype for WLCG evaluation is running at: <https://maddash.aglt2.org/WLCGperfSONAR/omd>

WLCG OMD Check_MK Mainpage

← → ↻ https://maddash.aglt2.org/WLCGperfSONAR/check_mk/

Check_MK

1.2.2p3

Main Overview

Tactical Overview

Hosts	Problems	Unhandled
184	5	5
Services	Problems	Unhandled
1843	506	506

Quicksearch

Views

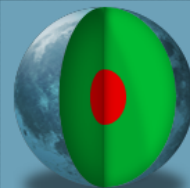
- Dashboards
 - Main Overview
- Hosts
 - All hosts
 - All hosts (Mini)
 - All hosts (tiled)
 - Host search
- Hostgroups
 - Hostgroups
 - Hostgroups (Grid)
 - Hostgroups (Summary)
- Services
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 - Services by group
- Business Intelligence
- Problems
- Addons
- Other

EDIT

WATO - Configuration

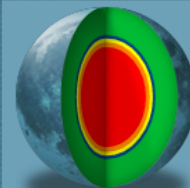
- Main Menu
- Hosts & Folders
- Host Tags
- Global Settings
- Host & Service Parameters
- Host Groups
- Service Groups

Host Statistics



Up	179
Down	5
Unreachable	0
In Downtime	0
Total	184

Service Statistics



OK	1291
In Downtime	0
On Down host	46
Warning	55
Unknown	79
Critical	372
Total	1843

Host Problems (unhandled)

state	Host	Icons
DOWN	perfonar01-1ep-grid.saske.sk	
DOWN	perfonar02-1ep-grid.saske.sk	
DOWN	perfonar2.ihep.ac.cn	
DOWN	ps-bandwidth.clumeq.mcgill.ca	
DOWN	sonar2.itim-cj.ro	

Service Problems (unhandled)

State	Host	Service	Icons	Status detail
CRIT	ccperfonar2-lhcopn.in2p3.fr	One-Way Ping Service OWAMP		CRITICAL - Socket tim 10 seconds
CRIT	lcg-sonar01.hep.ucl.ac.uk	PS-Homepage		CRITICAL - Socket tim 45 seconds
CRIT	hep-sonar.ecm.ub.es	Traceroute Measurement Archive		CRITICAL - Socket tim 10 seconds
CRIT	lpnhe-psl.in2p3.fr	Traceroute Measurement Archive		No route to host
CRIT	netmon02.grid.hep.ph.ic.ac.uk	PingER Measurement Archive and Regular Tester		No route to host
CRIT	netmon00.grid.hep.ph.ic.ac.uk	PS-Homepage		CRITICAL - Socket tim 45 seconds
CRIT	ps01.ncg.ingrid.pt	perFONAR-BUOY Measurement Archive		Connection refused
CRIT	ps02.ncg.ingrid.pt	PS-Homepage		CRITICAL - Socket tim 45 seconds
CRIT	psonar1.lal.in2p3.fr	PS-Homepage		CRITICAL - Socket tim 45 seconds
CRIT	ccperfonar2.in2p3.fr	PingER Measurement Archive and Regular Tester		CRITICAL - Socket tim 10 seconds
CRIT	gridpp-ps-lat.ecdf.ed.ac.uk	PS-Homepage		No route to host
CRIT	netmon02.grid.hep.ph.ic.ac.uk	Traceroute Measurement Archive		No route to host
CRIT	perfonar1.ihep.ufl.edu	perFONAR-BUOY Measurement Archive		Connection refused
CRIT	perfonar01.ftuam.es	PingER Measurement Archive and Regular Tester		Connection refused
CRIT	perfonar01.datagrid cea.fr	PS-Homepage		No route to host

Events of recent 4 hours

	Time	Host	
	9 min	uct2-net1.mwt2.org	PingER Measur Archive Tester
	9 min	iut2-net1.iu.edu	PingER Measur Archive Tester
	9 min	hcc-ps01.unl.edu	PingER Measur Archive Tester
	9 min	psonar2.fnal.gov	PingER Measur Archive Tester
	9 min	lutps.lunet.edu	PingER Measur Archive Tester
	9 min	perfonar-owamp.accre.vanderbilt.edu	PingER Measur Archive Tester
	9 min	perfonar01.hep.wisc.edu	PingER Measur Archive Tester
	10 min	ps2-ecbhep.cern.ch	Bandwi

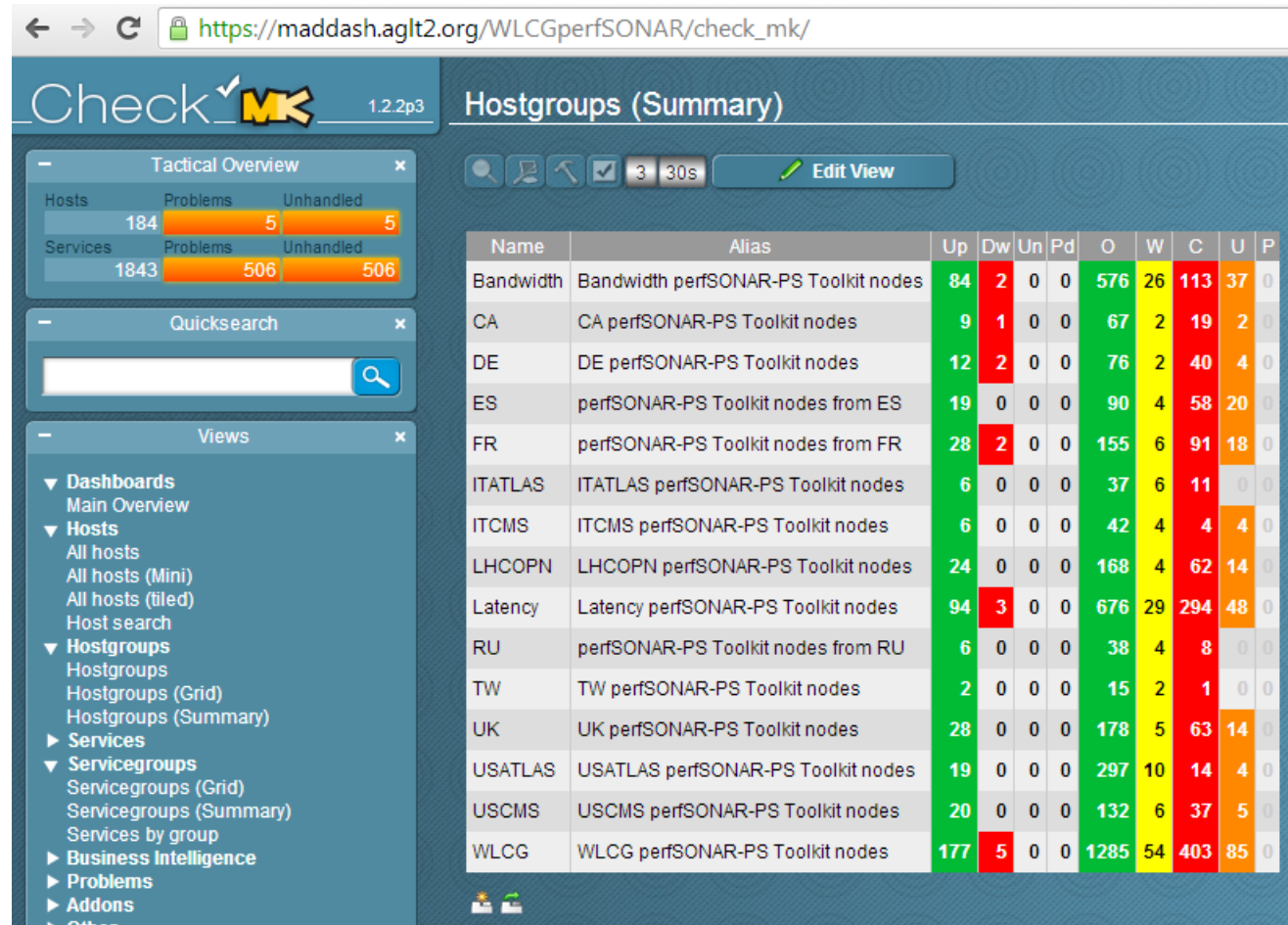
Grouping By Hosts

Check_MK rules were used to setup host groups

Easy to track Regional/VO cloud status this way

Can also organize by perfSONAR node type

The “Name” column is a link you can use to drill-down to host lists



Grouping By Service

The screenshot shows the WLCGperfSONAR check_mk web interface. The browser address bar displays https://maddash.aglt2.org/WLCGperfSONAR/check_mk/. The page title is "Servicegroups (Summary)".

On the left sidebar, there are three main sections:

- Tactical Overview**: A summary table showing the number of hosts and services, problems, and unhandled issues.
- Quicksearch**: A search bar with a magnifying glass icon.
- Views**: A list of available views, including Dashboards, Hosts, Hostgroups, Services, and Servicegroups.

The main content area displays a table of service groups. The table has columns for Name, Alias, O, W, C, U, and P. The data is as follows:

Name	Alias	O	W	C	U	P
Bandwidth	Bandwidth Test Controller	80	0	6	0	0
NDT	Network Diagnostic Tester	146	0	32	0	0
NPAD	Network Path and Application Diagnosis	103	0	75	0	0
OWAMP	One-Way Ping Service OWAMP	86	0	11	0	0
PS-Admins	PS Toolkit Administrator Configured, cached and checked every hour	132	0	10	41	0
PS-Homepage	PS-Homepage access checked every 6 hours	148	3	32	0	0
PS-LatLong	PS Toolkit Latitude/Longitude Configured, cached and checked every hour	83	0	100	0	0
PS-Version	PS Toolkit Version, cached and checked every hour	60	47	36	40	0
PingER	PingER Measurement Archive	64	0	33	0	0
TracerouteMA	Traceroute Measurement Archive	66	0	31	0	0
WLCG-Mesh-Updates	Check for WLCG mesh updates	0	0	1	0	0
perfSONAR-BUOY-MA	perfSONAR-BUOY Measurement Archive	145	0	38	0	0

We can also group by service type, allowing us to quickly check service status by grouping. Name column is clickable. **Note we check needed PS services but don't yet have a good check of sites mesh-configuration (use dashboard for now)**

Example of Detailed Host

Check MK 1.2.2p3 Services of Host maddash.aglt2.org 44 rows omdadmin (admin) 02:18

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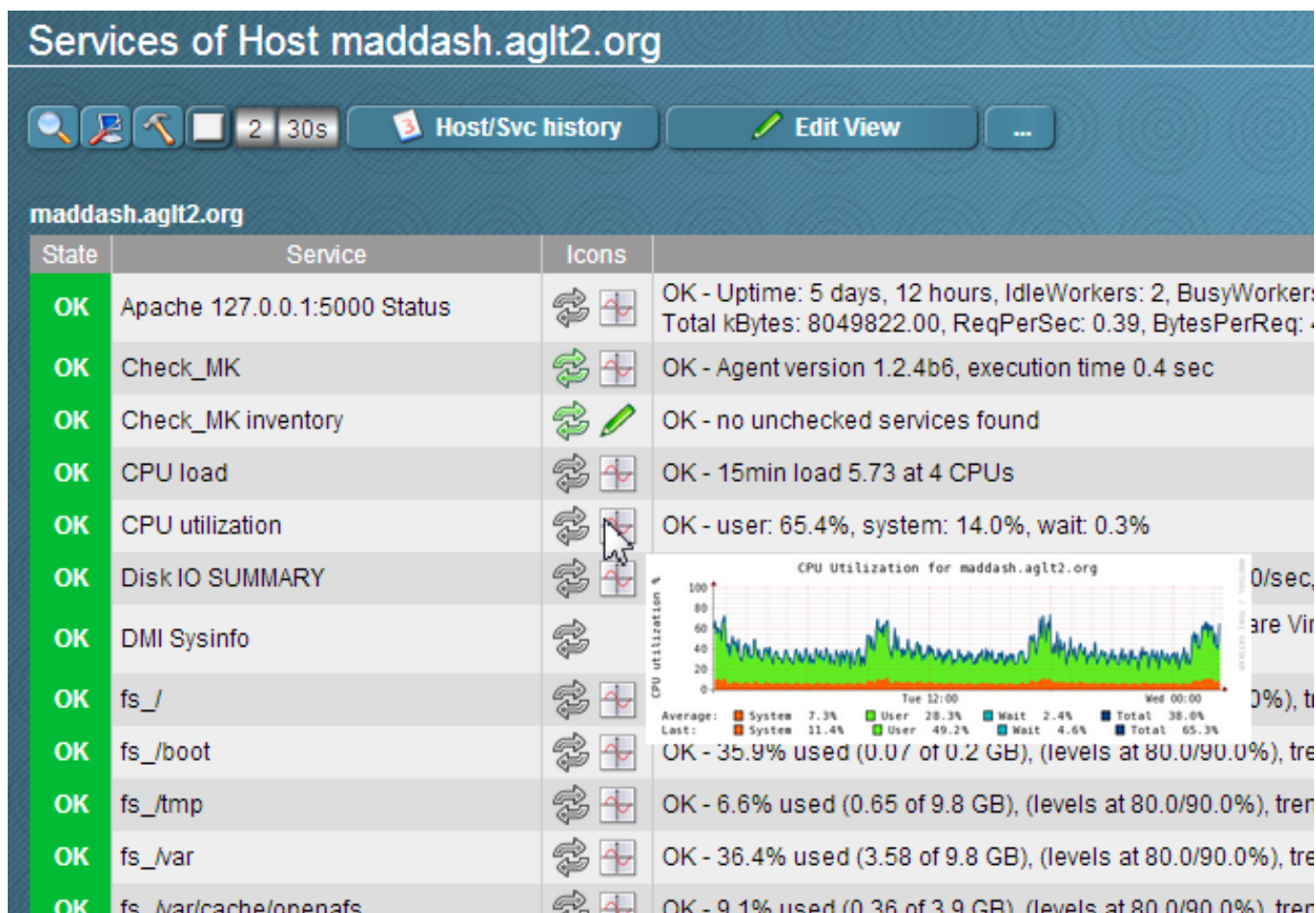
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- Users & Contacts
- Roles & Permissions
- Contact Groups
- Time Periods

Services of Host maddash.aglt2.org

State	Service	Icons	Status detail	Age	Checked	Perf-O-Meter
OK	Apache 127.0.0.1:5000 Status		OK - Uptime: 5 days, 12 hours, IdleWorkers: 2, BusyWorkers: 1, OpenSlots: 125, TotalAccesses: 188014, CPUload: 0.09, Total kBytes: 8049822.00, ReqPerSec: 0.39, BytesPerSec: 43842.60, BytesPerSec: 17232.60, States: (Waiting: 2, SendingReply: 1)	2014-01-29 12:09:41	13 sec	
OK	Check_MK		OK - Agent version 1.2.4b6, execution time 0.4 sec	2014-01-29 12:09:39	13 sec	0.4s
OK	Check_MK inventory		OK - no unchecked services found	2014-02-08 10:54:51	2 min	
OK	CPU load		OK - 15min load 5.73 at 4 CPUs	2014-02-08 10:22:32	13 sec	6.8
OK	CPU utilization		OK - user: 65.4%, system: 14.0%, wait: 0.3%	2014-01-29 12:09:41	13 sec	79%
OK	Disk IO SUMMARY		OK - 1.41MB/sec read, 655.33kB/sec write, IOs: 124.70/sec, Latency: 1.61ms	2014-01-29 12:13:39	13 sec	1.41M/s 0.64M/s
OK	DMI Sysinfo		OK - Manufacturer: VMware, Inc., Product-Name: VMware Virtual Platform, Version: None, S/N: VMware-42 09 a9 d8 7a 11 9c 4b-ca 90 4a 80 d7 ec 71 1e	2014-01-29 12:09:41	13 sec	
OK	fs_/_		OK - 15.4% used (5.67 of 36.8 GB), (levels at 80.0/90.0%), trend: +19.07MB / 24 hours	2014-01-29 12:09:41	13 sec	15%
OK	fs_/_boot		OK - 35.9% used (0.07 of 0.2 GB), (levels at 80.0/90.0%), trend: 0.00B / 24 hours	2014-01-29 12:09:41	13 sec	35%
OK	fs_/_tmp		OK - 6.6% used (0.65 of 9.8 GB), (levels at 80.0/90.0%), trend: +186.24kB / 24 hours	2014-01-29 12:09:41	13 sec	6%
OK	fs_/_var		OK - 36.4% used (3.58 of 9.8 GB), (levels at 80.0/90.0%), trend: -16.09MB / 24 hours	2014-01-29 12:09:41	13 sec	36%
OK	fs_/_var/cache/openafs		OK - 9.1% used (0.36 of 3.9 GB), (levels at 80.0/90.0%), trend: 0.00B / 24 hours	2014-01-29 12:09:41	13 sec	9%
OK	Interface 2		OK - [em1] (up) 1GBit/s, in: 10.85kB/s(0.0%), out: 3.25kB/s(0.0%)	2014-01-29 12:09:41	13 sec	0.0% 0.0%
OK	Interface 3		OK - [em2] (up) 1GBit/s, in: 148.16kB/s(0.1%), out: 33.86kB/s(0.0%)	2014-01-29 12:09:41	13 sec	0.1% 0.0%
OK	Kernel Context Switches		OK - 1795/s in last 60 secs	2014-01-29 12:10:39	13 sec	1794.8/s
OK	Kernel Major Page Faults		OK - 7/s in last 60 secs	2014-01-29 12:10:39	13 sec	7.5/s
OK	Kernel Process Creations		OK - 74/s in last 60 secs	2014-01-29 12:10:39	13 sec	74.1/s
OK	LOG /var/log/boot.log		OK - no error messages	2014-01-29 12:19:39	13 sec	
OK	LOG /var/log/dmesg		OK - no error messages	2014-01-29 12:19:39	13 sec	
OK	LOG /var/log/maddash/maddash-server.log		OK - no error messages	2014-01-29 12:19:39	13 sec	
OK	LOG /var/log/maddash/maddash-server.netlogger.log		OK - no error messages	2014-01-29 12:19:39	13 sec	
OK	LOG /var/log/messages		OK - no error messages	2014-01-29 12:09:41	13 sec	
OK	LOG /var/log/personar/config_daemon.log		OK - no error messages	2014-01-29 12:19:39	13 sec	
OK	LOG /var/log/secure		OK - no error messages	2014-01-29 12:19:39	13 sec	
OK	Memory used		OK - 1.78 GB used (1.33 GB RAM + 0.45 GB SWAP, this is 63.3% of 2.81 GB RAM)	2014-01-29 12:09:41	13 sec	63%
OK	Mount options of /		OK - mount options exactly as expected	2014-01-29 12:09:41	13 sec	

Individual hosts can be monitored in detail by installing check_mk-agents
See <https://twiki.cern.ch/twiki/bin/view/LCG/WLCGperfSONARMonitoring>

Feature: Graphs Automatically Created



Graphs are created automatically where checks provide performance data. Hovering over the “graph” icon shows a thumbnail. Clicking takes you to a page with larger graphs sequenced by timescale (RRD).

Near term items

- **Migrate prototypes into OSG?**
 - **Goal is one service/dashboard for OSG (and WLCG)**
 - **Lots of questions about integration with MyOSG vs standalone components**
 - **Define Operations responsibilities vs OSG/WLCG's**
- Complete upgrades for sites with perfSONAR-PS versions prior to 3.3.2 and ensure mesh-config use
 - Identify and lobby non WLCG OSG sites to install
- **Expand automated creation of “mesh-configs”**
 - **Prototype and test creation of WLCG meshes.**
 - **Needs interaction between Soichi and CERN/GOCDB experts.**
- Using and improving the OSG network service
 - As sites upgrade and use the mesh, verify data, displays
 - Begin testing “clients” of OSG network metrics
 - Will require some API changes to get certain typical queries
- Continued documentation updates and additions
 - Maintain/update documented procedures
 - Augment as we develop new components (generation of mesh-config, datastore and API, use-cases, etc.)

URLs of Relevance

- Network Documentation
<https://www.opensciencegrid.org/bin/view/Documentation/NetworkingInOSG>
- perfSONAR-PS OSG Installation Instructions
<https://twiki.opensciencegrid.org/bin/view/Documentation/PerfSONARToolKit>
- Modular Dashboard Replacement Prototypes
 - <http://maddash.aglt2.org/maddash-webui>
https://maddash.aglt2.org/WLCGperfSONAR/check_mk
- perfSONAR-PS Installation Motivation:
<https://twiki.grid.iu.edu/bin/view/Networking/WhyPerfSNOAR>
- Initial OSG mesh details
<http://confluence.grid.iu.edu/display/CENTRAL/Perfsonar+Mesh+Configs>

Questions or Comments?

Thanks!