

Monitoring BOF

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WLCG Workshop

1st September, 2007



Welcome

- Scope of session
 - Grid service monitoring
 - from the viewpoint of a site and a VO
 - Service availability calculation
- Focus of session
 - Progress since last workshop
 - Multi-infrastructure issues
- Out of scope (at least not prepared :)
 - Accounting, information system, auditing



Progress since last workshop

- Focus in January was on newly created WLCG Monitoring WGs
- Highlights
 - System Management group
 - <http://www.sysadmin.hep.ac.uk/>
- System Analysis group
 - New tools for experiments (dashboards)
 - Working on getting usage patterns and requirements from the experiments
 - Grid Service Monitoring
 - Worked on system architecture
 - Created probe and exchange specifications
 - Created first prototype of site monitoring



Grid Service Monitoring WG

- Very active participation from many groups
 - SRCE (Emir Imamagic) contributed nagios based prototype
 - Based on work done for EGEE CE ROC
 - OSG provided significant input on probes specifications (Arvind Gopu, Rob Quick)
 - EDS Openlab collaboration (Max Böhm) has worked on architecture and analysis
 - GridIce, Gridview, SAM, R-GMA teams were regular contributors at phone-cons



"The Nagios-based Prototype"

- Simple monitoring of grid services based on
 - Currently available remote data (SAM, Network)
 - Existing probes from EGEE CE region
 - New probes written according to component developer provided specifications
- Initially implement using one fabric monitoring system - Nagios
 - ... but architecture checked with LEMON developers
- OSG actively involved in design process
 - Parallel working done using Gratia for data collection
 - Same probes can be used in both systems
- Some simple plotting using Ganglia



Nagios Display

Nagios

General

- Home
- Documentation

Monitoring

- Tactical Overview
- Service Detail**
- Host Detail
- Hostgroup Overview
- Hostgroup Summary
- Hostgroup Grid
- Servicegroup Overview
- Servicegroup Summary
- Servicegroup Grid
- Status Map
- 3-D Status Map

Show Host:

- Service Problems
- Host Problems
- Network Outages

Comments

Downtime

- Process Info
- Performance Info
- Scheduling Queue

Reporting

- Trends
- Availability
- Alert Histogram
- Alert History
- Alert Summary
- Notifications
- Event Log

Configuration

- View Config

Current Network Status
 Last Updated: Wed Jun 6 11:53:57 CEST 2007
 Updated every 90 seconds
 Nagios@ - www.nagios.org
 Logged in as *nagiosadmin*
 - Notifications are disabled

[View History For all hosts](#)
[View Notifications For All Hosts](#)
[View Host Status Detail For All Hosts](#)

Host Status Totals

Up	Down	Unreachable	Pending
25	0	0	1

All Problems	All Types
0	26

Service Status Totals

Ok	Warning	Unknown	Critical	Pending
158	0	137	24	0

All Problems	All Types
161	319

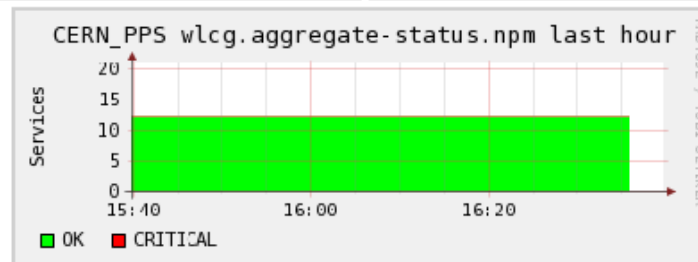
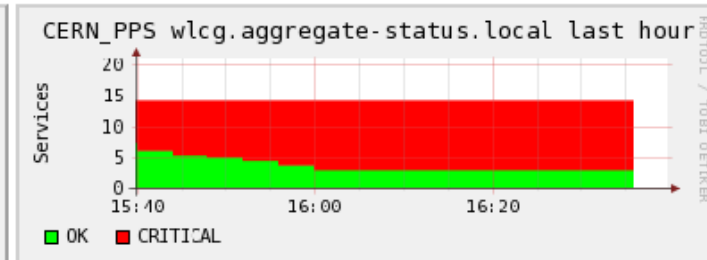
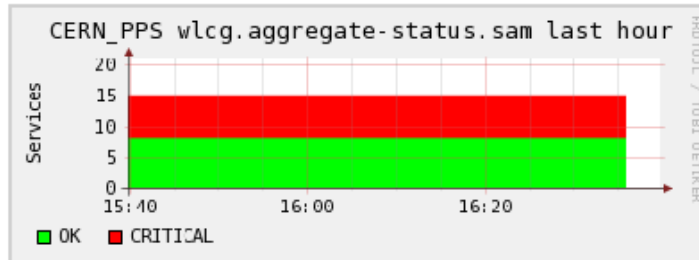
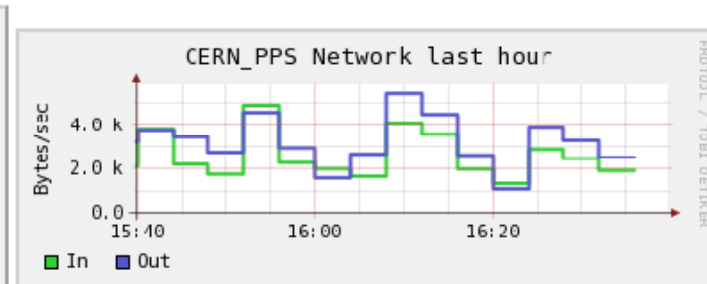
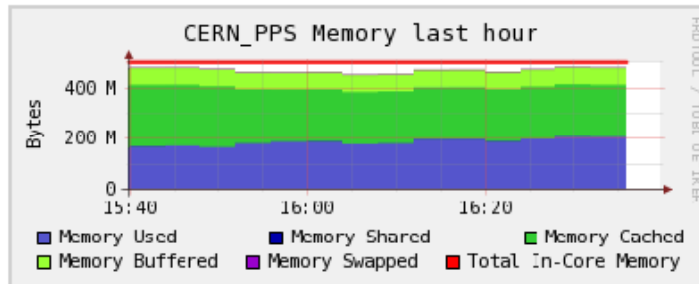
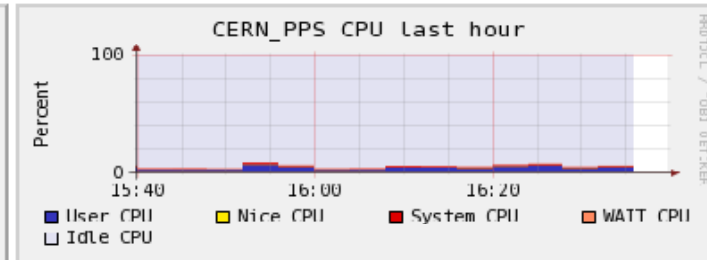
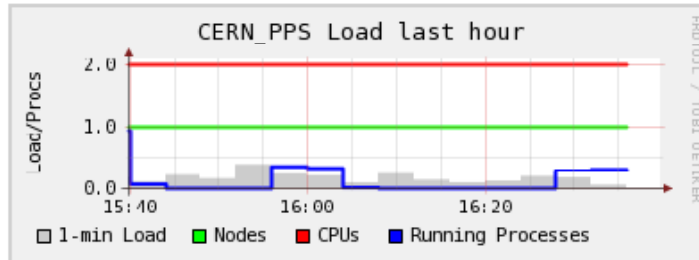
Service Status Details For All Hosts

Host ↑↓	Service ↑↓	Status ↑↓	Last Check ↑↓	Duration ↑↓	Attempt ↑↓	Status Information
castorgrid.cern.ch	GridFTP-Ping	OK	06-06-2007 11:53:33	11d 20h 16m 10s	1/4	FTP OK - 0.039 second response time on port 2811 [220 castorgrid04.cern.ch CASTOR GridFTP Server 1.12 GSS4 Globus/GSI wu-2.6.2(cern-2) (gcc32dbg, 1069715860-42
	GridFTP-Transfer	OK	06-06-2007 11:16:03	0d 0h 37m 54s	1/4	Upload to remote computer succeeded. Download from re computer succeeded. File successfully removed from ren computer. Received file is valid.
	SE-host-cert-valid-OPS-remote	OK	06-06-2007 11:38:08	0d 18h 29m 35s	1/1	SAM status: ok
	SE-lcq-cp-Atlas-remote	OK	06-06-2007 11:03:53	0d 18h 49m 54s	1/1	SAM status: ok
	SE-lcq-cp-CMS-remote	OK	06-06-2007 09:59:00	0d 1h 54m 57s	1/1	SAM status: ok
	SE-lcq-cp-DTeam-remote	OK	06-06-2007 11:47:54	0d 18h 21m 11s	1/1	SAM status: ok
	SE-lcq-cp-OPS-remote	OK	06-06-2007 11:00:03	0d 19h 2m 36s	1/1	SAM status: ok
	SE-lcq-cr-Atlas-remote	OK	06-06-2007 11:03:50	0d 18h 49m 59s	1/1	SAM status: ok
	SE-lcq-cr-CMS-remote	OK	06-06-2007 09:58:48	0d 1h 55m 9s	1/1	SAM status: ok
	SE-lcq-cr-DTeam-remote	OK	06-06-2007 11:47:51	0d 18h 21m 14s	1/1	SAM status: ok
	SE-lcq-cr-OPS-remote	OK	06-06-2007 11:00:00	0d 19h 2m 39s	1/1	SAM status: ok
	SE-lcq-del-Atlas-remote	OK	06-06-2007 11:03:56	0d 18h 49m 51s	1/1	SAM status: ok
	SE-lcq-del-CMS-remote	OK	06-06-2007 09:59:05	0d 1h 54m 52s	1/1	SAM status: ok
	SE-lcq-del-DTeam-remote	OK	06-06-2007 11:47:56	0d 18h 21m 8s	1/1	SAM status: ok
	SE-lcq-del-OPS-remote	OK	06-06-2007 11:00:05	0d 19h 2m 34s	1/1	SAM status: ok
	SE-seavail-OPS-remote	OK	06-06-2007 11:38:13	0d 18h 18m 53s	1/1	SAM status: ok
	SE-seused-OPS-remote	OK	06-06-2007 11:38:13	0d 18h 18m 53s	1/1	SAM status: ok



Ganglia display

Overview of CERN_PPS





Prototype delivery timescale

- Stage I – 'gather_sam'
 - Open **DONE** workshop, mid-June 2007
- Stage II – 'check_wlwg'
 - End **DONE** 2007
- Stage III – Local probes
 - CHE **End September ?**
- Expect to rapidly iterate, so perhaps on **CERN PPS, PIC, NIKHEF, SRCE, ... (?)**
June/July
 - Will ask for volunteers at Operations meeting



Futures

- Prototype deployed more widely
 - Probably as part of gLite release in ~1/2 months
- Added sensors running on the actual service nodes
 - Checking logs, daemon status, ...
- Integrate OSG, EGEE, (NDGF) data in a single SAM/Gridview display
 - Also some new visualisation tools aimed at giving a better "view of the grid"



□ Discussion

- Progress of WLCG Monitoring WG since last workshop
- Demonstration of Nagios-based Prototype
- SAM Availability calculation including equivalence of components across multiple grid infrastructure
- Site Local vs. Central tests - what is a good balance?
- Various job submission methods and job monitoring, monitoring of jobs submitted via condor_g



WLCG Monitoring WG



Monitoring

□ *You can't manage what you don't measure...*

appropriate metrics

- directly relevant to user experience
- clearly defined and understood

accuracy and credibility

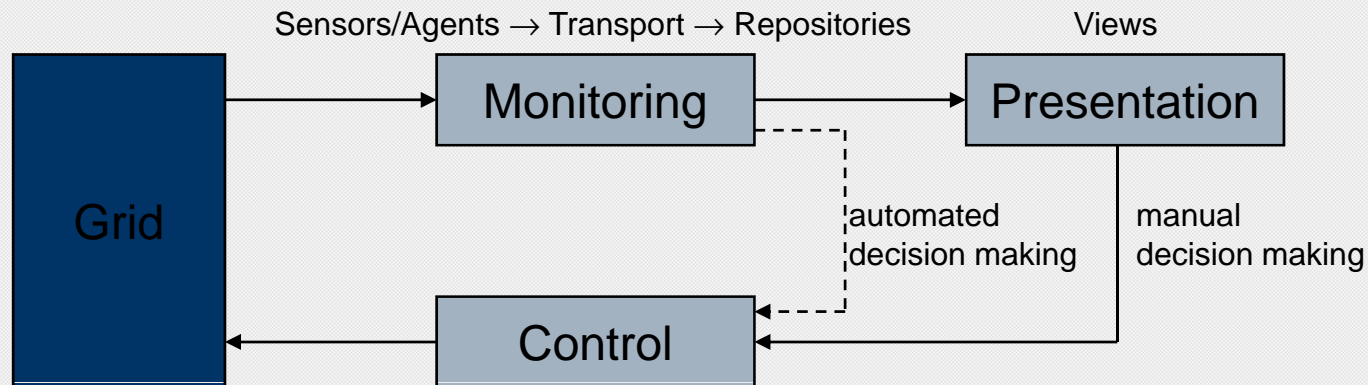
measurement instrumentation

- active, passive, collection intervals, alarms

data collection points

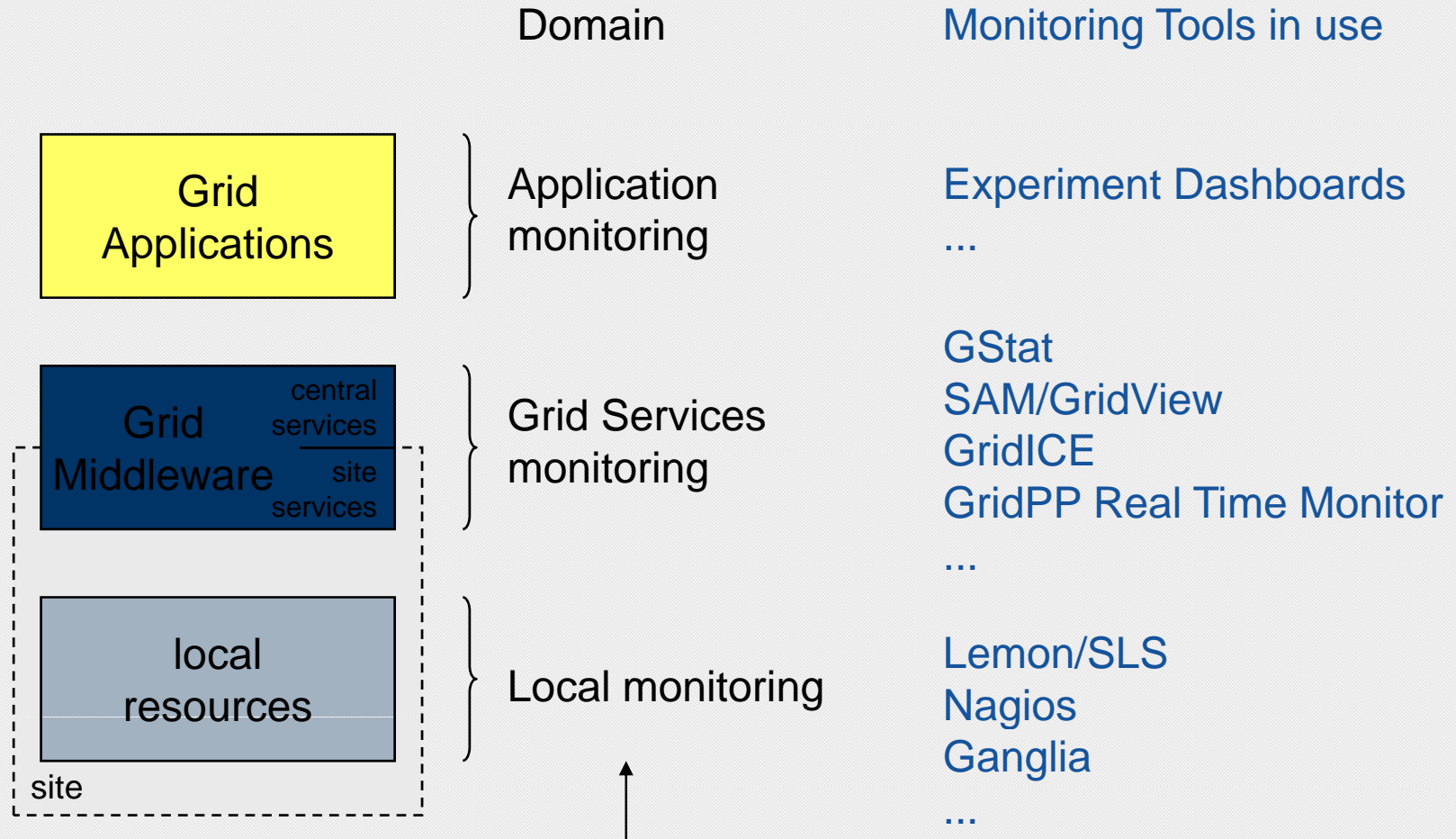
- system element ↔ service

real-time ↔ historical





WLCG Grid Monitoring Landscape



3 WLCG Monitoring Working Groups



Aims of Grid Services WG

- Create set of 'standard' WLCG Probes
 - And how to calculate availability based on the metrics produced
- Improve quality by providing technical guidance
 - Documenting best practices
 - Providing example components

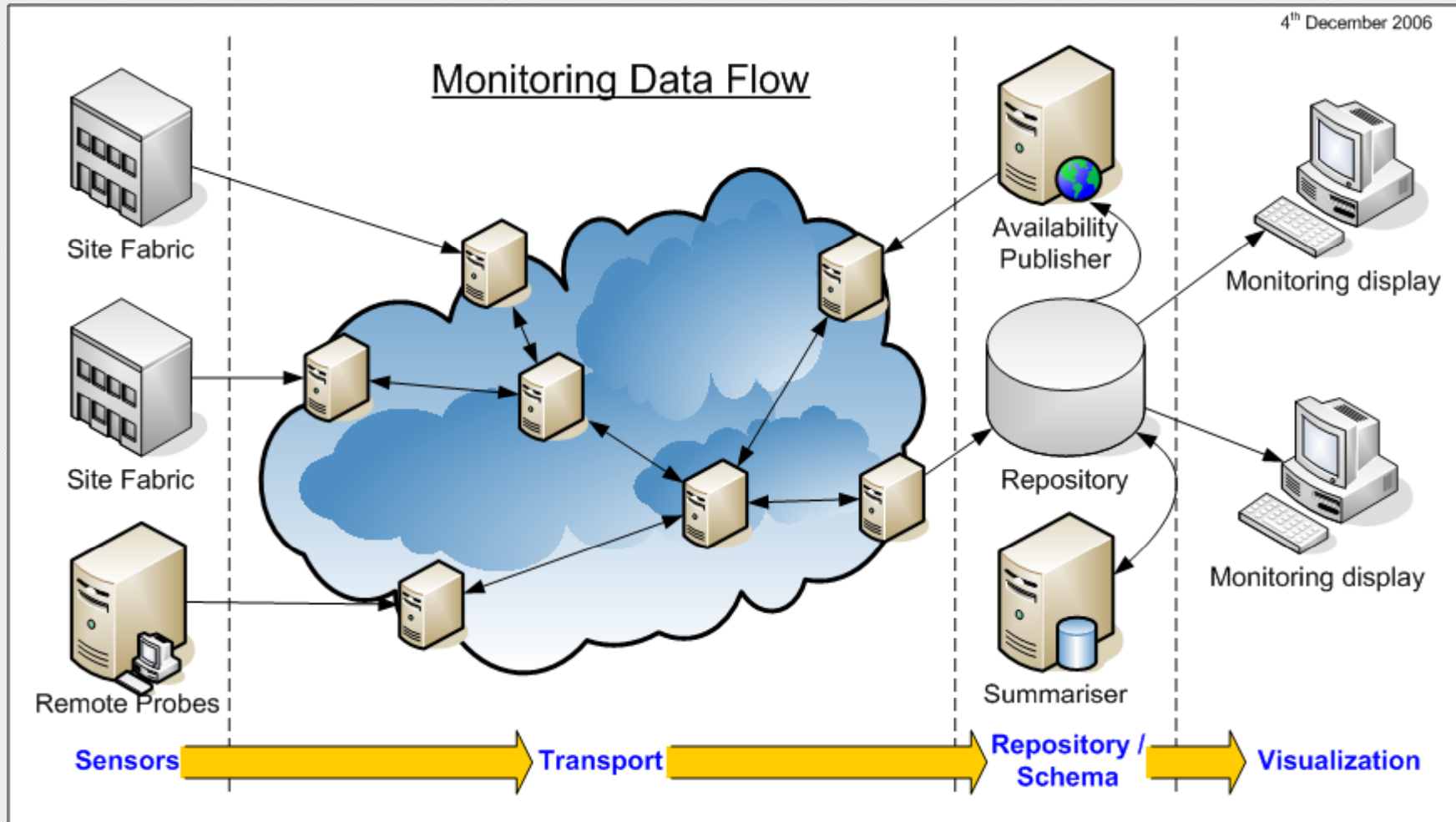


Direction

- Focus on the interaction points between the different systems
- *"Specifications, not Standards"*
 - Timescales mean we can't get involved in long and heavyweight standards activities
 - Take best practices from existing systems, and document them
- Get something out to the stakeholders
 - Close feedback loop is the key to adoption
 - Plan for a "standards based" solution in the future



High-level Model



See https://twiki.cern.ch/twiki/pub/LCG/GridServiceMonitoringInfo/0702-WLCG_Monitoring_for_Managers.pdf for details



Example Site Component View

