Outils Operationnels
Généralités et Nouveautés

Service Availability Monitoring (SAM)

SAM Scope

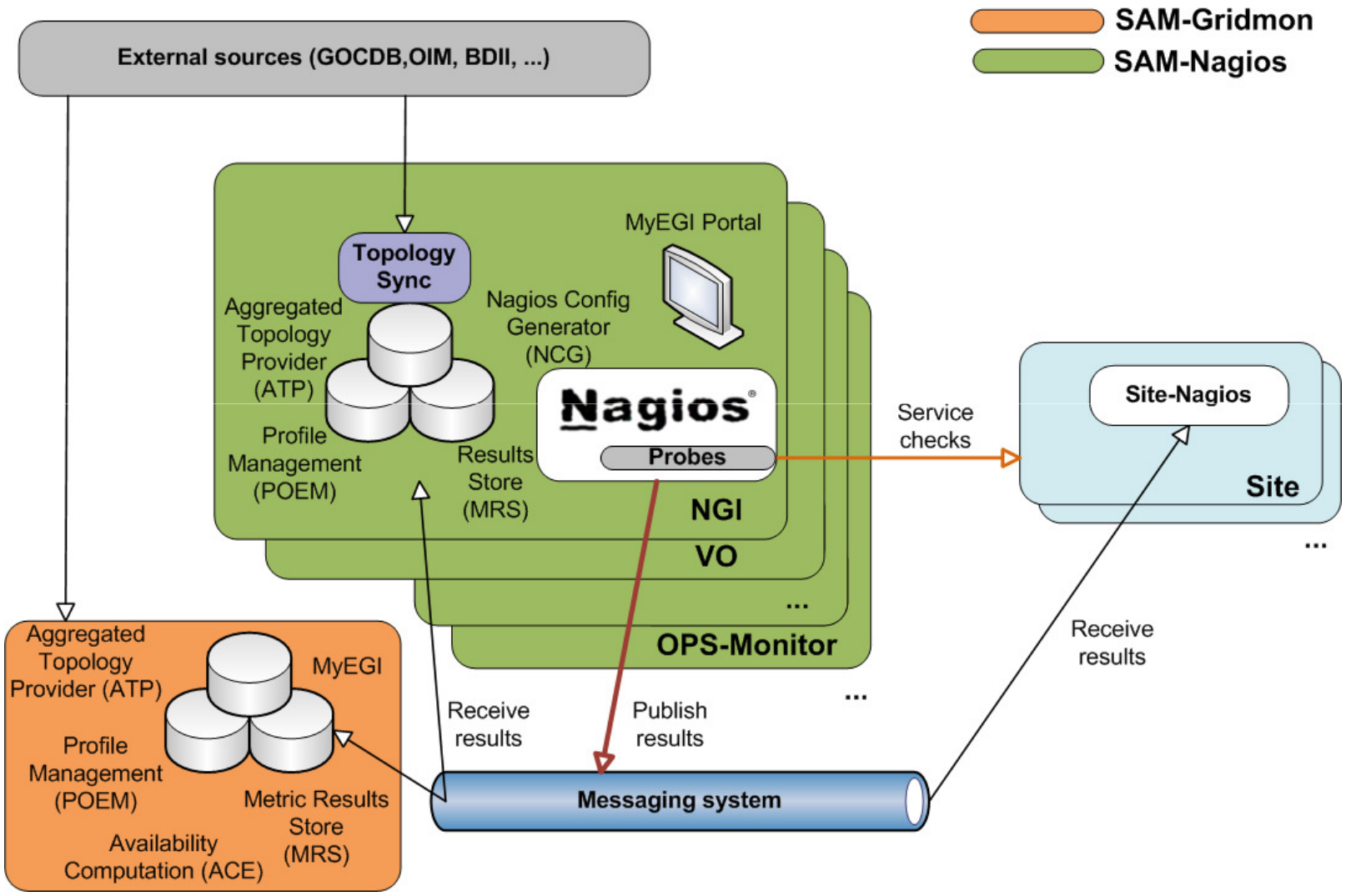
- **SAM grid monitoring (SAM-Gridmon)**

⇒central services (Web, API, availability)

- **SAM-Nagios**

– Monitoring platform supporting multiple configurations:
  - NGI-Nagios
  - VO-Nagios1
  - Site-Nagios
  - Operations Tools-Nagios (ops-monitor)

SAM Architecture



Aggregated Topology Provider (ATP)

Service aggregating grid topology information and downtimes from different external sources (GOCDB, OIM, CIC, BDII,GSTAT, feeds)

- **Recent changes**

  - regionalization
  - VO feeds
  - sanity checking
  - integration of changes in GSTAT, VO cards
  - improvements in logging

Profile Management (POEM)

- **Replaces MDDB (metric description database)**
- **Defines and groups metrics into profiles (e.g. ROC_CRITICAL)**
  - metrics
  - VO
  - topological groups (optional) – region, site, ngi
- **Profiles are used to generate Nagios configuration**
- **Regionalized:**
  - multiple POEM WEB instances (central, regional)
  - synchronization of profiles from any number of sources
  - namespace concept (e.g. ch.cern.sam-ROC_CRITICAL)

Generates Nagios configuration files

Recent Changes

- support for failover instance
- integration of Globus5 and UNICORE probes
- improved integration with Operations Portal
- notification improvements

Metric Store (MRS)

Stores metric output and computes service statuses

Recent changes

- performance tuning
- performance measurements
- new probe to indicate MRS status [5]

Web and API (MyEGI)

SAM Web and application interfaces

https://grid-monitoring.egi.eu/myegi (central instance)
https://ccnagboxli01.in2p3.fr/myegi/ (regional instance)
Visualisation tools (status , availability , gridmap , metrics history) [R5]

Recent changes :

- Added Gridmap-style features
  - visualization per site status, flavour, VO, profile
  - historical and current status views
  - topology view by regions and tiers
- Service Availability (only on the central instance)
- Performance and validation of Web service API
  - throttling and limits
- Programmatic Interface queries [R6]

https://ccnagboxli01.in2p3.fr/myegi/sam-pi/service_types_and_flavours_per_service?
https://grid-monitoring.egi.eu/myegi/sam-pi/status_of_site_in_profile?profile_name=ALICE_CRITICAL&vo_name=alice&group_type=Site

References

1. Development policy document
   https://tomtools.cern.ch/confluence/display/SAMDOC/Probes+Development+Policy

2. New structure of the documentation (user / developer / adminstrator guide)
   - https://tomtools.cern.ch/confluence/display/SAMDOC (remplace le twiki)

3. Service Availability on the central instance
   - http://grid-monitoring.cern.ch/myegi

4. https://tomtools.cern.ch/confluence/display/SAM/Central+Data+Warehouse+Monitoring

5. Probe status document
   - https://tomtools.cern.ch/confluence/display/SAM/Probes

6. MyEGI documentation
   - https://tomtools.cern.ch/confluence/display/SAM/MyEGI/

7. MyEGI API Documentation
   - https://tomtools.cern.ch/confluence/display/SAMDOC/Web+Services+Specification

Broker Messaging

Recent changes

- EGI usage policy (OMB) : https://wiki.egi.eu/wiki/Message_brokers
- Deployment of authentication
- Enforcing the ACLs to the topics
- Use of queues

ACE (Availability Computation Engine)

• ACE is **released** by the SAM team and made available in the central grid-monitoring service (WLCG product used in EGI and OSG)

ACE main task is to compute availability and reliability statistics for grid services and sites:

- **Status** is the status of service instances, overall service flavours, and sites at a given point in time
- **Availability** is the fraction of time a service was up during the period the service was known
- **Reliability** is the fraction of time a service was up during the period the service was scheduled to be up

Overview

Metric Results

- Retrieved from Messaging Broker and stored in DB

Status Computation

- Calculated continuously
- Based on Service Instances, Service Flavours, Sites

Availability Computation

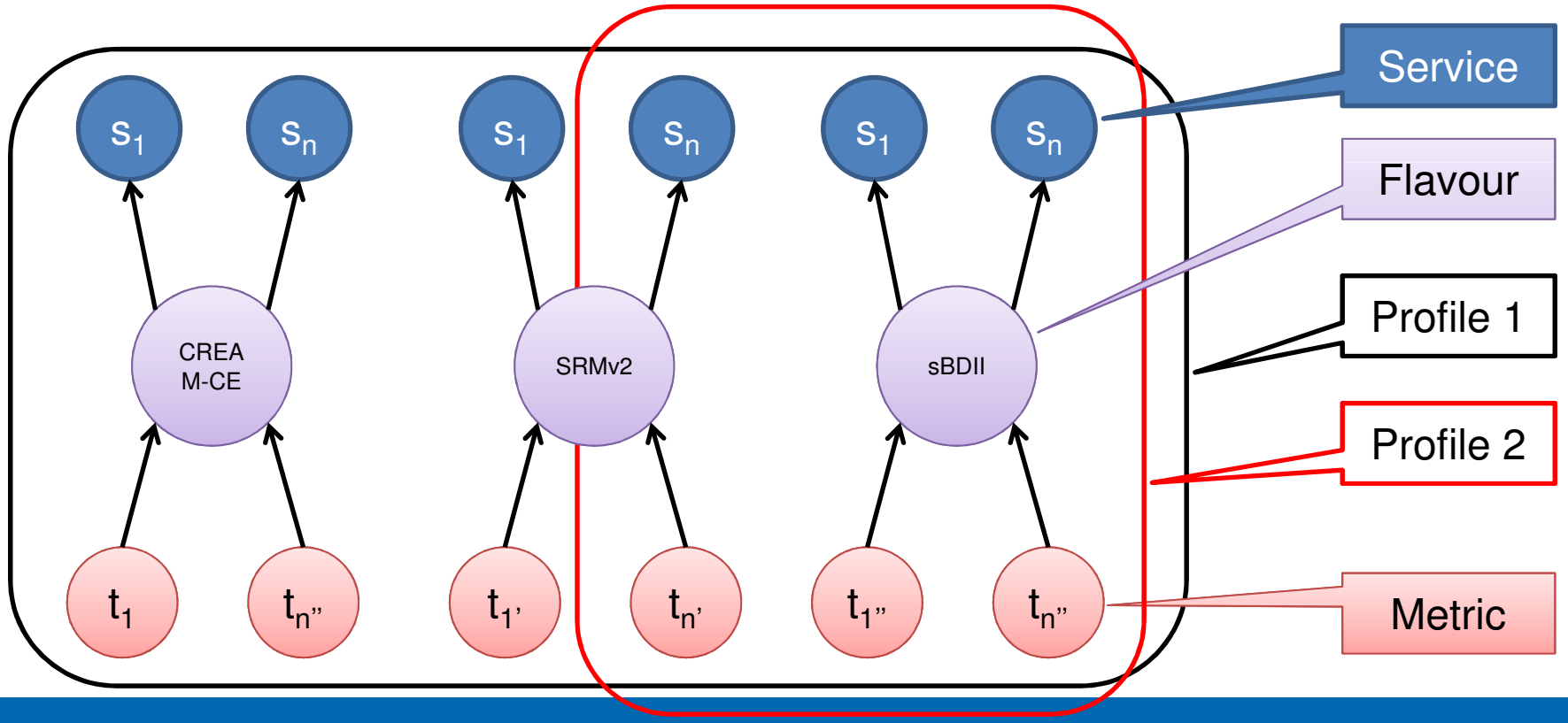
- Calculated per Hour, Day, Week, and Month
- Based on Service Instances, Service Flavours, Sites

Visualization

- Monthly Reports
- Web Interface

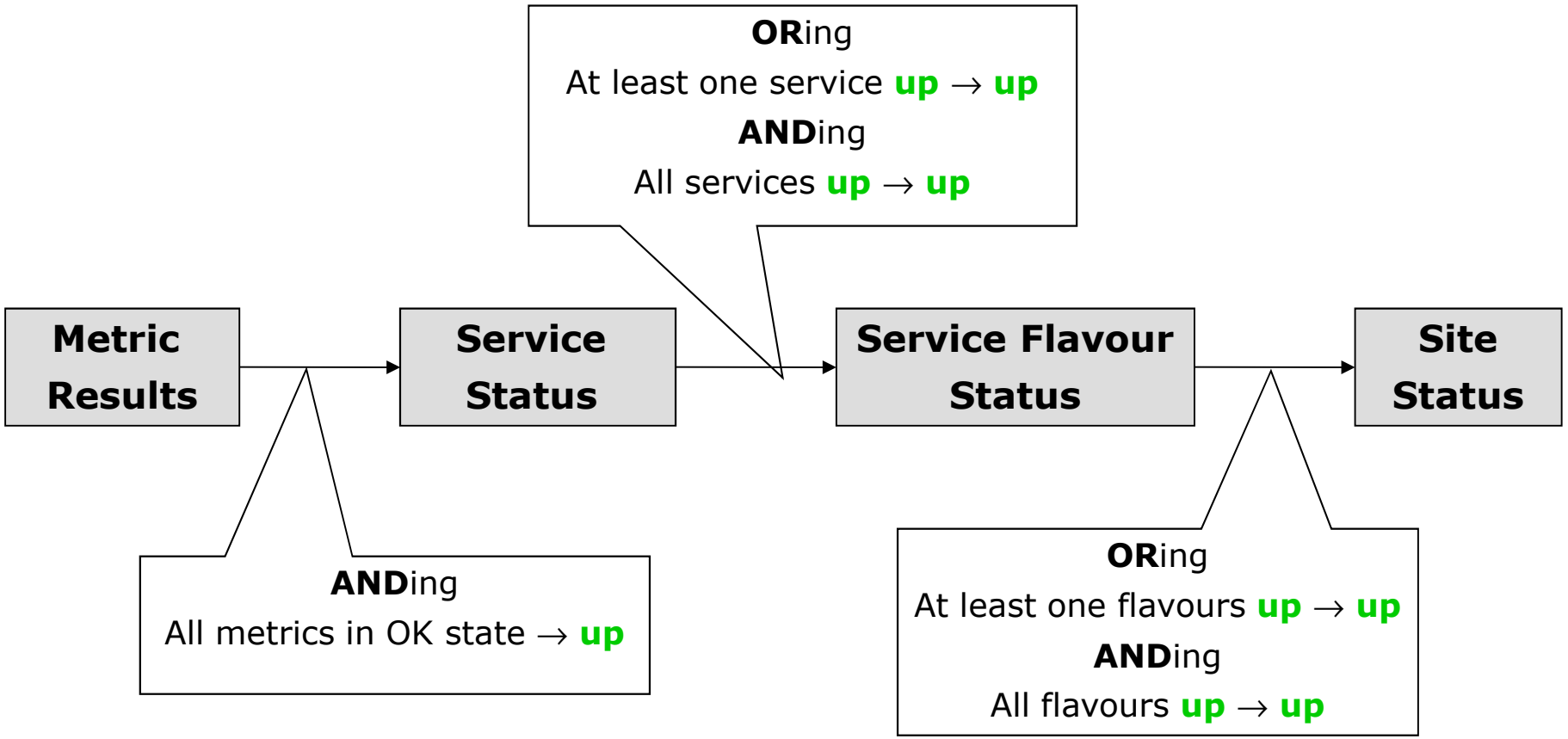
Overview

- ACE **Profiles** are a collection of metrics/services defined for VOs (multiple profiles per VO). Each profile defines its computation **algorithm**.



Status Computation

- ACE computes status for services, service flavours, and sites based on metric results



Availability Computation

Based on the concepts of hourly up fraction, scheduled down fraction, and unknown fraction

From the status and downtimes information ACE computes **hourly** availability and reliability for services, overall service flavours, and sites

From the hourly availability and reliability information ACE computes **daily, weekly, monthly** availabilities and reliabilities for services, overall service flavours, sites, and federations

Visualization

Monthly Reports:
EGI: Management of OPS VO profile and algorithm (OR CEs) AND (OR of SEs) AND sBDII
Generation of monthly availability and reliability reports for OPS VO

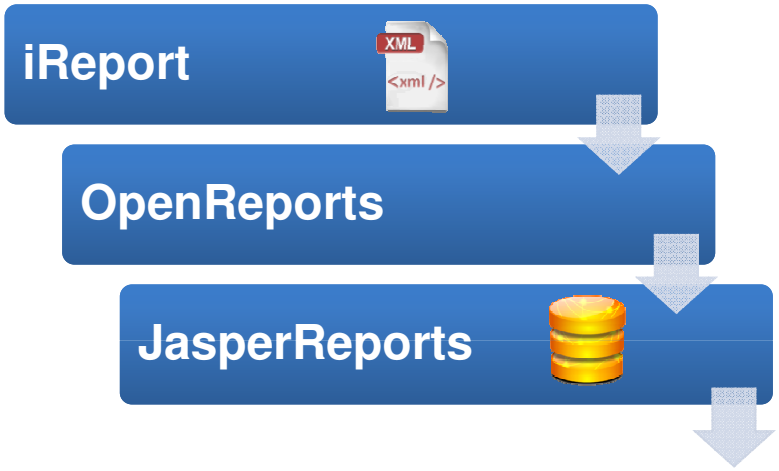
- http://gvdev.cern.ch/GRIDVIEW/downloads/Reports/
- PDFs reporting monthly availability and reliability numbers
- Created once per month and distributed to WLCG/EGI
- Created using iReport, OpenReports, and JasperReports

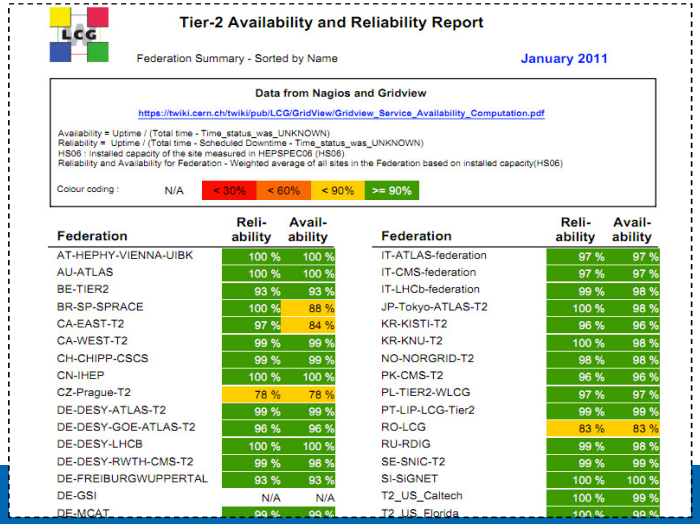
Web Interface: Operation of the service availability web interface provided by the central grid-monitoring MyEGI portal

- https://grid-monitoring.cern.ch/myegi/sa
- Online tool showing availability and reliability graphs
- Queries can be based on: profiles, groups, sites, dates

Doc: https://tomtools.cern.ch/confluence/display/SAM/ACE

Monthly Reports





Tier-2 Availability and Reliability Report

Federation Summary - Sorted by Name — January 2011

Data from Nagios and Gridview

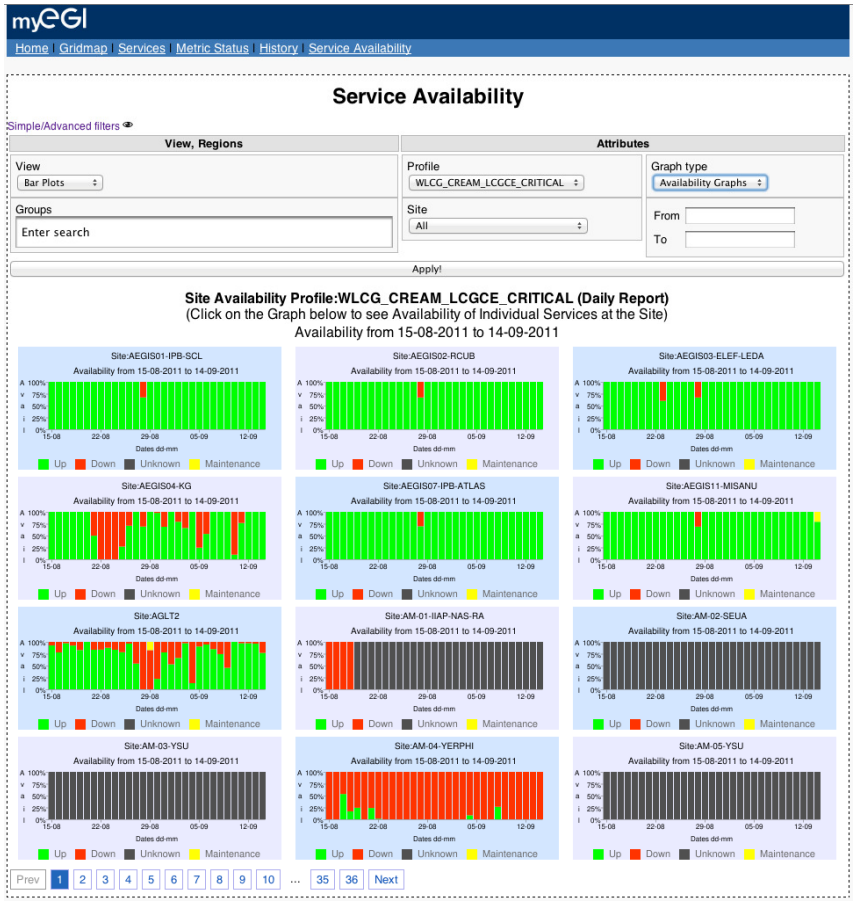
https://twiki.cern.ch/twiki/pub/LCG/GridView/Gridview_Service_Availability_Computation.pdf

Availability = Uptime / (Total time - Time_status_was_UNKNOWN)
Reliability = Uptime / (Total time - Scheduled Downtime - Time_status_was_UNKNOWN)
HS06 : Installed capacity of the site measured in HEPSPEC06 (HS06)
Reliability and Availability for Federation - Weighted average of all sites in the Federation based on installed capacity(HS06)

Colour coding : N/A | < 30% | < 60% | < 90% | >= 90%

Federation	Reli-ability	Avail-ability	Federation	Reli-ability	Avail-ability
AT-HEPHY-VIENNA-UIBK	100 %	100 %	IT-ATLAS-federation	97 %	97 %
AU-ATLAS	100 %	100 %	IT-CMS-federation	97 %	97 %
BE-TIER2	93 %	93 %	IT-LHCb-federation	99 %	98 %
BR-SP-SPRACE	100 %	88 %	JP-Tokyo-ATLAS-T2	100 %	98 %
CA-EAST-T2	97 %	84 %	KR-KISTI-T2	96 %	96 %
CA-WEST-T2	99 %	99 %	KR-KNU-T2	100 %	98 %
CH-CHIPP-CSCS	99 %	99 %	NO-NORGRID-T2	98 %	98 %
CN-IHEP	100 %	100 %	PK-CMS-T2	96 %	96 %
CZ-Prague-T2	78 %	78 %	PL-TIER2-WLCG	97 %	97 %
DE-DESY-ATLAS-T2	99 %	99 %	PT-LIP-LCG-Tier2	99 %	99 %
DE-DESY-GOE-ATLAS-T2	96 %	96 %	RO-LCG	83 %	83 %
DE-DESY-LHCB	100 %	100 %	RU-RDIG	99 %	98 %
DE-DESY-RWTH-CMS-T2	99 %	98 %	SE-SNIC-T2	99 %	99 %
DE-FREIBURGWUPPERTAL	93 %	93 %	SI-SiGNET	100 %	100 %
DE-GSI	N/A	N/A	T2_US_Caltech	100 %	99 %
DE-MCAT	99 %	99 %	T2_US_Florida	100 %	99 %

Web Interface



GOC DB

GOCDB-4.2 Release (25-11-2011)

This release includes scoping of sites and service endpoints.
A GOCDB instance (whether central or regional) needs to differentiate between EGI and non-EGI data. To do this, new tagging logic had been added so that new data scoping rules can be applied to GOCDB entities, allowing Sites, Services and other data to be identified as either EGI, Local some other scoped data. This is a regionalisation prerequisite. By default, sites and services are defined in the 'EGI' scope.

GOCDB-4.1 Release (01-11-2011)

•New View Site page (to support scoping)
•New View Service Endpoint page
•Added current UTC time to new Downtime page
•New Downtime interface much improved, moved to single page + can now select all endpoints under one site
•Increased front end responsiveness
•Cleaned old roles
•Added a URL field to service endpoint objects to support UNICORE services
•Add a "my site" link in the main menu
•Record Certification Status History
• Consolidated Wiki and all documentation.

Operations Portal

Dashboard - Rappels

Permalinks

https://operations-portal.egi.eu/dashboard?ngi=NGI_FRANCE
https://operations-portal.egi.eu/dashboard?site=IN2P3-CC

Rss (Thunderbird , Outlook)

https://operations-portal.egi.eu/rss/nagiosNotifications/site/AUVERGRID
https://operations-portal.egi.eu/rss/nagiosNotifications/ngi/NGI_FRANCE
https://operations-portal.egi.eu/rss/nagiosNotifications/site_list/71

Security Dashboard (1/3)

Goal

Detect and inform sites about security incidents and vulnerabilities.
Propose an adapted display and workflow to open tickets against sites in the Operations Dashboard.

Achieved work

• Authentication model : authorization is applied based on GOC DB and EGI SSO in order that security staff access only data in their own scope (EGI / NGI or site)

• Summary of the current issues : Nagios and pakiti with historical details + Notepads and attached problems

• Possibility to create / update notepads againt the site and attach problems to this notepad .

• Possibility to generate dynamically metrics (table or charts)

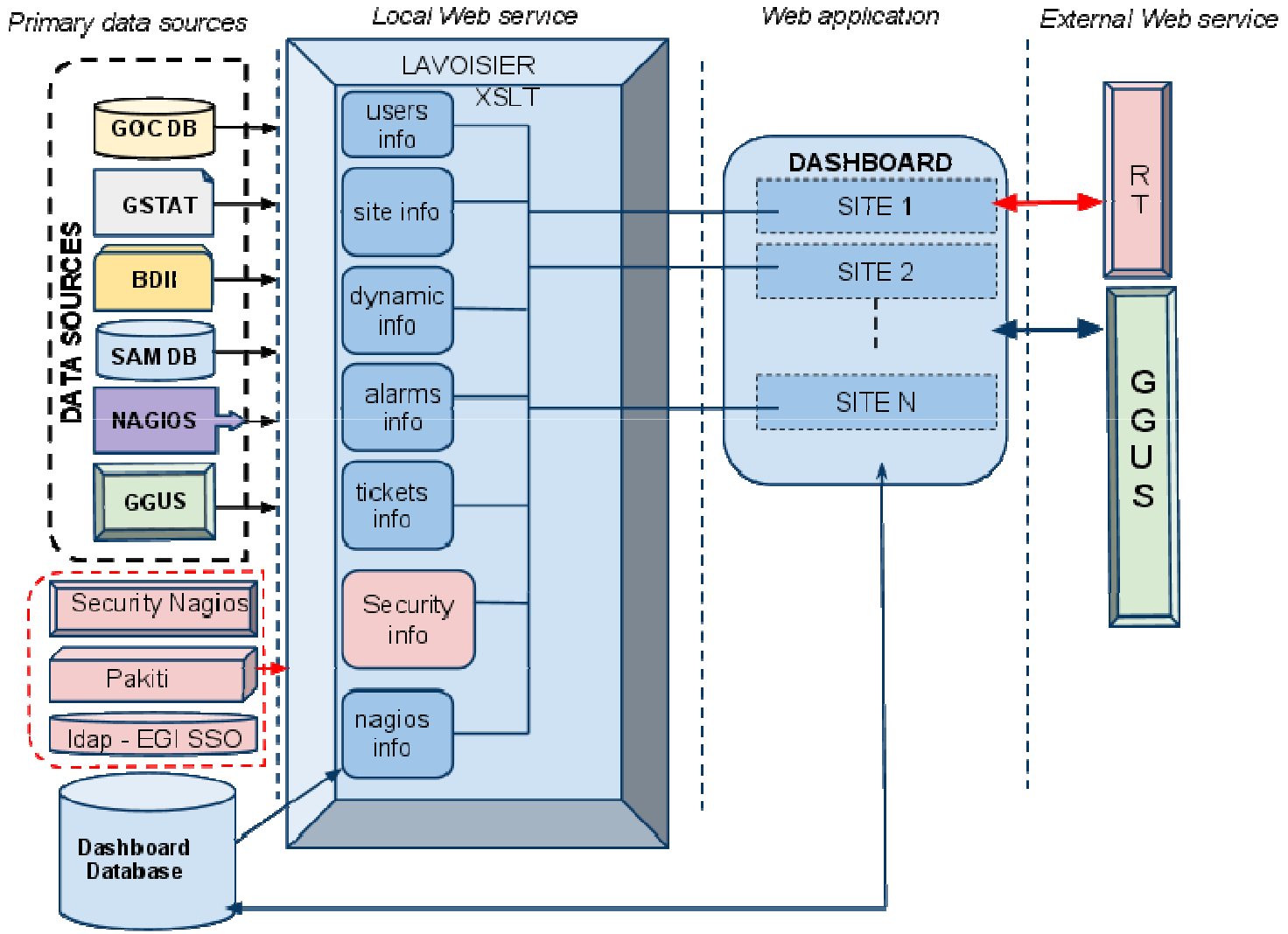
• Possibility to manage / declare events

Remaining work

Extension of the notepad to tickets into RT

Security Dashboard (2/3)

Security Dashboard (3/3)



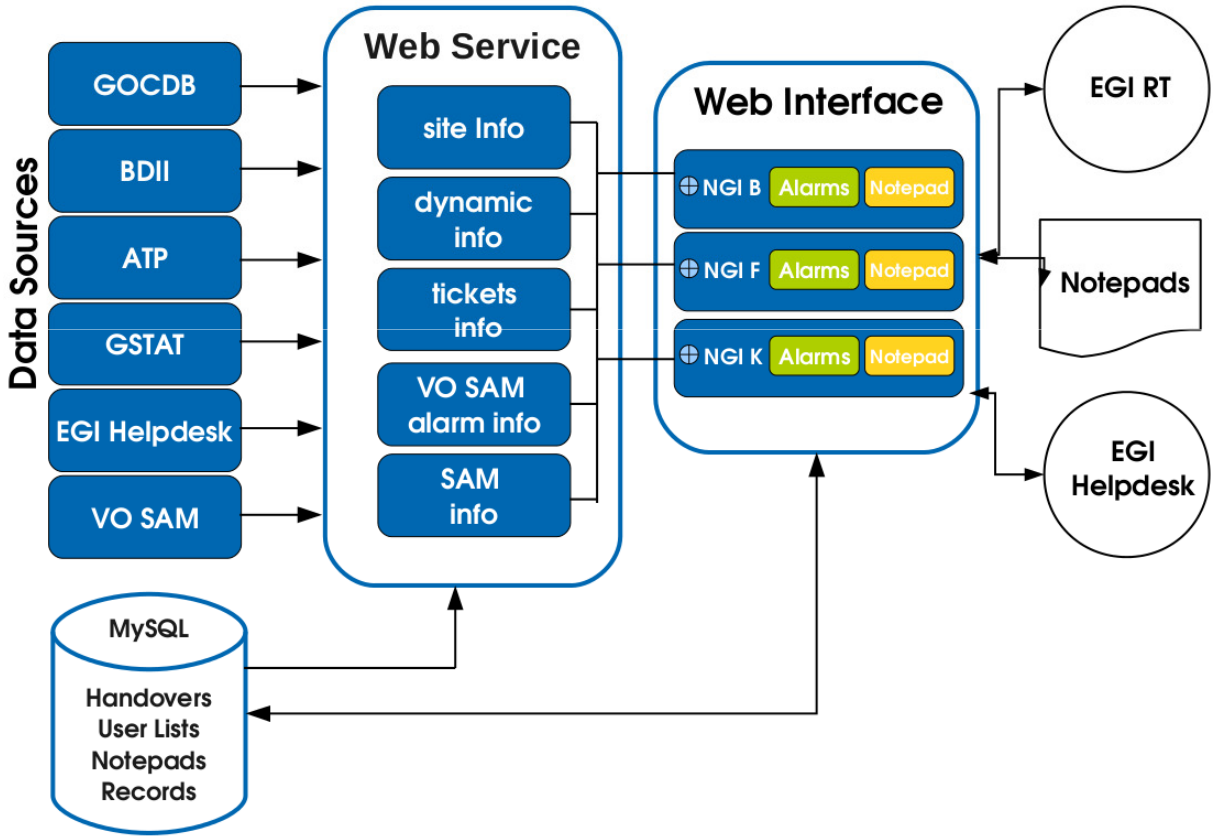
VO oriented Dashboard Basic functions

- Collecting results from Nagios
- The basic "unit" of the report will be a site, the Dashboard will be able to "construct" a VO view out of the relevant sites.
- Providing a view of a VO/NGI/site
- Proper access control must be applied : VO shifters either declared in the VO ID cards either based on a VOMS role
- Dispatching alerts when needed
- Operations functions – links to GOC DB, EGI RT , GGUS or Gstat
- Reporting functions – generation on demand and automatically on regular basis
- compute VO metrics based on the numbers gathered
- Possibility to declare a list of tests to take into account on a VO basis.

Different additional communication channels :

- notepad to send a note to the site
- handover to communicate between shifters

VO oriented Dashboard Architecture



VO oriented Dashboard Roadmap

Tasks for phase Development I	Estimated required effort (personweek)
Data connection and treatment	1
Interface developments	4
Overview part (dashboard)	2
Metrics part	1
Handover Part	1
Authentication and control access	1
Notepad and tickets creation	2
TOTAL EFFORT	8