

# SAM Framework and Nagios Probes

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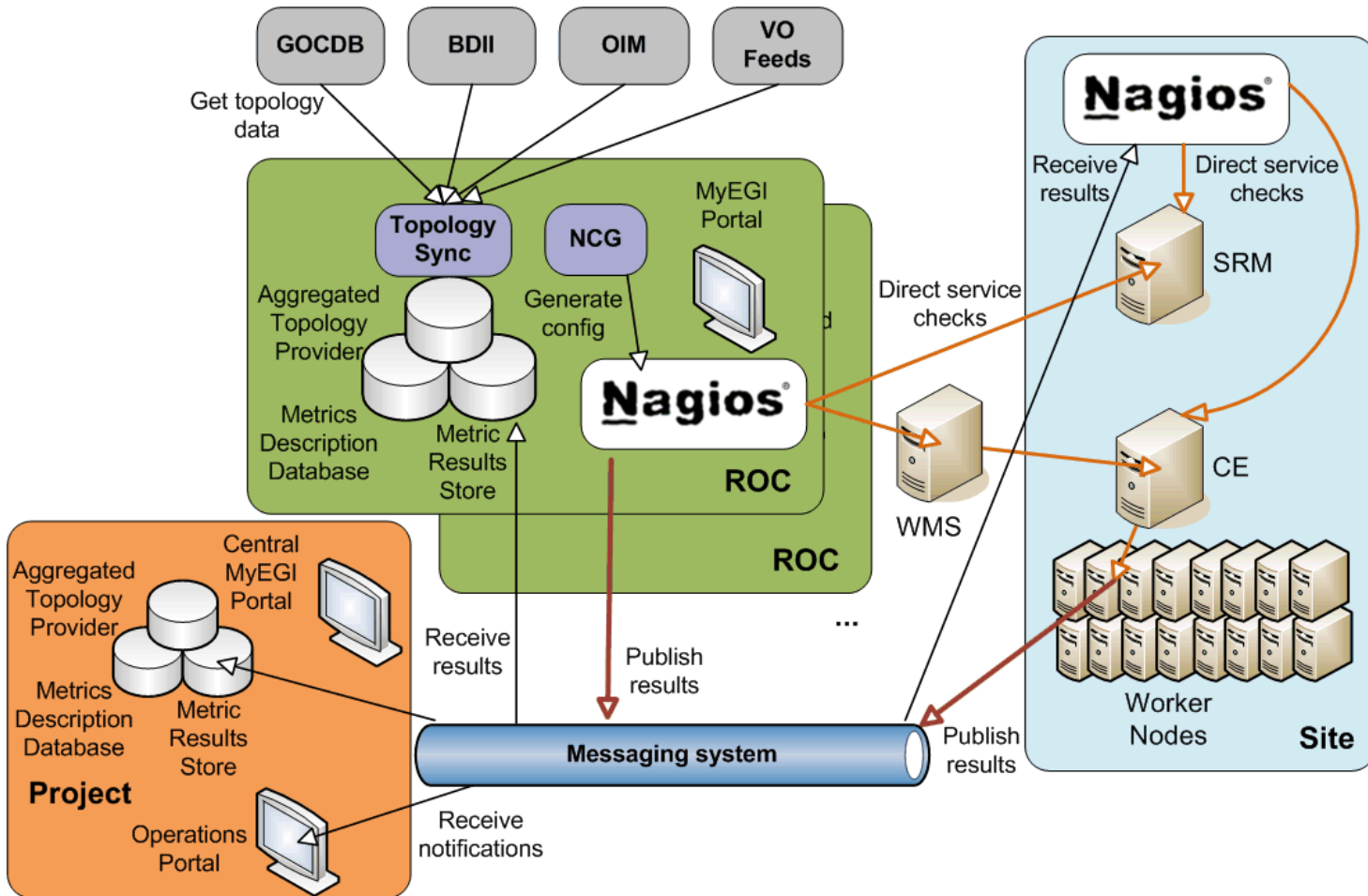
University Computing Centre  
(SRCE)

- Service Availability Monitoring
- Nagios Probes
- Probes in SAM
- Links

# Service Availability Monitoring



- Infrastructure for distributed monitoring
  - submission, transport, storage and visualization of probes
  - relies on existing technologies (Nagios, ActiveMQ, Django)
  - deployed at each NGI
- Results are used to measure the availability and reliability of EGI sites.



- Visualization tool for monitoring the grid infrastructure
  - replaces the SAM Portal and programmatic interfaces (PI)s
- Provides
  - status and history of services and sites
  - visualization of services & sites availabilities
  - gridmap style views
  - web services for data export in JSON/XML

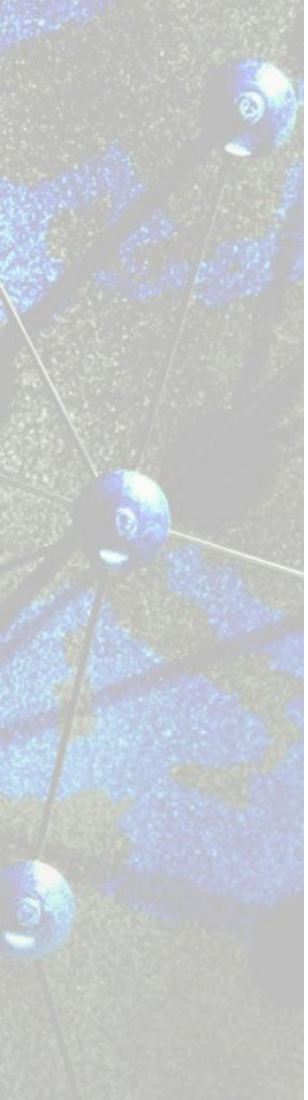
- Aggregated Topology Provider (ATP)
  - grid topology
  - web interface for data visualization
- Metric Description Database (MDDDB)
  - metric definitions
  - web interface to display data
- Metric Results Store (MRS)
  - monitoring results

- Automatic generation of Nagios configuration
  - simple bootstrap of Nagios instances
- Based on multiple information sources
  - ATP, BDII, GOCDB, MDDDB, SAM, static files



- Check health of services
- Executed by Nagios system
- Configured by the NCG
- Not maintained by SAM team

# Nagios Probes



- Software for performing service health check
  - service can be arbitrary test (e.g. disk free space, SRM put)
  - any programming language
- Nagios probe specification
  - [http://nagios.sourceforge.net/docs/3\\_0/plugin\\_api.html](http://nagios.sourceforge.net/docs/3_0/plugin_api.html)

- Service status = exit code
- Additional information = STDOUT
  - do not use STDERR
- Optional performance data
  - provided in output

Exit code	Service Status
0	OK
1	WARNING
2	CRITICAL
3	UNKNOWN

- Information about the status
  - especially relevant if status is not OK
- Basic information
  - 1<sup>st</sup> line of output
- Detailed information
  - everything after first “newline” char
- Output limit in SAM is **16K**

- Active checks
  - probes executed by Nagios
- Passive checks
  - test results imported into Nagios by active probe or other external system

- Respect the standard arguments
  - -w, -c, -H, -t, -h, -V, -v
- Implement timeouts
- A lot of probes already exist
  - <http://nagiosplugins.org/>
  - <http://exchange.nagios.org/>



# Probes in SAM



- **Inherited from the old SAM**
  - CE, WN, SRM, WMS
  - rewritten to Nagios probes
  - Python
- **Contributed by sites**
  - CE, GridFTP, LFC, FTS
  - CERN, SRCE
  - Perl, Python

- Provided by service developers
  - BDII, ARC, APEL
  - C, shell scripts
- Native Nagios probes
  - Nagios plugins, Nagios Exchange

- Perform check of service in single run
  - using Nagios probe specification
- Programming languages
  - Perl, Python

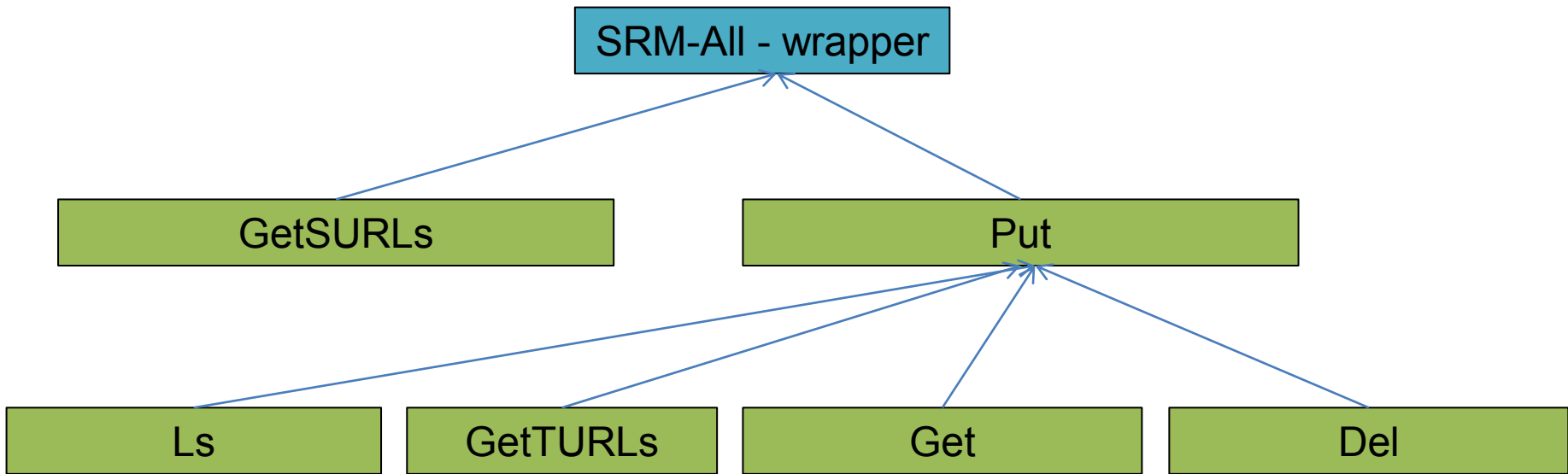
Service	Probe	Description
Certificate lifetime	CertLifetime-probe	Check service certificate lifetime by using service with SSL interface. Possible to check certificate stored in file.
VOMS	VOMS-probe	Invoke “/services/VOMSAdmin?method=getVOName”

Service	Probe	Description
FTS	FTS-probe	Check if FTS node is registered in the infosystem. Invoke “glite-data-transfer-fts/services/ChannelManagement?method=listChannels”

Service	Probe	Description
LFC	LFC-probe	LFC service level ping. File read check. File modification check. Directory list. DLI read.

- Single run performs multiple tests
  - mix of active and passive checks
- Dependency between tests
  - e.g. file put – file get – file delete
- Example
  - SRM-probe





- Long-running test overload Nagios
- Split in decoupled tests
  - submit – monitor – report state
- Example
  - CREAMCEDJS-probe, CE-probe, WMS-probe

Test Name	Description
org.sam.*-JobState (*)	Perform job submission. Hold the current state of submitted job
org.sam.*-JobSubmit (**)	Contains final status of job submissions
org.sam.*-JobMonit	Monitor status of all submitted jobs and update org.sam.*-JobState

(\*) Active and passive check

(\*\*) Passive check

- Probes executed on WN
  - job submission with CE-probe
  - results reported as passive checks
- Results sent via messaging system
  - infrastructure for receiving results is part of SAM
- Examples
  - WN-probe, MPI and gLExec tests

- Nagios probe specification
  - [http://nagios.sourceforge.net/docs/3\\_0/pluginapi.html](http://nagios.sourceforge.net/docs/3_0/pluginapi.html)
- Nagios probes repositories
  - <http://nagiosplugins.org/>
  - <http://exchange.nagios.org/>

- List of SAM probes for EMI services
  - <https://twiki.cern.ch/twiki/bin/view/EMI/NagiosProbes>
  - [https://wiki.egi.eu/wiki/EMI\\_Nagios\\_probes](https://wiki.egi.eu/wiki/EMI_Nagios_probes)
- SAM probes documentation
  - <https://tomtools.cern.ch/confluence/display/SAM/Probes>

- Adding new probes to SAM
  - <https://tomtools.cern.ch/confluence/display/SAM/Integrating+new+probes+into+SAM>
- Demo Perl probe
  - <https://svnweb.cern.ch/trac/sam/browser/trunk/demo-probe/probe-example>
- Demo Python probe
  - <http://svnweb.cern.ch/guest/sam/trunk/probes/src/T-probe>



# Thank you!

## Questions?