



Service Monitoring and Management

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Overview

- The Description of Work
- Service Monitoring
- Service Management
- The Next Steps

From the DoW

- *Standard **service monitoring and management interfaces** are currently largely **absent** from grid middleware, but their necessity is becoming obvious in the context of running large scale production infrastructures.*
- *The correct approach to grid service management is **still discussed** in relevant standardization forums and **no clear recipe exists** yet.*
- *However, **established technologies are available** and used in many commercial applications based on standard definitions like the Common Information Model (**CIM**), developed by IBM, Microsoft and Intel among others, and the QPID Modeling Framework (**QMF**) recently adopted by the leading Linux provider, Red Hat.*
- *EMI will **investigate** and **adapt off-the-shelf solutions** and **develop sensors** to be plugged in industry standard monitoring tools, such as **Nagios** and standard **CIM-based tools**.*

Service Monitoring Users

- Site administrators
 - Computing Fabric (host up)
- Grid service managers
 - Not necessary the same as site admin
 - Is the service working?
- Grid operators
 - Shifters on duty (Infrastructure)
- Virtual Organization management
 - Shifters on duty (VO workflow)
- Grid Project management
 - Service Availability Metrics

Service Monitoring in WLCG/EGI

- From WLCG Monitoring Requirements
 - Category A
 - Agent running on the node
 - Category B
 - User-level operation (ping)
 - Category C
 - Internal service metrics
- Service Availability Monitoring (SAM)
 - Mainly remote user-level operations (Category B)
 - Periodically executed probes
 - Based on Nagios (Regional Instances)
 - Results transported via Messaging

Fabric Level Integration

- Problems at a data center
 - Should be discovered at that center
 - And fixed by the local administrator
- Each center has local monitoring framework
 - Which generates alarms
- How can we integrate our Grid Services?
 - The same information must be available
 - To local administrators
 - Remote operations

Link with Service Management

- If you see a problem
 - Why don't you fix it?
- Local fabric management
 - Alarm invokes
 - service restart
 - deployment of additional resources
 - remove host from alias
- Remote operations
 - Investigate and interact with service
- Monitoring (Request, Response)
- Management (Request, Action, Response)

Service Management

- Fabric Level
 - How do we integrate with local Fabrics?
- Infrastructure Level
 - How do we integrate with operations tooling?

Existing Solutions/Standards

- DMTF standards
 - Qpid Management Framework
 - OGF Management Interfaces
 - What else?
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- What is the adoption of the above?

What we need to do?

- Support SAM and EGI
 - Ensure probes exist and are useful
- Use of messaging for monitoring
 - How can we leverage what already exists?
- Survey of Computing Fabrics
 - Frameworks in use today
 - What technologies are supported?
- Survey of existing technologies
 - What exists today?
 - What is the adoption rate?

Warning Signs

- No obvious standards
 - No clear recipe exists
 - Can we really addresses this issue
 - With the limited manpower available
- Need to tread carefully
 - Understands solutions
- Only implement when we are certain
 - Do not want to waste effort
- However, there are things that we can do
 - Improve probes, log files etc.

Conclusions

- Whole area is unclear
 - With potential pitfalls
 - Need to tread carefully
- Require Service Monitoring
 - Even if it is *non-standard*
 - Something is better than nothing
- Service Management is nice
 - But not a critical feature
- Many factors outside of our control
 - e.g. Standards



Thank you

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