

GLUEMan: A WBEM-based Implementation of GLUE 2.0

Michele Carpené (INFN, Italy)
michele.carpene@cnafr.infn.it

<http://glueman.sf.net>

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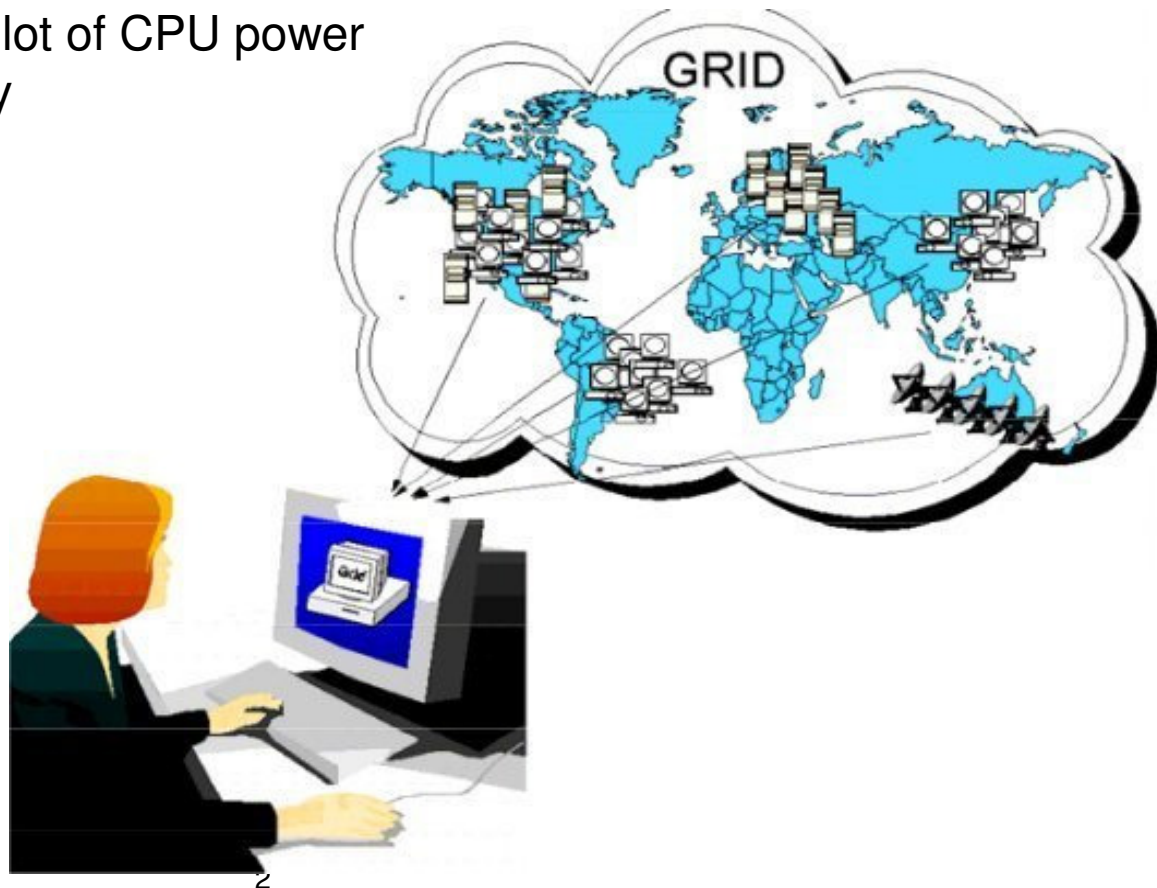
MWS 2008 Munich

Grid Computing

Many heterogeneous computers over the whole world

can be used to provide a lot of CPU power and data storage capacity

- Applications can be executed at several locations
- Combining geographically distributed services
- Collaboration
- Seamless access, Web services



Grid Concept



“A computational grid is a hardware and software infrastructure that provides dependable, consistent, pervasive, and inexpensive access to high-end computational capabilities.”

(1998, I. Foster and C. Kesselman))

“... The essence of the definition can be captured in a simple checklist,... a Grid is a system that:

1. coordinates resources that are not subject to centralized control...
2. ... using standard, open, general-purpose protocols and interfaces...
3. ... to deliver nontrivial qualities of service.

(In 2002, I. Foster)

Core Services:



Computing Element:

- Executes a computation
- Get the status of the computation
- Cancel the computation
- Computing resources are typically provided by possibly large farms of computers (Worker Nodes)
 - Usually managed by a batch system (e.g. LSF, PBS, Condor)

StorageElement:

- Manages the storage of data
 - Data are typically in the form of files
- Create, read, write, delete files/directories
- Storage may be provided using different technologies
(DPM, Castor, dCache, storm)

The standard



How do I know which resources are available? How do I know which ones I can use?

Services have to publish their existence, characteristics and status in the Information Services
(**discoverability, common abstraction layers**)

The Open Grid Forum (OGF) is the reference standard body which is defining a number of standard specifications for Grid services to solve the interoperability problem.

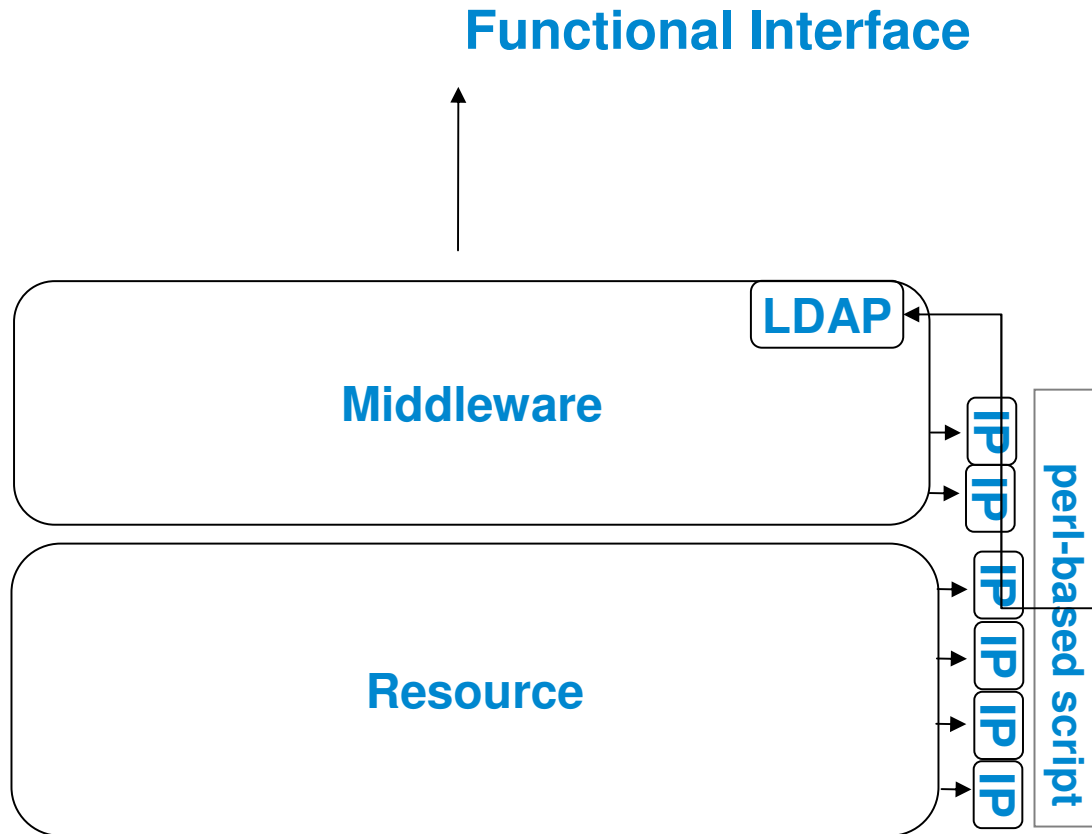
The Open Grid Forum (OGF) is defining GLUE, a conceptual model and reference realizations to concrete data models for describing advertisable capabilities of Grid services and resources.

What is The Problem?



- We have the GLUE 2.0 Specification and the reference implementations
- Grid components **MUST** be instrumented to
 - expose GLUE 2.0-based description which is
 - Conformant with the spec
 - Conformant with the renderings
- We want to reduce the impact on developers
 - Reduce concepts and technologies to learn
 - Improve quality of data

Generic Grid Middleware



- Pre-WS and WS Interfaces
- “out-of-band” information
 - Information about services and resources is provided by an external publisher (based on OpenLDAP)
- Situation:
 - GLUE Schema 1.3
 - IP: Info Provider which output LDIF

GLUEMan: What



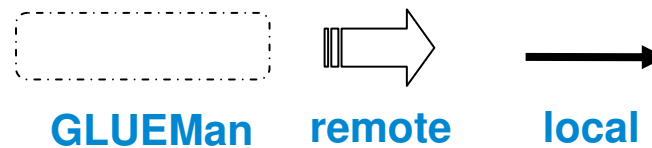
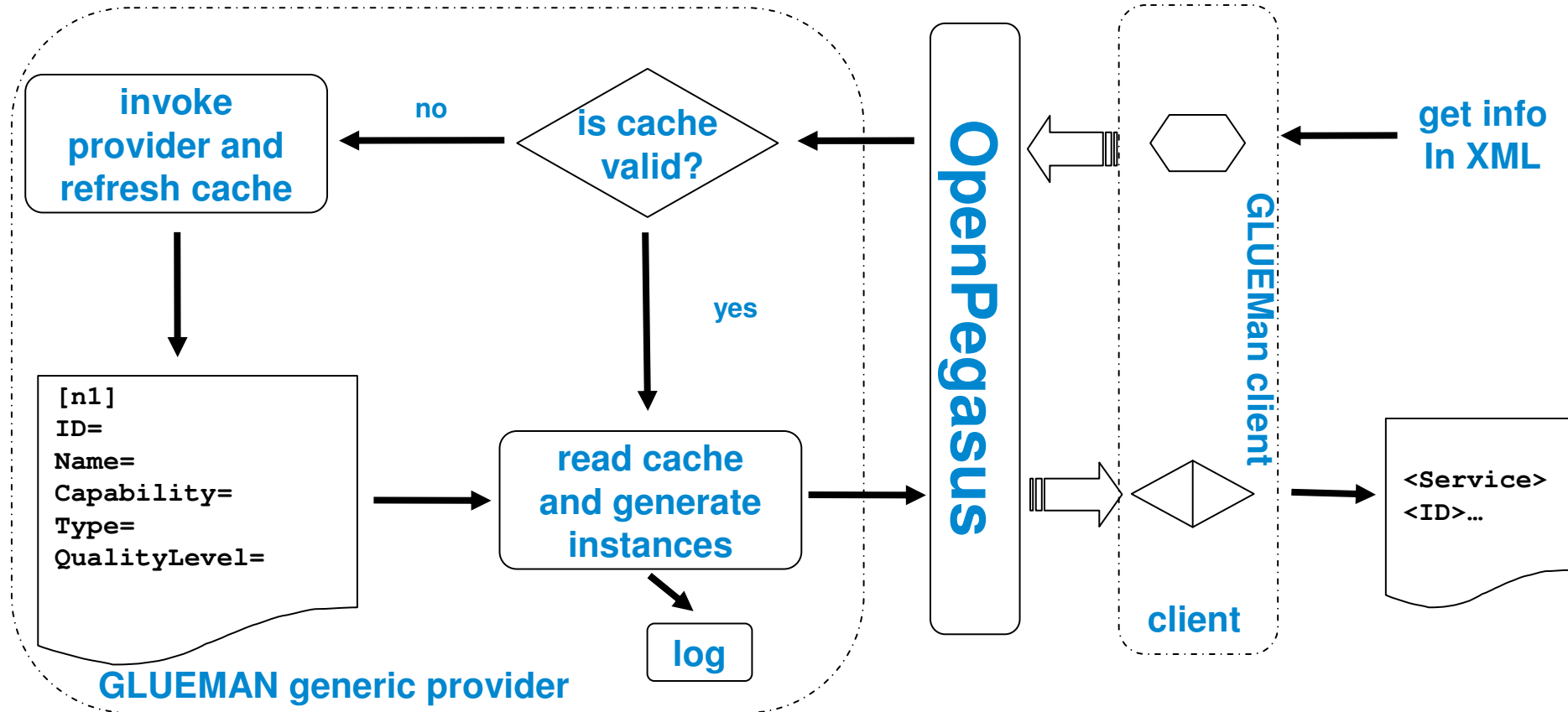
- A framework to manage information providers for GLUE 2.0
- Leverage WBEM technologies:
 - a suite of standards for the managing distributed IT resources defined by the DMTF
- Based on Open Pegasus
 - **open-source implementation of the DMTF CIM and WBEM standards in C++**
 - **Industry-supported**
 - **light-weight**

Identified Requirements



- General
 - Isolate provider developers from WBEM-specific details
 - Read-only providers
 - Support any programming languages
 - Reduce intrusiveness
- Provider
 - Enforce strong data conformance checking
 - Help in detecting errors about the produced information
 - Easy the writing of configuration-based information
- Client
 - Support multiple output renderings
 - at least XML, LDAP, SQL
 - Easy the addition of new renderings

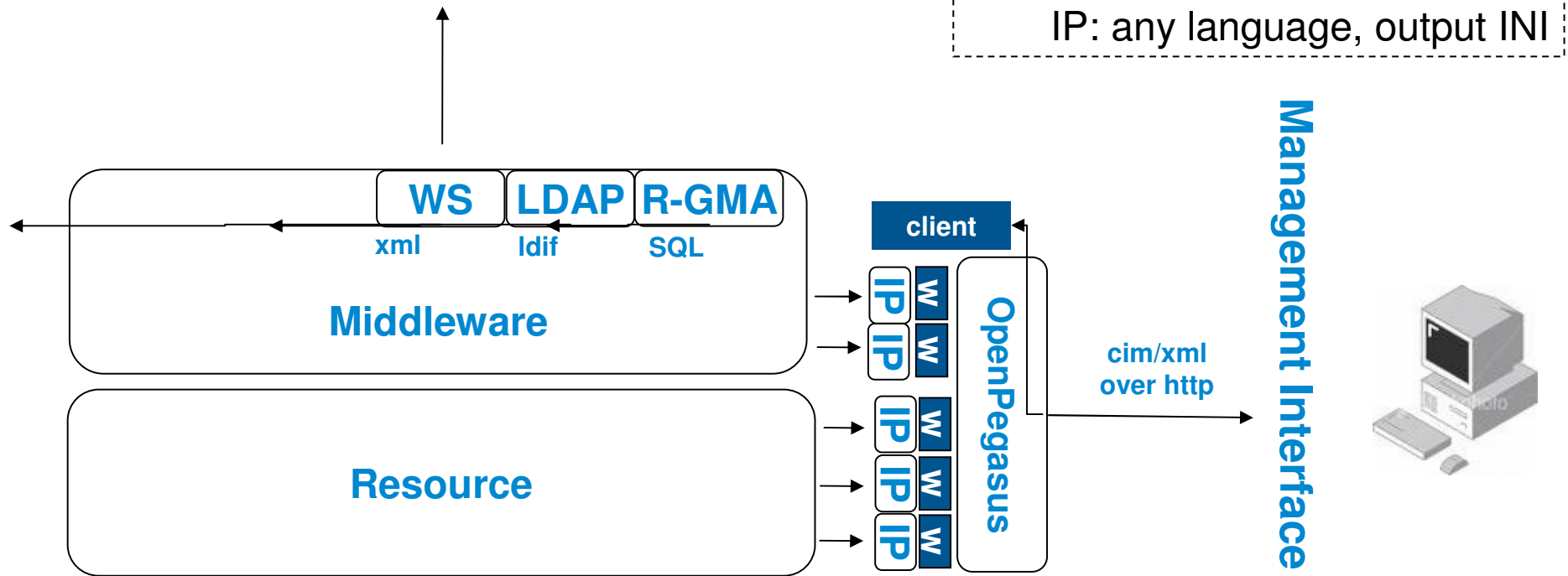
Simplified Functional View



Possible Deployment Scenario in gLite



Functional Interface



Situation:

GLUE 2.0

IP: any language, output INI

abstraction layer to isolate from IP manager specific aspects

GLUEMan Release Milestones



- Feb2008: Alpha Release
- May2008: Beta Release
 - All foreseen functionalities implemented
 - Aligned with latest GLUE 2.0 Spec

GLUEMan  BETA

The word "GLUEMan" is written in a large, multi-colored font (blue, orange, yellow, green). To the right of the word is a blue starburst badge with the word "BETA" inside.

<http://glueman.sf.net>

Conclusion



- GLUE 2.0 Spec enables standard-based information interoperability among different Grid Middleware

<http://www.ogf.org/pipermail/glue-wg/2008-May/000740.html>

- GLUEMan will simplify and help the development of providers
 - Based on standards
 - Easy to adopt
 - Open Source
 - <http://glueman.sf.net>, apache 2.0 license
 - Open to Collaboration

Team



- Sergio Andreozzi (leader)
- Marco Canaparo
- Michele Carpené

@ INFN-CNAF, Bologna, Italy