EMI 3 Overview

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Data Area Leader

Slides stolen from Emidio Giorgio, Alberto Di Meglio

With support by Florida Estrella

EMI 3 Tutorial
ISGC 2013, 21\textsuperscript{th} March 2013
Plans for today

13:20
EMI Introduction
Patrick Fuhrmann

CREAM CE + Site BDII Installation and configuration
Guiseppe La Rocca

Break

15:10
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Site Manager on Duty
Enrico Fattibene
Topics

- EMI in a nutshell
  - Factsheet
  - Objectives
  - Activities
- EMI 3 and Area highlight
• European FP7 project - coordinated by CERN
• 3 years – ends April 2013
• About 25 M Euros
• Bringing together major EU middleware providers
  – Unicore
  – gLite
  – ARC
  – dCache
The European Middleware Initiative (EMI) project represents a close collaboration of the major European middleware providers - ARC, gLite, UNICORE and dCache - to establish a sustainable model to support, harmonise and evolve the grid middleware for deployment in EGI, PRACE and other distributed “e-Infrastructures”
Project activities

- Maintenance, Support, Release Management
- Innovation and Development
- Dissemination, Training, Exploitation, Sustainability
- Quality Improvements
- Software Eng.

- EMI 1 Kebnekaise (Legacy pre-EMI MW)
- EMI 2 Matterhorn EMI 3 Montebianco

Web site, communication channels
DCI and other collaborations
SciencePAD
Commercial collaborations

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Some worlds about releases
## EMI Support Policies

<table>
<thead>
<tr>
<th>Release</th>
<th>Code Name</th>
<th>Release Date</th>
<th>End of full support</th>
<th>End of standard updates</th>
<th>End of security updates and support</th>
</tr>
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- **Full Support**: updates are released to address issues in the code and new features are provided (lasts 12 months)
- **Standard Updates**: updates are released to address issues in the code but no new features are provided (lasts 6 months)
- **Security Updates and Support**: only updates targeting security vulnerabilities are provided (6 months).
- Within an EMI major release only the latest version of a component is supported, and updates are implemented targeting such version.

As older versions of the EMI products are superseded by newer versions, an **end-of-life** announcement is made which coincides with the end of the security updates and support period.

*This date is beyond the lifetime of the EMI project and depends on the individual partners commitments to their supported products.*
EMI 3 released on 11th March, 2013

- Finished after 10 months of
  - Development
  - Product and Inter-product testing
  - Certification

- 50 products

- Support for
  - SL5 : 480 packages
  - SL6 (x86_64) : 474 packages
  - Debian6 : 230 Packages
• Quality assurance
  – the release snapshot is based on the achievement of a set of “acceptance criteria”, which are
    • Certification
    • Package formats
    • Documentation
• Mandatory inter-product (integration) tests
• Standard compliance tests
  • <i>litmus</i> (<i>WebDAV</i>)
  • GlueValidator
  • <i>EMI CAR</i> validator
  • StARval
  • several <i>EMI-ES Testsuites</i>
  • CANI
EMI Updates Schedule

EMI is planning for 2 update cycles
- Dates: 21 March & 18 April
- Releases:

EMI 1
- Security fixes for
  - CREAM
  - CEMon

EMI 2
- Amga
- CREAM
- GE Module
- Hydra

EMI 3
- ARGUS
- DPM/LFC
- FTS3
- Hydra
- L&B
- Hydra
Highlights by area

Data

Compute

Infrastructure

Security
Infrastructure
**Highlights in the infrastructure area**

**EMI service Registry**

**EMIR**: from implementation through performance testing to deployment planning

- One central registry where all services can be discovered
- *No registry supported by all three middleware providers prior to EMI*
- **Unified service discovery**
- Quorum based, replicated Global Service Registry DB ensures HA
- Service providers register to and push information to Domain Service Registries
- Deployment hierarchy of DSRs in investigation
- All services to publish information in EMIR
EMI 3 highlights

- **Information Systems and monitoring**
  - Improved version of the *EMIR service* registry with all EMI services being able to send registration records.
  - Improved set of NAGIOS probes for all supported services.
  - Completion of the messaging-based (SSM2) accounting probes for EMI CEs and SEs supporting CAR and StAR standard accounting record formats.

- **Not (yet) released**: ARGUS-EES, CREAM, FTS3, HYDRA

- See Reference for Major & Backward (In)Compatibilities Changes & Upgrade Paths
Computing
Compute

- Implementation of the *EMI ES* specifications across all compute element services

An agreement in the consortium on which interfaces and protocols we use in order to enable computational job submission and management required across technologies.
EMI-ES: from specification to implementations

- EMI-ES interface specification agreed as the common job management interface
- Web-service interface with
  - Integrated support for data staging
  - Delegation capability
  - Re-engineered state model
  - Revised job description
  - Glue2-based service and activity description
  - Clearly defined Port Types
- All CEs implemented EMI-ES job management specification at 80-90% completion level
- Iterative schema definition to protect users from child deceases
  - EMI-ES v1.2 revision
- Client side development ongoing
- Central piece in the EMI harmonisation efforts
Security
Common Authentication Library

CANL: From implementation to adoption

- Defined and documented API for common security library
- Main features
  - Credentials handling
  - Trust store handling
  - Name constraints checking
  - CRL
  - Proxy: verification, generation, proxy CSRs, utilities
  - Partially unified error codes and messages
  - OCSP support (on-line revocation)
  - PKCS 11 (support for smart cards & soft tokens)
- Implementation available in C, C++ and Java
- EMI products migrating to CANL
  - VOMS, ARC HED, Trustmanager, L&B, UNICORE, dCache, CREAM, Argus, Pseudonymity, Hydra, STS
- Consolidating work on security libraries. Just one team.
For simplified credential management

- STS transforms an existing security token into another security token *understandable* by grid services

- **Input formats**
  - Username / Password
  - SAML

- **Output formats**
  - X509/EEC using external online CA
  - X509 Proxy using VOMS

- **Pilot service for WLCG**
  - Username/Password to VOMS Proxy through CERN IdP
Data
Main objective for the Data Area

Becoming a major player in Big Data, competing with industry.

How to achieve that

By consequently applying industry standards to our storage components.
Industry standard protocols for accessing SEs and the Catalog

• DPM and dCache ready for **NFS4.1**. In production for dCache for more than a year.
• **HTTPS** offered by DPM, StoRM and dCache
• **WebDAV** support in DPM and dCache
• WebDAV support being developed in **FTS3** and LFC
• **StAR**: Storage Accounting Record
• Dynamic Federation
Example: Dynamic Federation

Federation Service

Portal

Best Match Engine

Candidate Collection Engine

GEO

IP

Candidate Collection Engine

DPM@Taipei

dCache@DESY

Telecom cloud @Germany

dCache

WLCG LFC
More about “Beyond EMI”
Some product teams have a history in collaborating.
- e.g. StoRM, dCache and CERN DM

For some EMI activities those collaborations will continue.
- FTS 3
- Industry standards for SE’s
- Dynamic Federation
• This is not EMI - 2

SciencePAD Goals

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The individual product teams will take over support and maintenance of their components. (EU contract).

Development may continue within the product teams, depending on funding.

Some collaborations will continue to achieve ‘extended’ EMI tasks.

EMI is launching a marketplace ‘SciencePAD’.

We hope to be able to provide a common download/repository area even after EMI.
References

• EMI web site
  – EMI 3 page
    • with installation and download instructions
    • http://www.eu-emi.eu/emi-3-montebianco
  – EMI repository
    • http://emisoft.web.cern.ch/emisoft/index.html
  – All EMI 3 products
    • http://www.eu-emi.eu/montebianco-products

• Support :
  – GGUS : http://ggus.org
Thank you
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