S13N in EMI
(Delegation, GLUE 2.0)

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Setting the scene: SRM

- **SRM**
  - Protocol for controlling storage

- **Delegation**
  - Allows an SRM server to act “on behalf of” end-user.
  - Creating X.509 certificate & private key on server, signed by end-user.

- **GSI**
  - V. similar to SSLv3 but incompatible.
  - Allows clients to trigger delegation
Why delegate?

• Protocol-independent 3rd-party copy
  
srmCopy

• Reserving network bandwidth
  
srmPrepareTo(Get|Put), srm(Get|Put)Done, srmCopy

• X.509-aware tertiary storage
  
SrmBringOnline, srmPrepareTo(Get|Put), srm(Get|Put)Done, srmCopy

• Federated SRM

  Everything except srmPing.
Why drop GSI?

• **GSI is not a standard** (SSLv3 is)
• Coupling delegation with transport negotiation is **inflexible**.
• It's **not widely used** outside of Grid
• Only libraries are coming from a **single vendor**: Globus
• Hard to add advanced features; e.g., **no hardware acceleration**.
What to do about delegation?

• If delegation isn't needed then SSLv3 should work fine.
• When delegation is needed then client requires some extra functionality.
• Soln: a service that allows delegation. (NB. we're not talking about a single, per-site shared service; rather, each service has a common extra API)
# Delegation Services

<table>
<thead>
<tr>
<th>Name</th>
<th>Tech.</th>
<th>C / Native</th>
<th>Java / JVM</th>
<th>Supported</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Client</td>
<td>Server</td>
<td>Client</td>
</tr>
<tr>
<td>Globus Credential Delegation Service</td>
<td>SOAP</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>GridSite Delegation Service</td>
<td>SOAP</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Globus New Delegation Service</td>
<td>REST</td>
<td>N</td>
<td>N</td>
<td>N</td>
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<tr>
<td>IVOA Delegation Service</td>
<td>REST</td>
<td>N</td>
<td>N</td>
<td>Y</td>
</tr>
</tbody>
</table>
Introducing the winner

• GDS is a **de facto standard**.
  – Developed ~2005 by Andrew McNab for web management software.
  – Adopted by gLite, after going through a review process

• Current version is v2.0.0
  – In production (FTS, GridSite, ...)

• **Two** independent libraries (Java and C), both provide **client** and **server**.
GDS: an EMI standard

- Other services in EMI also need to delegate
  - EMI ES (execution service), FTS, ...
- Agreement to use GDS within EMI.
- Current API docs need tidying up:
  - Conflates documenting software with documenting the standard,
  - Leaves some things too vague.
- Some work underway in this area
Taking it further

• GDS is a “standard” only within EMI.
  – Not endorsed by any standards body.
• No obviously applicable standard
• Should we start an OGF WG?
  – Suggest writing up GDS as an experience report
• See BoF session, this Thursday
GLUE 2.0: motivation

• GLUE is an info-model for describing grid resources.

• Current version is GLUE v1.3
  – Backwards compatible with prev. versions
  – Somewhat evolved, ad-hoc design
  – Hard to publish what's deployed
    • SRM must be published twice,
    • Naming conventions used to tie objects.
    • Problems in representing cluster partitioning.

• Solution: GLUE v2.0
GLUE 2.0: the standard

• Breaks backwards compatibility
  – More structured, hierarchical approach.

• Multiple documents
  – Technology agnostic, general document
  – Documents describing how to store information using different technologies.

• General document finished 2009

• At least two renditions:
  – LDAP (completed), XML (WiP)
GLUE 2.0: now (+/- a bit)

• EMI-1 includes support for GLUE 2.0
  – LDAP schema support
  – Information published as v1.3 and v2.0
    • Publish different versions side-by-side.
  – Available v2.0 information similar to v1.3
  – Clients use v1.3 initially.
    • With EMI-2, clients will use GLUE 2.0.

• QA tools for validating GLUE v2.0
  (LDAP Schemata are quite primitive)
GLUE 2.0: in the future

• Clients move from using v1.3 to use v2.0
  – Coming with EMI-2
• Enrich publishing of GLUE 2.0 information
• Drop support for GLUE 1.3
Summary

• S13n of delegation has started
• Moving to GLUE 2.0 to overcome limitations of GLUE 1.3
Thank you!

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