Standard Adoptions of the European Middleware Initiative (EMI)

Data area

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Adopting existing standards
HTTP / WebDAV

- How do we support **non-HEP users**?
- dcap, RFIO, xrootd
  
  No one outside of HEP has heard of these

- **HTTP** and **WebDAV**
  
  Everyone has a web-browser, WebDAV clients for all platforms,
  
  WebDAV is increasingly being used commercially (Microsoft *SkyDrive*, Deutsche Telekom *Mediencenter*)

- Deployed **in production**: DESY, PIC, BNL …
- Available for all storage solutions with EMI-2
Federated Storage
Federated Storage

1. GET

2. REDIRECT

3. GET

4. NOT FOUND

Storage Element

Data

Storage Element

Data

Storage Element

Translation

Catalogue
Federated Storage

1. GET
2. REDIRECT
3. GET
4. RDRCT
5. GET
6. DATA

Translation
Catalogue

Storage Element
Data

Storage Element
Data

Storage Element
Federated storage

- Encode stack of locations in **URL**
  - Limited by size of URL a browser will accept.
- **Last location** in stack redirects back to catalogue
  
  Catalogue can redirect to more locations or fail the request if there are no more.

- Support in DPM and dCache
  
  Coming with EMI-2
Federated Storage

1. GET
2. REDIRECT
3. GET
4. DATA

Storage Element
Data

Plugin

Dynamic Catalogue

Plugin

Query Update

Catalogue

Storage Element
Data

Plugin

Storage Element
Data

Plugin
NFS 4.1/pNFS

- Industry standard protocol:
  
  Available **NOW**
  
  *RHEL/SL 6.x, Fedora, Debian ("Wheeze"), Ubuntu, Windows, Solaris, ...*

- In **production** (at DESY) for over a year

- **DPM & dCache** implement NFS 4.1/pNFS

- “Trusted network” & GSS (==Kerberos) available

- dCache & CERN collaboration to look at solutions to support **X.509** authentication
  
  - One example is **project moonshot** from CESNET
GLUE 2.0

- **Information model** for describing a grid
  - v1.3 came out of WLCG, in collaboration with other grid efforts
  - v2.0 developed by OGF
- v2.0 is a **radical update** from GLUE 1.3
  (not backwards compatible)
  fixes several problems with GLUE 1.3
- Support for **publishing GLUE 2.0** coming with EMI-2 release:
  - Software publishes both GLUE 1.3 and 2.0 descriptions.
  - Currently just as **LDAP** updates (LDIF)
  - Will be adding **JSON** and looking at **XML**
- Clients are currently being updated to use GLUE 2.0
CDMI

- Developed for **cloud storage**
  - Many similarities to SRM
- Industry backed: DDN, NetApp, ...
- Standardised:
  - Current **SNIA standard**, planned **ISO**
- Increasing **client adoption**
  - especially within the “cloud area”.
- Will be **watching carefully**, but unlikely to be adopted during EMI lifetime.
Driving **new** standards
• **Storage Accounting Record**
  - Based on (Computing) Usage Record
  - Provides usage records
  - *Accounting and billing*
  - Support being rolled out.
  - Triggered corresponding activity in computing: CAR

• **UR 2.0 is currently being defined**
  - Incoporate features from StAR and CAR
  - Plans to unify the two formats into a common structure.
Identity Delegation

- A process involving security tokens (e.g., X.509)
- An identity is transferred or copied,
  - usually so the copy is valid only for a short period.
- Typical usage is for 3rd party interaction
  - With data, the usual reason is to gain authorisation for fetching or uploading data.
  - Other use-cases exist in computing
Identity Delegation

• There is currently no standard approach
  • For most identity technologies (e.g., X.509), identity delegation is a simple process.

• Despite this, it's a common problem:
  • Multiple approaches have been implemented,
  • Usually these differ superficially.
Identity Delegation

- Within EMI, we have standardised on a protocol called **GridSite Delegation**
  - The only implementation that offers **multiple implementations** (both C and Java), both server and client.

- However, GSD is **not ideal**:
  - Existing documentation is problematic in places:
    - **vague** in places and **over-specific** in others.
  - some potentially useful **functionality is missing**:
    - Back- or reverse- delegation is missing.
    - What about SAML, OAuth, OpenID, …?
Identity Delegation

- Formation of **OGF IDEL** group to fix all these problems:
  - Use OGF process to produce **rigorous description** of GridSite protocol.
  - Come up with a **common standard** that provides all reasonable functionality.

- Current status:
  - Have interest from **several groups** (XSEDE, IGE/Globus, EMI, EDGI, ...)
  - First official session was yesterday:
    - **Presentations from different communities**
    - **Programme of work agreed**
Conclusion

• EMI storage: adopting standards
  Lowering maintenance costs
  Reducing/removing barriers for new communities
  **Driving standardisation.**
  Providing input to existing standardisation processes (StAR/CAR/UR)
  Stimulating new standardisation directions (IDEL)
Thanks for listening

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