Certificate-free User-friendly HPC Access with UNICORE

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UNICORE

- Universal HPC middleware
- Easy access to complex data and computing resources
- Many HPC systems, XSEDE, PRACE, soon HBP
- Portal, rich client, commandline client

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UNICORE

- Higher level services to manage computing tasks and data sets
  - Workflow management
  - Metadata management
- High throughput data life cycles
  - Data oriented processing
  - Space based approach

Challenge

- Adoption significantly hampered by grid user certificates

- Manual and personal application at official registration authority

- To be repeated every year to prolong certificate

- Significant barrier of entry and annoyance especially for novice users

- Prevents UNICORE from becoming truly universal and usable way to access HPC resources

Certificate-free access

- Integrated solution path available

- Use of institute identities for access via UNICORE

- UNICORE 7 and Unity 1, released in 01/2014

Certificate-free access

- Unity graphical capabilities
  - Interface with diverse federated identity management systems
  - Authentication and authorization service
- In combination with Unity, UNICORE becomes standard way of access for HPC resources
- Immediate HPC access even for novice users
- For simple or highly complex computing tasks

Situation at ZIH

- Cluster Taurus
- User access via resource application
- UNICORE not used by average user due to grid certificates
- ZIH LDAP server
  - Includes all HPC users
  - Includes login, passwords, groups

Goals at ZIH

- Automatic access to ZIH data and computing resources via UNICORE

- Avoidance of further steps on users' side

- Integration of ZIH LDAP and UNICORE with Unity

Goals at ZIH

- Commandline and rich client

- Deployment of central UNICORE portal at ZIH, integrated with Unity and LDAP

- Significantly lower hurdle of use to ZIH HPC resources

Solution Steps – Installation and Configuration of Unity

- unityServer.conf
  - main config, general server setting
  - port, host, credentials, authenticators, endpoints
- LDAP configuration as "authenticator"
- Login/password verification via LDAP through Unity
- Definition of LDAP server
- Information about schema
- Group for specific cluster
- Endpoints such as UCC/URC/Portal

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Solution Steps – Configuration of UNICORE

- Gateway
  - Turn off client authentication
- U/X
  - Configure Unity as attribute source, i.e. instead of XUUDB
  - Trust certificate of Unity instance
- Client, such as UCC
  - Specify address, username, password

Conclusion

- Path to UNICORE as standard service for HPC systems using Unity

- Immediate and automatic access as with SSH

- Far easier to use

- With far more functionality

Further Steps

- Integration with

  – Shibboleth, DFN-AAI for German wide access

  – Research environments such as the MoSGrid science gateway

Thanks

- Questions?