

Lecture 10 Part 2 Grid/Metacomputing

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Lecture 10 part 2

- ⌞ The updates and other systems
- ⌞ Unicore
- ⌞ Globus 2.0/2.2b
- ⌞ A little on XML
- ⌞ Globus 3 or Open Grid Services Architecture (OGSA)

UNICORE



Slides courtesy of Edgar Gabriel
High Performance Computing Center
Stuttgart

UNICORE outline

- ⌞ Concept
- ⌞ Submission of a simple job
- ⌞ UNICORE-plugins

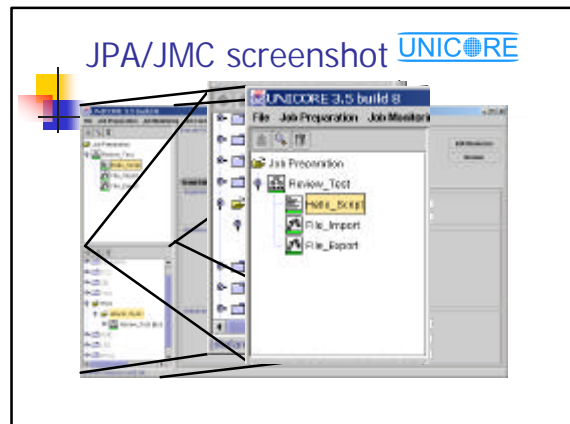
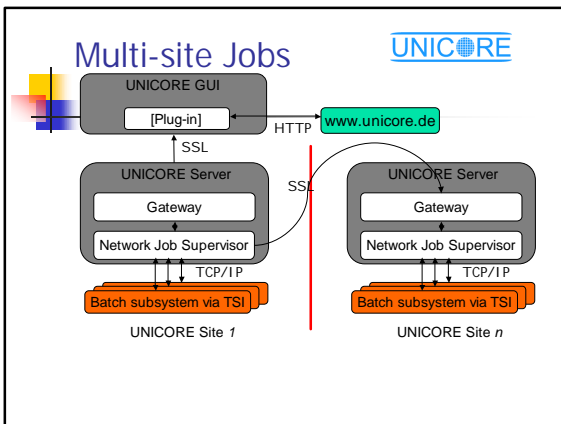
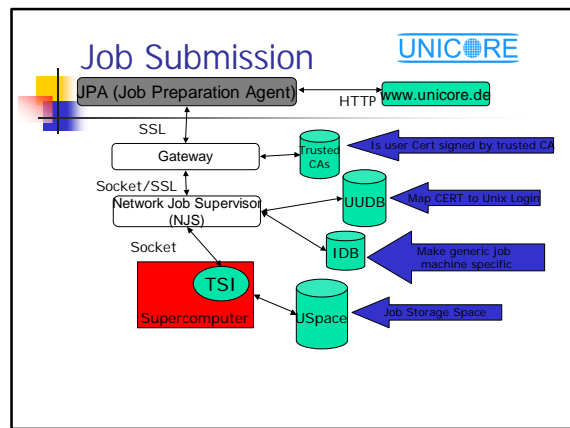
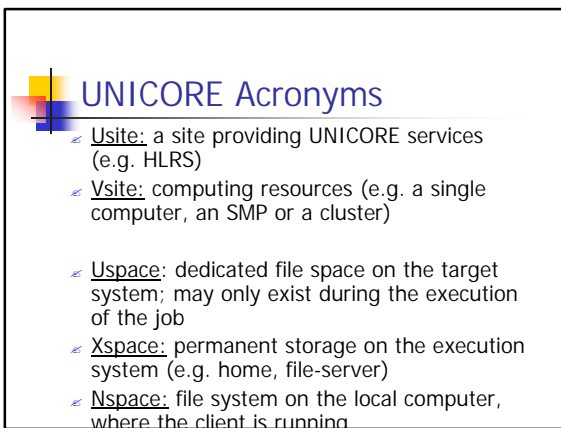
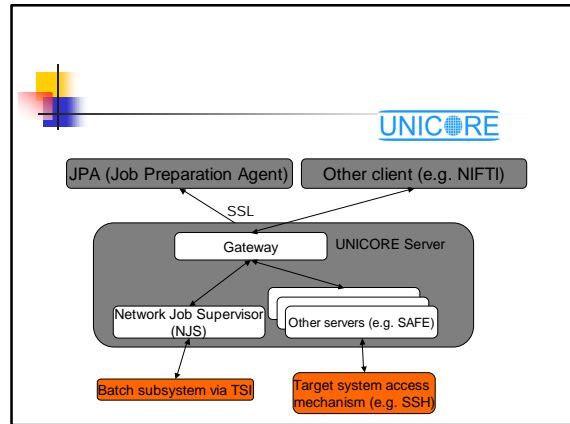
UNICORE

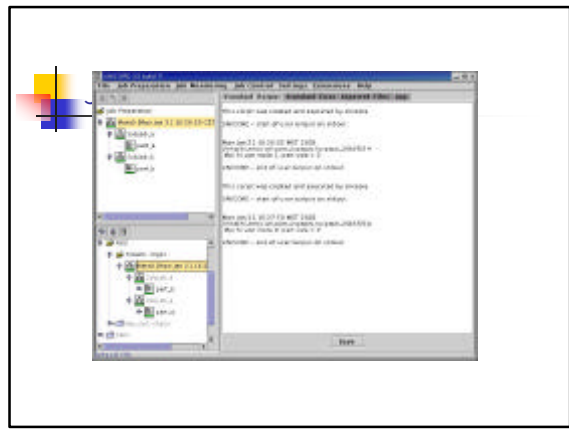
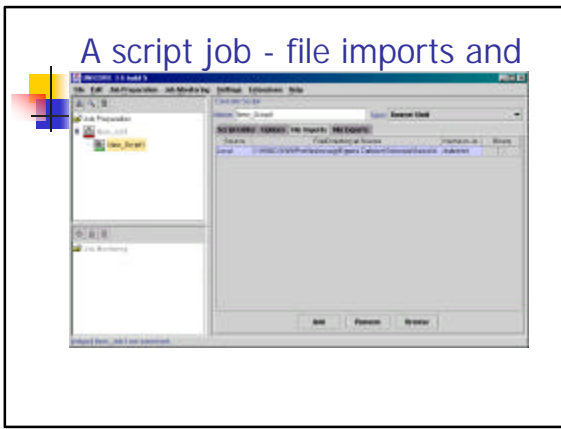
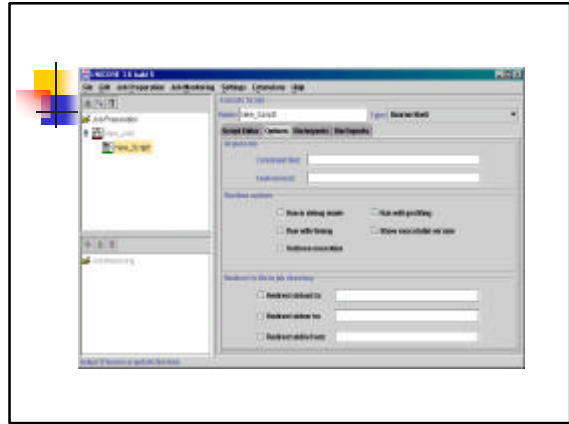
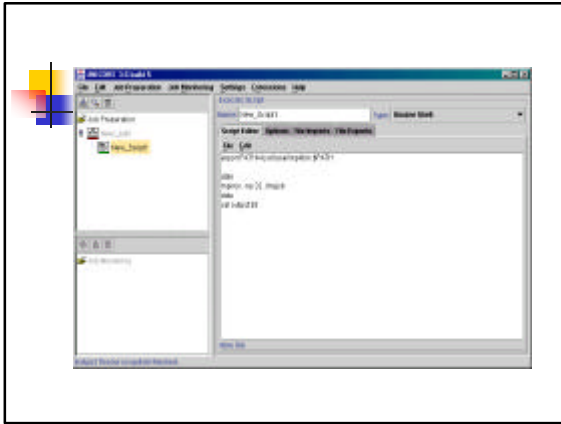


- ⌞ **U**niform **I**nterface to **C**omputing **R**esources
- ⌞ Goals:
 - ⌞ Seamless, secure and intuitive access to HPC resources
 - ⌞ Consistent batch access to different remote systems
 - ⌞ Support existing and emerging technologies
 - ⌞ Minimal intrusion into the centers
 - ⌞ Support multi-system and multi-site applications

UNICORE status

- ⌞ Current version: 3.6
- ⌞ Version 4.0 available at the end of the year
- ⌞ Licensing:
 - ⌞ Protocol will be publicly available
 - ⌞ Distribution and support by Pallas GmbH
- ⌞ Free download of test system at:
<http://www.fz-juelich.de/unicore-test>

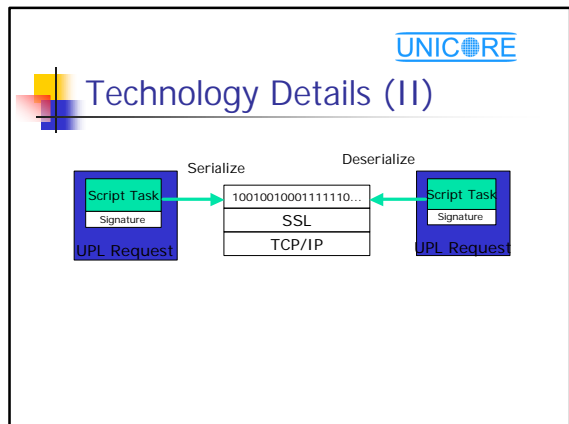


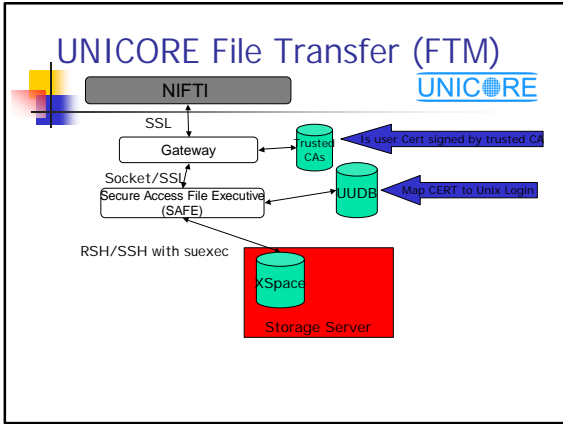


UNICORE

Technical Details (I)

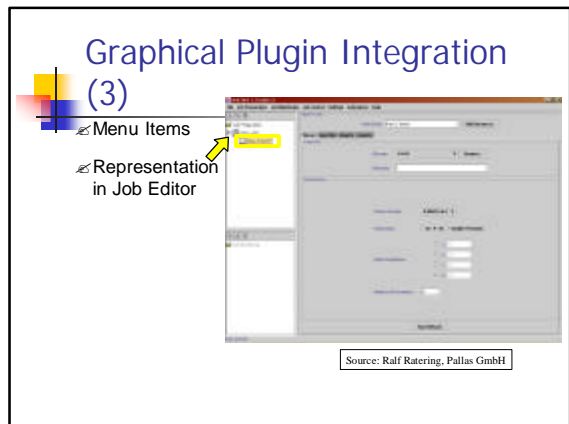
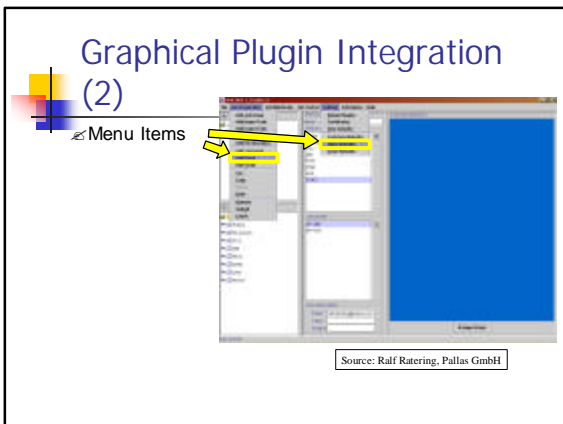
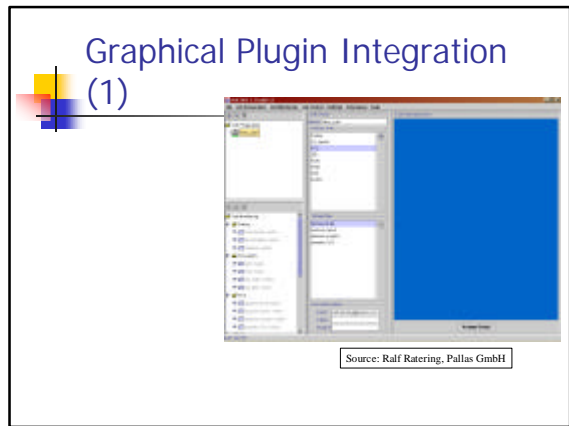
- Client is implemented in Java
- The protocol is implemented in two layers
 - Unicore Protocol Layer (UPL)
 - Simple Request/Response Protocol realized with serialized Java Objects
 - Abstract Job Objects (AJO) model Jobs such as a Script Task in a generic way are transmitted as serialized Objects within UPL Requests





- ### UNICORE Technical Details (FTM)
- Architecturally integrated with the rest of the UNICORE software
 - Protocol is also based on serialized Java Objects
 - Due to different nature of file transfer commands the protocol is a multi stage protocol (not UPL)
 - Will use the same Gateway

- ### UNICORE plug-in mechanism
- Application-specific support in UNICORE
 - Currently planned/supported plug-in:
 - CPMD
 - Fluent
 - STAR-CD
 - Nastran
 - Gaussian
 - ...
-
- The screenshot shows a configuration window with several sections: 'Advanced User Interface', 'Custom', 'Miscellaneous Options', 'Advanced Settings', 'Properties', 'Advanced', 'Check for updates', 'Use new server framework', and 'Use path normalizing'.



Graphical Plugin Integration (4)

- Menu Items
- Representation in Job Editor
- GUI

Source: Ralf Ratering, Pallas GmbH

Graphical Plugin Integration (5)

- Menu Items
- Representation in Job Editor
- Representation in Job Monitor

Source: Ralf Ratering, Pallas GmbH

Handling of plugins for users (1)

User

Client Software Plugin XY

Plugin Jar Archive

Download plugin jar archive and store in plugin directory.

Source: Ralf Ratering, Pallas GmbH

Handling of plugins for users (2)

2. Is the plugin author trustworthy?

Source: Ralf Ratering, Pallas GmbH

Handling of plugins for users (3)

User

Client Software Plugin X

3. Editing the plugin

Source: Ralf Ratering, Pallas GmbH

Handling of plugins for users (4)

User

Client Software Plugin XY

Request

Software Resource: Plugin XY

4. Will the selected virtual site support the plugin?

Source: Ralf Ratering, Pallas GmbH

Handling of plugins for users (5)

Source: Ralf Ratering, Pallas GmbH

5. Submit the job.

Submit Job containing Plugin tasks

More information

- ⚡ UNICORE Web-site:
<http://www.fz-juelich.de/unicoreplus>
- ⚡ UNICORE-Forum:
<http://www.unicore.org>
- ⚡ Contact: info@pallas.com
- ⚡ Support: unicore-support@pallas.com
- ⚡ Documentation:
 - ⚡ UNICORE Client description (56 pages)
 - ⚡ UNICORE Client Plugins - Programmers Guide Version 3.6 (13 pages)
 - ⚡ Installation guides to all components available

Future of UNICORE

- ⚡ Eurogrid
 - ⚡ European UNICORE based testbed for three application areas
- ⚡ GRIP
 - ⚡ interoperability between UNICORE and Globus
- ⚡ Convergence towards OGSA (Open Grid Software Architecture)

Globus 2.0b/2.2

- ⚡ Many Bug fixes
- ⚡ API changes hence 1.X to 2.X
- ⚡ Improved packaging via gpt
 - ⚡ Think of rpms for Grids
- ⚡ Component improvements
- ⚡ Architecture changes
 - ⚡ MDS->GRIS/GIIS no need to start LDAP root at ANL
 - ⚡ GSI is simpler (see etc/grid-security)

Xml, WSDL and SOAP

- ⚡ OK how do we describe 'services' in a portable way?
- ⚡ How do we describe data in a way that everybody understands?
- ⚡ How do we then transfer the data invoke the service

Xml, WSDL and SOAP

- ⚡ Why use XML/SOAP?
 - ⚡ Agreed way of describing something
 - ⚡ But, just because we agree on the language we use does not mean we agree on what it means..
 - ⚡ Hence the OGSA spec.



HARNESS XML/SOAP example

- ⚡ Maybe only use XML/SOAP to ask for a ref handle to a SERVICE and THEN use a binary on the wire protocol
 - ⚡ I.e. DIME



Globus 3 or OGSA

- ⚡ Open Grid Service Architecture
 - ⚡ Components now implement services described by WSDL
 - ⚡ Data and queries are transferred via XML using SOAP requests
 - ⚡ Demo version available via www.globus.org