Desktop Grids opening up to UNICORE

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Agenda

- Desktop Grid
- EDGI Project
- Integration
- Plan
What are Desktop Grids?

• **Variants**
  – Volunteer grids like seti@home
  – Enterprise grids, e.g., in universities, companies

• **Consolidate non utilized computing resources**
  – Not dedicated, user has priority => less reliable
  – But very large

• **Loosely coupled**
  – rare communication

• **Desktop Grid (DG) Middleware**
  – BOINC, XtremWeb, Condor, OurGrid, ... (# = 17) [Taxo]
Popular Desktop Grids

- Climateprediction.net [494980]
- LHC@Home [232805]
- SpinHenge@home [150557]
- MalariaControl [119167]
- SIMAP [118239]
- Quantum Monte Carlo at Home [117287]
- ABC@Home [104775]
- SZTAKI Desktop Grid [88445]
- POEM [72518]
- WLCG [64191]
- EGI Grid [53137]
- Leiden Classical [52331]
- Rectilinear Crossing Number [48337]
- IberCIVIS [42646]
- FreeHAL [41238]
- Yoyo@Home [34639]
- Chess960 [28172]
- GPU Grid [22810]
- EGEE Grid [17280]
• **European Desktop Grid Initiative** [EDGI]
• Builds upon work of predecessor project EDGeS
• Extends Service Grids with Desktop Grids
  – glite, UNICORE, ARC
• Additionally utilizes Cloud Resources
• **Worldwide DG dissemination**
  – partner project [DEGISCO]
• **More information...** [Roadmap]
Both grids

Service Grids
- glite
- UNICORE
- ARC

Desktop Grids
- Xtrem-Web
- BOINC
EDGI Components

Service Grids
- glite
- UNICORE
- ARC

ATTIC Storage
- 3G-Bridge
- Application Repository

Desktop Grids
- Xtrem-Web
- BOINC
General Concept

Service Grids
- glite
- UNICORE
- ARC

ATTIC Storage

Desktop Grids
- Xtrem-Web
- BOINC

Application Repository
- DGs, Apps, Metadata

Job Submit / Staging

schedule

computation
UNICORE

UNICORE

UI
(UCC, URC, HiLA)

UNICORE/X

Storage Management Service

UNICORE/X

EDGI /DG

3G-Bridge
(proxy for DG)

Application Repository
(App-, DG-Metadata)

Monitoring
(Statistic)

upload/download

which apps

submit apps

stagin-out

stagin/out & submit

query apps

events
**UNICORE/X**

- write
  - monitor-
    - event-
      - files

**httpd**

- (export job/
  - monitoring
directory)

**TSI**

- full featured staging

**3G-Bridge**

- submit

**Application Rep.**

**EDGI /DG**

- polls

**httpd**

- (export job
directory)

**Monitoring**

- periodic update

- dl output

- dl input

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*Die Universität der Informationsgesellschaft*

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UNICORE/X

- XNJS
  - TSI
    - IDB
      - httpd (export job/monitoring directory)
        - full featured staging
        - dl input
        - dl output
        - d1
      - periodic update
      - checks App
      - periodic update
  - monitor-
  - event-
  - files

EDGI /DG

- 3G-Bridge
  - httpd (export job directory)
  - polls

Application Rep.
Timeline

Past
• TSI extension, interaction with components, unit tests

Current
• First alpha package
• EDGI alpha test host (WP JRA1)

Shortly
• UNICORE svn / buildserver
• EDGI test cycle (WP SA2)

Interm.
• Monitoring, URL-passthrough, user-tagging
• Bugfixing

Final
• EDGI productive system
• UNICORE distribution
UNICORE Aims

• Part of D-Grid eco system
  – Applications with few communication requirement not executed on special low latency interconnected hardware

• Part of Standard UNICORE distribution

• Communities & Users
  – Call for (UNICORE) Communities to participate
  – “free” access
• Flyer IDGF, PC²
• [Taxo]
• [EDGI] http://edgi-project.eu
• [DEGISCO] http://degisco.eu
• [Roadmap] http://tinyurl.com/652ma9r
Why UNICORE...

• ... and not Desktop Grids directly?
• Learning one thing > UNICORE
• RichClient
  • vs CLI commands
• Nice application browsing
  • vs Application Repository searching and URL Copying
• UNICORE Storage
  • vs staging by hand
• Workflow Engine
  • unmatched
• **SOAP Interface for managing Jobs**
  – Submit, delete, monitor
  – Minor security (no certificates, assertions)
• **Plugin-Based**
  – BOINC, XtremWeb
  – UNICORE, glite
  – ...?...
• **Also used by P-Grade**
• [3gb] http://sourceforge.net/projects/edges-3g-bridge/
New Communities

• A lot of **free** resources vs. confidentiality
• Application porting **efforts**
  – Bundling & execution
    • Support from EDGI, courses
  – Validation
    • Team & Infrastructure
• There is an application repository to browse