



Grid for the ILC

Dennis Martsch @ ECFA
Workshop in Vienna 16 Nov. '05

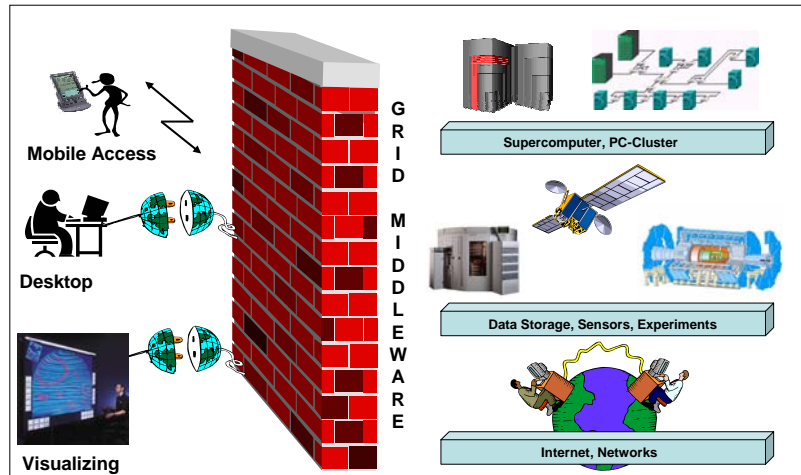


Grid computing

- Monte Carlo studies are essential for detector development and optimization
→ Need for **significant resources**
- “Divide and Conquer”-strategy speeds up MC
- Combine **multiple computing facilities** and use the resulting capabilities
- Use a **common interface**
→ That is what is called a grid (in this case: computing grid)
- Global structure for data storage
→ Datagrid



Schematics



H.F. Hoffmann, CERN

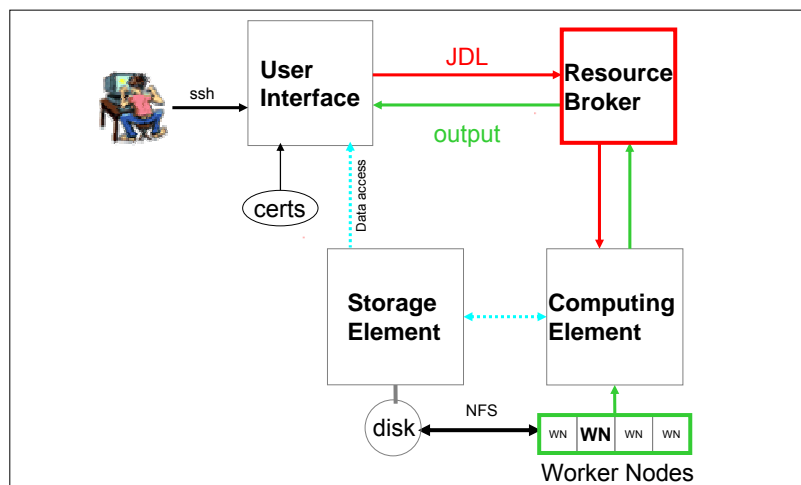
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Schematics (cont.)



A. Geilich, DESY

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Virtual Organizations (VO's)

- “A *Virtual Organization (VO)* is a *dynamic collection of individuals, institutions, and resources* which is defined by certain sharing rules.”
- The server holds a list of all users belonging to a collection
- **It is this collection we call a VO**
- Technically, a user is represented by his/her certificate
- The VO a user belongs to is NOT part of the certificate!
- In order to use the grid, a user must:
 - Have a valid certificate
 - Be a member of one VO

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ILC

- Virtual Organization of ILC is starting
- VOs ILC and Calice exist
 - Currently hosted at DESY
 - Supported by at the moment 8 institutions (more to come)
- Goal: a unique ILC VO
- Registration is done via LCG
- At the moment **1012 CPUs** (shared) and **125TB** disk
- Accounting of resources to be clarified

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Current resources (shared)

Institute	CPUs
Birmingham (University)	28
DESY	72
Imperial College	58
Oxford (University)	74
Queen Mary University (London)	556
Royal Holloway University (London)	134
Rutherford Labs	66
University of Freiburg	24
Sum	1012

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World from grid view

- "Worker Nodes" are bare
 - Only system, no application software
 - No network access to outer world
- Problem for ILC software
 - Mokka: Database
 - Geant 4: cross sections
 - etc.
- Current solution: give "WNs" network connectivity

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Job requirements

- Valid Grid Certificate
 - E.g. obtain via instructions given on grid.desy.de
- Needed files (input, binary, libraries,...) on SE
- Jobscript that:
 - retrieves all needed files from SE onto WN
 - sets custom environment
 - executes binary/script
 - stores output on SE

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Job Submission

- Start your proxy (i.e. start secured interface)
- Put all job depended files onto SE
- Write your JDL-file specifying
 - Name of jobscript
 - Arguments
 - input/output Sandbox
 - VO
- `edg-job-submit *your-jdl-file*`
- check status via job-ID

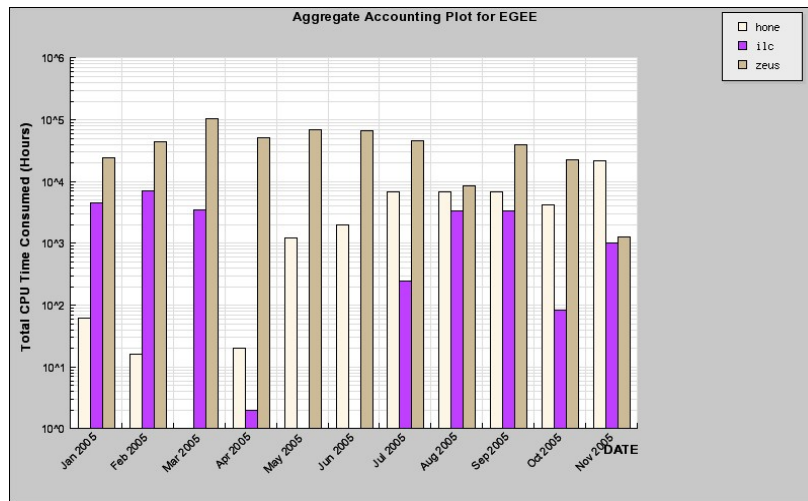
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Computing time



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Further Information

- Grid Computing:
 - <http://www.globus.org/>
 - <http://www.eu-datagrid.org/>
 - <http://cern.ch/lcg/>
 - <http://www.eu-egee.org/>
 - <http://d-grid.de/>
- DESY Grid Web Site:
 - <http://grid.desy.de/>
 - <http://www.dcache.org/>

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Summary & Outlook

- Grid Computing is the future of HEP computing
- Grid offers a high capacity of computing power
- Data is available around the World

- VO „ILC“ ist established and growing
 - Fermilab and University of Victoria are interested in supporting the ILC VO

- Key ILC software works fine on the Grid
 - Some teething problems, but not related to the Grid

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Thank you

Please contact us, if:

- You have further questions
- You want to join our VO
- Your Institute can provide us computing power and is willing to support ILC

Contact via: <http://grid.desy.de>

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