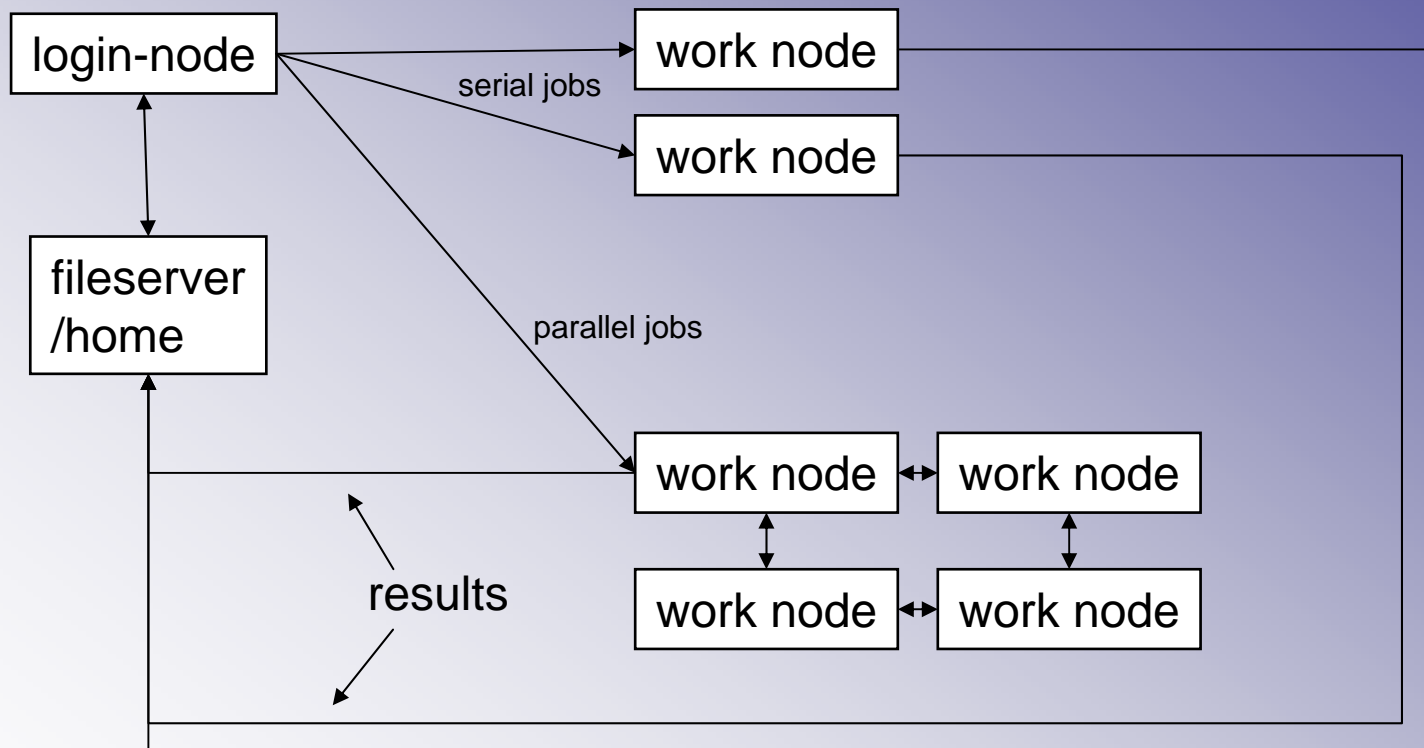


# Gridcomputing

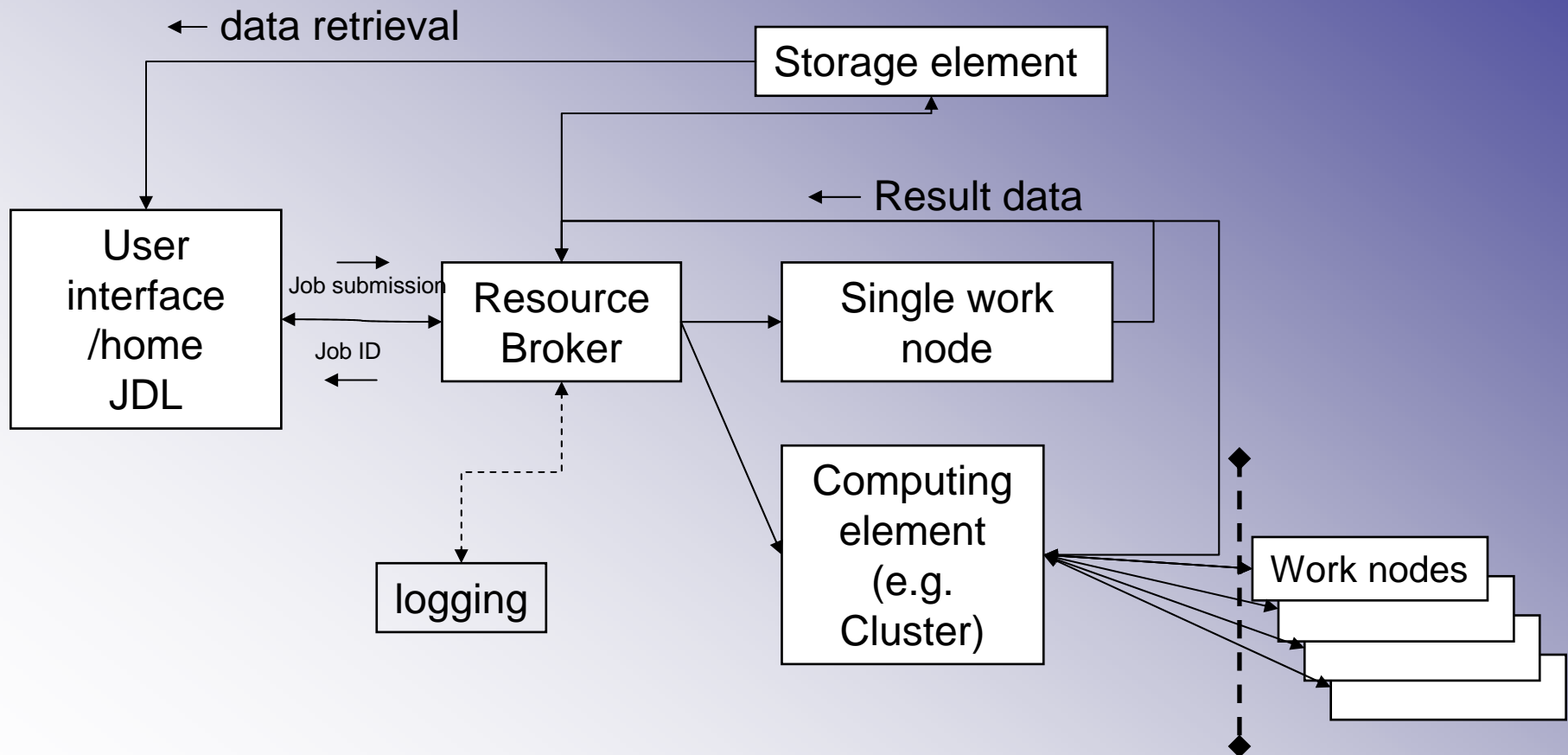
What the future has up her sleeve  
for our brave new world

# Working with Clusters



*typisches Schema eines HPC-Clusters*

# Grids - the technical frontier



*eine einfache Grid-Konfiguration*

# Grids - the technical frontier

- Grid:  
*Distributed computing infrastructure running a set of services (middleware) which allows users to access those resources uniformly and transparently.*
- Virtual Organisation (VO)  
*A logical group of participants in the grid that share the same privileges and resources.*

# Grids - the technical frontier

- Middleware  
*Computer software that connects software components or applications.*  
→see: “buzzword”
- Web service  
*Software system designed to support interoperable machine-to-machine interaction over a network.*  
→see: “buzzword”



# EGEE-II



## Enabling Grids for E-Science

- More than 90 institutions in 32 countries
  - Austria, Germany, Belgium, Italy, Croatia, Cyprus, Czech, France, Greece, Hungary, Israel, Poland, Portugal, Russia, Turkey, ...
- 24 hours a day, 7 days a week
  - ‘Power-line’ principle for computing
- Funded by European Commission

# EGEE-II

- Over 20.000 CPU available
  - Various platforms
- About 5 Petabytes storage capacity
  - In storage Elements
- 20.000 jobs per day average
  - By far not operating at full capacity
- 1.5GB/s data throughput

# EGEE-II

- Various applications and resources
  - HEP, LHCb (future), HERA, WISDOM(Biomed), MAGIC(Astro), ESR, EGEODE(Geology), ITER(future), RWAVEP(compchem), Columbus(future), ...
- Especially in CompChem VO
  - GEMS, ABCtraj, Venus, Di-Poly, RWAVEP, Columbus, GAMESS, CHARON-interface

# Grid middleware

- GLOBUS
  - <http://globus.org>
  - EGEE/EGEE-II
- UNICORE
  - <http://www.fz-juelich.de/zam/grid/>
- BOINC
  - <http://boinc.berkeley.edu>
  - seti@home

# Existing production grids

- Access Grid - <http://www.accessgrid.org>
- EGEE
- FusionGrid
- NorduGrid - <http://www.nordugrid.org>
- Open Science Grid
- OurGrid <http://www.ourgrid.org>
- Sun grid <http://www.network.com>