



NORDUGRID

*Grid Solution for Wide Area
Computing and Data Handling*

Status of the ARC Middleware

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Advanced Resource Connector

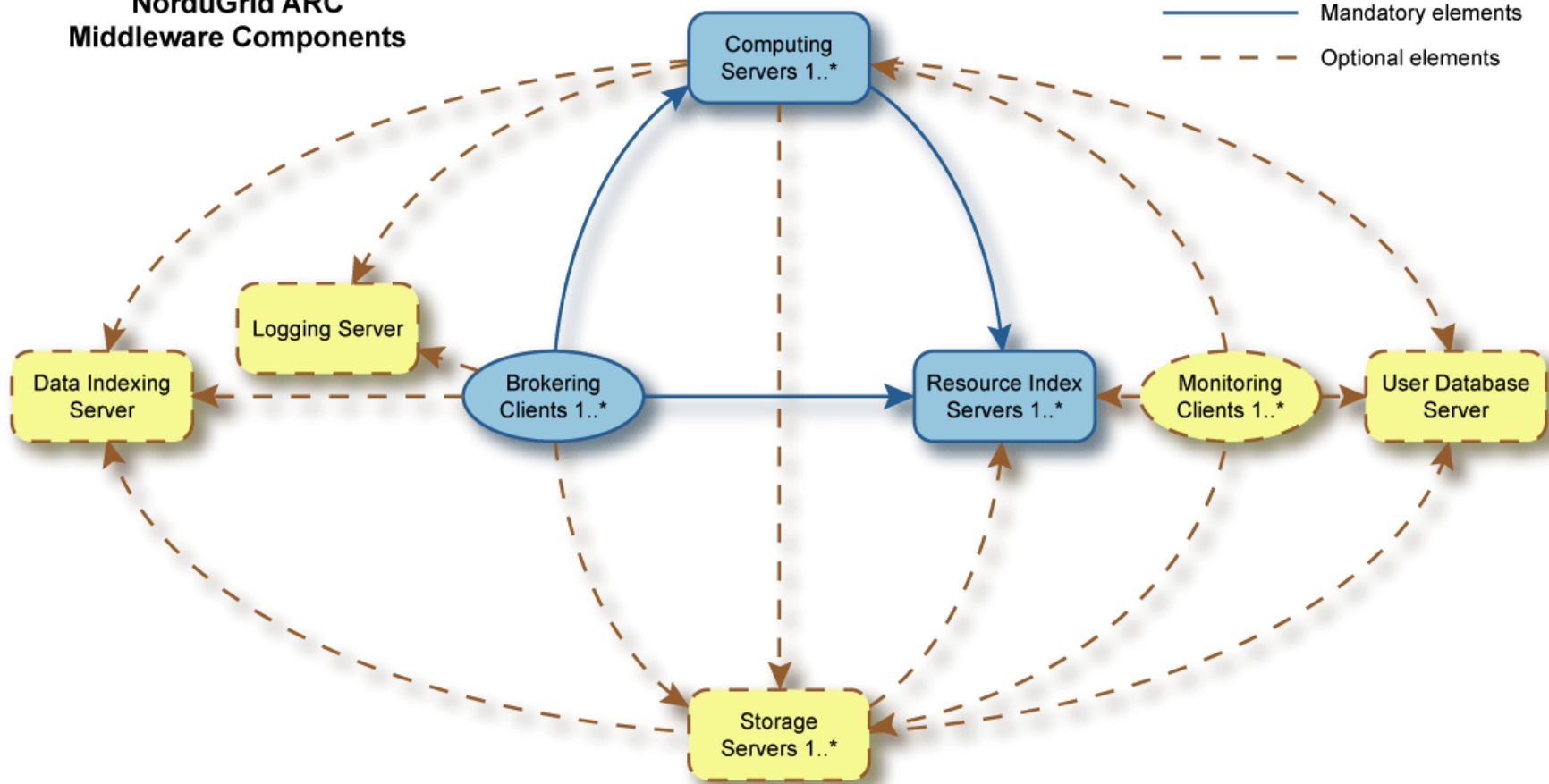
- The Advanced Resource Connector is a Grid Middleware developed by the NorduGrid collaboration
 - The NorduGrid collaboration is a research collaboration between Nordic academic institutions that started in 2002
- The objective of the collaboration is to provide a “grid solution for wide area computing and data handling”

Features of ARC

- Light-weight and non-intrusive
 - resource owners retain full control
 - services can be installed on an existing cluster installation
 - cluster don't have to be dedicated
- Portable
 - pre-compiled binaries for many Linux distributions
- Client easy to install for new users
 - available from <http://ftp.nordugrid.org/>

The ARC Middleware Architecture

**NorduGrid ARC
Middleware Components**



Architecture Key Points

- Each resource has a frontend
 - Authenticates users, interprets tasks, interacts with LRMS, publishes information, moves data
 - Resources are grid enabled by the ARC layer deployed on the frontend, no middleware components behind the frontend
- Each user can have an independent lightweight brokering client (or many)
 - Resource discovery, matchmaking, job submission and manipulation, monitoring
- Grid topology is achieved by an hierarchical, multi-rooted set of indexing services
- Monitoring relies on the information system

History of ARC

- Version 0.1
 - First ever NorduGrid release 23 April 2002
- Version 0.4.5
 - Current production release
- Version 0.5.55
 - Current development release
- Version 0.6
 - Upcoming production release

New Features in Release 0.6

- Client libraries
- Python bindings (using SWIG)
- Unified configuration file
- New job states
- Improved error messages
- Wider use of GACL
- Support for VOMS authorization
- ... and much more

Visions for the Future

- Make the middleware design more modular with well defined interfaces between modules
- More tools for data management
- Adopt and participate in the development of emerging standards
- Improved interoperability with other grid solutions

Development Continues

- ARC is an open source project
 - Sources are released using the GPL licence
- ARC is continuously being developed by
 - The developers in the NorduGrid collaboration
 - Members of supporting projects such as KnowARC and NGDF
 - Community contributions