Administration course intro

DIRAC Project

Outline

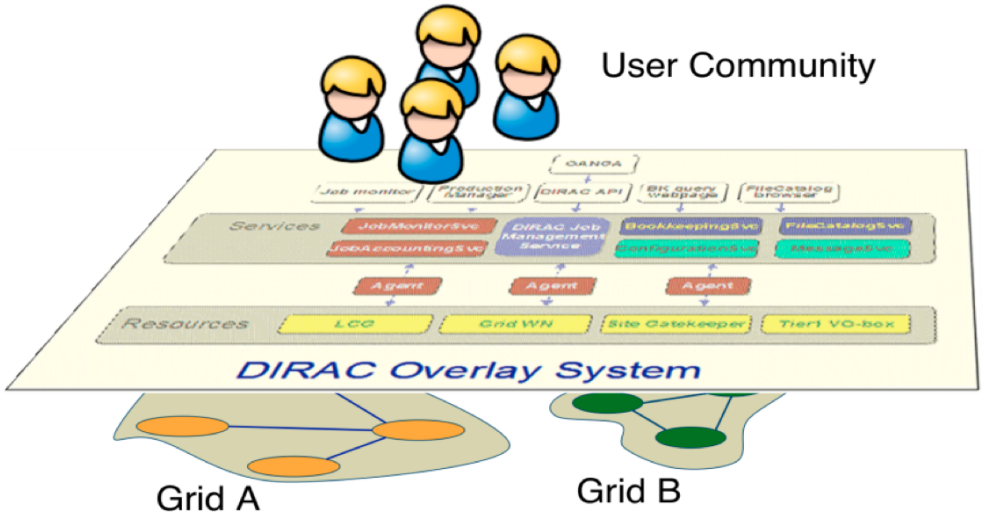
- DIRAC scope reminder
- The course objectives
- The course plan

DIRAC middleware scope

- DIRAC was developed for the LHCb experiment
  - Single VO LHCb
  - High throughput environment
- Positive LHCb experience
  - Several innovative concepts were introduced
  - Much of the DIRAC developments were of general interest
- In 2008 DIRAC generic core functionality separated from the LHCb extensions
  - DIRAC became general purpose grid middleware

DIRAC general view

- DIRAC forms a layer between end-users and distributed computing resources to hide complexity and heterogeneity



- Users see the whole set of computing and storage resources as a single coherent system with clean and friendly interfaces

Usage examples

- Multiple DIRAC users today
  - Collaborations: ILC, Belle, BES, CTA, etc
  - Grids: GISELA
  - VOs: biomed
- Multiple evaluations are on-going
  - SuperB, Glast, etc

DIRAC evolution

- DIRAC is rapidly evolving
- Main development lines:
  - Supporting installations serving multiple VO's
  - Supporting new types of computing resources
    - Batch systems
    - Storage systems
  - Providing new services and functionalities
    - File Catalog
    - Storage element with advanced features
    - Administrator tools, resource monitoring
    - …
  - Support for cloud resources
  - General performance and stability improvements

DIRAC user community

- The main goal is to meet user requirements and expectations
- Developments are more and more driven by the DIRAC user community
  - Incorporating into the core software base developments done by the DIRAC users
- Performance optimizations are first done where users need that
  - Trying to be reactive to the user feature requests

The goals of the DIRAC service

- The goal of the DIRAC server installation in CC/Lyon is to provide a user friendly grid environment
  - Ease of use
  - Seamless access to the resources otherwise non-available in the grid
  - Help porting user applications to the grid
- This is a service to help migrating users from various domains to the grid computing environment

The goals of the course

- The DIRAC server installation will need solid maintenance and user support
  - Experts in DIRAC server support are in a high demand
- DIRAC server maintenance tools are scarce but available, however, good understanding of the concepts and architecture is needed to quickly identify and fix problems
  - In the course we will pay much attention to the DIRAC basic structure
- DIRAC server admins will need practical knowledge of running the services and coping with the related problems
  - This course is a first step for those who are just starting

The course plan

- DIRAC concepts and architecture
  - Software architecture
  - Components architecture
  - Configuration structure
- Server installation
  - What is installed and where, and how
  - Where to look for the DIRAC components
- DIRAC security
  - Managing VO's, users and groups
  - Authorization rules
  - Managing proxies

The course plan, cont'd

- Configuring and running DIRAC services
  - Subset of services serving as examples
- Configuring and using computing resources
  - Computing elements
  - Storage elements
  - Catalogs
- Monitoring the system behavior, accounting
- Problems troubleshooting

Course format

- Explanations + hands-on exercises
  - Tutorial virtual machines
    - Do not be afraid to break it !
- Installation of a (almost) complete DIRAC server
  - Single-host all-in-one installation
  - Adding users and groups
  - Adding resources
  - Running services with basic tasks
  - Modifying services options
  - Monitoring services behavior
- Free format
  - Ask questions at any moment

Last remarks

- Some of you have already got experience running your DIRAC installation
  - Hope you will still learn more !
  - Help your less experienced colleagues
- In the end we should aim to have a concerted well trained team of DIRAC experts
  - Sharing experience
  - Reactive to the user's problems and needs