Le Service DIRAC

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Plan

- Service in CC/Lyon
  - Agreement between France-Grilles and CC
  - Deployed services
  - Services and user support
- Perspectives
  - Advanced services in CC
  - Support for multiple communities
  - Support for various computing resources
- Conclusion

CC as a DIRAC service host

- Agreement between the CC and France-Grilles to provide hardware and hosting environment for the DIRAC service
  - See Gille's presentation
- DIRAC installation existed in the CC for supporting grid tutorials
  - A small virtual host not suitable for massive usage
- CC has provided a powerful hardware configuration now
  - Adequate to the usage of all the France-Grilles resource in France
  - And more …

CC DIRAC server configuration

- 5 servers
  - 8 cores, 16 GB RAM, 1TB disk
  - ***ccdirac01*** – secure services, configuration
  - ***ccdirac02*** – Workload Management
  - ***ccdirac03*** – Data Management
  - ***ccdirac04*** – StorageElement, Accounting, Monitoring
  - ***ccdirac05*** – Web Portal
    - http://dirac.france-grilles.fr
- MySQL server
  - 30GB, 100 connections
- Redundant supporting services outside the CC in Lyon
  - CPPM, CREATIS, etc

Server installation in CC/Lyon

- The servers are now installed in Lyon and fully functional
- Basic DIRAC services
  - WMS – managing users jobs
    - Job submission, monitoring, retrieval
    - Accounting of the resources consumed
  - DMS – managing user data basic tasks
    - Access to standard Grid Storage Elements
      - SRM, DIRAC
    - Replicating data between SEs
    - Providing Simple Storage Element in Lyon
    - DIRAC File Replica Catalog
    - DIRAC File Metadata Catalog
- Web Portal

Registry

- 10 VOs, 40 users registered
- Resources available for registered VOs are configured in the DIRAC service
  - Computing Elements
  - WMS instances
  - Storage Elements

Service administrator group

- Group of administrators
  - CPPM, CC-IN2P3/Lyon, CREATIS
  - Universities of Bordeaux, Montpellier, Nice
- DIRAC administrator tutorial took place in January
  - Mostly for the people interested in participating to the service in Lyon
  - But not only
- The next tutorial and/or workshop dedicated to the DIRAC service administration tasks is foreseen for the 24-25 June

Service maintenance tasks

- Support for the DIRAC services
  - Resources description and status monitoring
  - Software updates
  - Services monitoring
- Support of DIRAC users
  - VO administrators
  - User/group registration
  - Policies, quotas management
- Tools to help maintenance tasks are being actively developed now
  - New Web interfaces to come

User support

- VO administrators
  - Handling user registration requests
  - Basic help
  - Checking the description of resources available for the users of the VO
- Forums
  - Exchange of user experience
  - FAQs
  - http://groups.google.com/group/diracgrid-forum
- Tutorials
  - Regular tutorials
  - The next one will be held the 13-14th June in Bordeaux

Support for grid infrastructures

- No technical limits to add more users, VOs, resources
  - Exact policy is to be defined
  - Extra load on administrators
  - More opportunities to involve extra manpower for maintenance tasks
- Support for other Grid projects
  - GISELA
    - Main services are provided by the DIRAC service in Lyon
    - Redundant auxiliary service in Rio, Porto, …
  - Others can join as well
    - Eu-asia

Application support

- Help in porting applications to the grid
  - Standalone applications to be gridified from scratch
  - Applications with existing portals to run on a larger resources base
    - E.g. collaboration with the Scientific Gateway and other portal infrastructure projects
- RESTFul DIRAC interface
  - To help using DIRAC from application portals
  - Provide language neutral API
  - Can be used as basis for the DIRAC (J)SAGA interface
    - Multiple portal rely on JSAGA interface

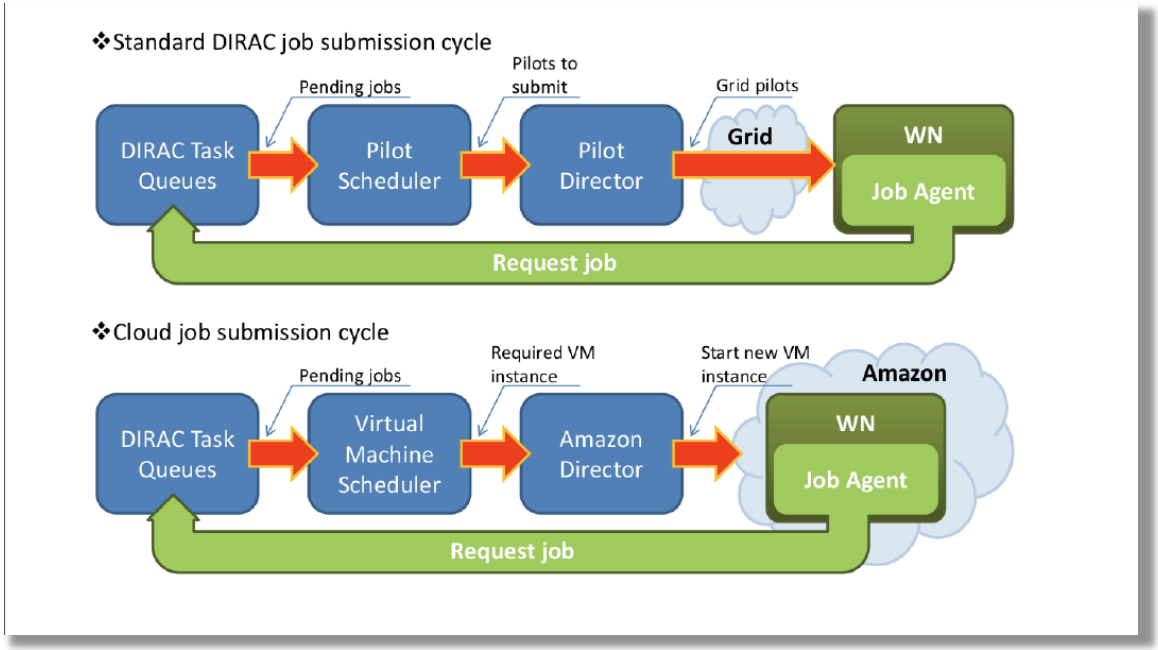
Advanced services

- More advanced services can be made available in CC Lyon
  - Following the user demands
  - Transformation Service (automated job submission)
  - Replication Service (automated data replication)
    - Parallel and/or complementary to iRods
  - Data integrity inspection
  - User storage and CPU consumption Accounting
  - Support for MPI jobs
  - Others ?
- Hosting Community DIRAC services
  - Specific services developed for particular communities can be hosted in the same infrastructure

Resources that can be provided via the DIRAC Service

- Grid resources
  - France-Grilles, GISELA, …
- Clusters (Torque/PBS, LSF, SGE, Condor, etc)
  - Can be made available for particular user community and/or for common use
- Clouds (Amazon, OpenNebula, OCCI compliant)
  - Development is in full swing
  - Building DIRAC virtual clusters on the fly
- Desk top grids (BOINC based with support for virtualization)
  - Campus grids

Belle (KEK) use of the Amazon EC2



- VM scheduler developed for Belle MC production system
  - Dynamic VM spawning taking spot prices and TQ state into account

Support for VO specific resources

- Many resources available through the DIRAC service interface are limited to certain communities
  - Computing Elements
  - Storages
- The access control to those resources by members of different VOs is subject to precise rules
  - This is different compared to single VO installations, e.g. LHCb
- Configuration of Computing Elements with VO access information is available
- More work is to be done for description of VO specific Storage Elements and other services, e.g. catalogs.
  - This is being actively developed now

Conclusions

- The France-Grilles DIRAC service in CC is up and running
- A team of administrators is formed
  - Tools to help administration tasks are being developed
- Support for multiple VOs is mostly in place
  - More development is needed to properly configure access control to various resources by different VOs
- We are devoted to provide user with a friendly grid interface for their practical tasks

Backup slides

Support for MPI Jobs

- MPI Service developed for applications in the EELA Grid
  - Astrophysics, BioMed, Seismology applications
  - No special MPI support on sites
    - MPI software installed by Pilot Jobs
  - MPI ring usage optimization
    - Ring reuse for multiple jobs
      - Lower load on the gLite WMS
    - Variable ring sizes for different jobs