Multi-VO installation based on the FG-DIRAC example

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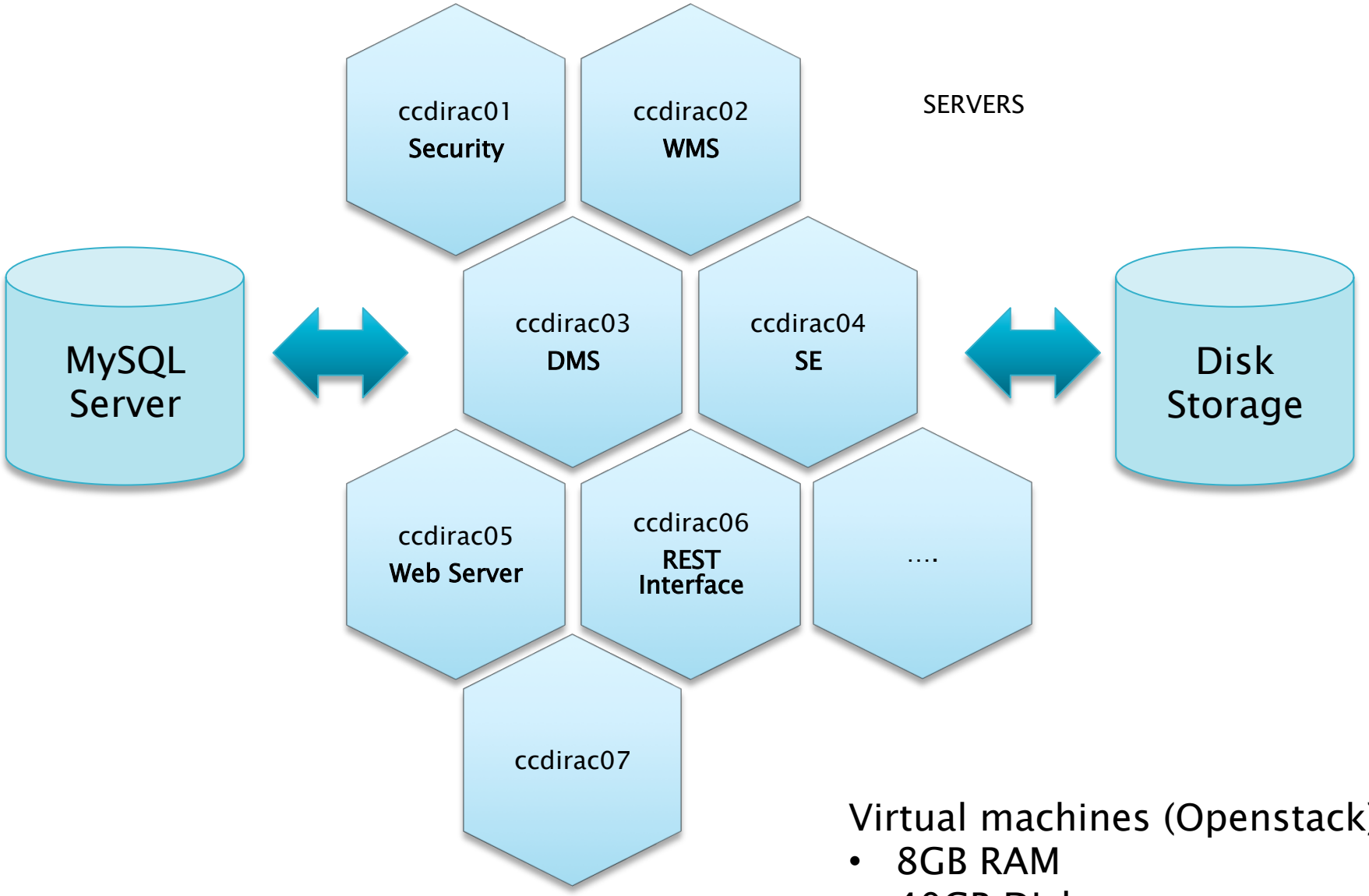
Overview

- DIRAC Multi-VO installation – why?
- FG-DIRAC instance
- Configuration changes (and a wish list ☺)
  - Registry
  - Resources
  - Operations
- Conclusions

DIRAC Multi-VO installation – why?

- Originally DIRAC was developed as a single community system to manage distributed computing resources
- Small communities could not afford installation and management of a fully functional DIRAC service
  - No expertise
  - Too complicated
- France-Grilles was the first grid infrastructure project to offer DIRAC services to its users
  - Starting from 2012

FG-DIRAC instance

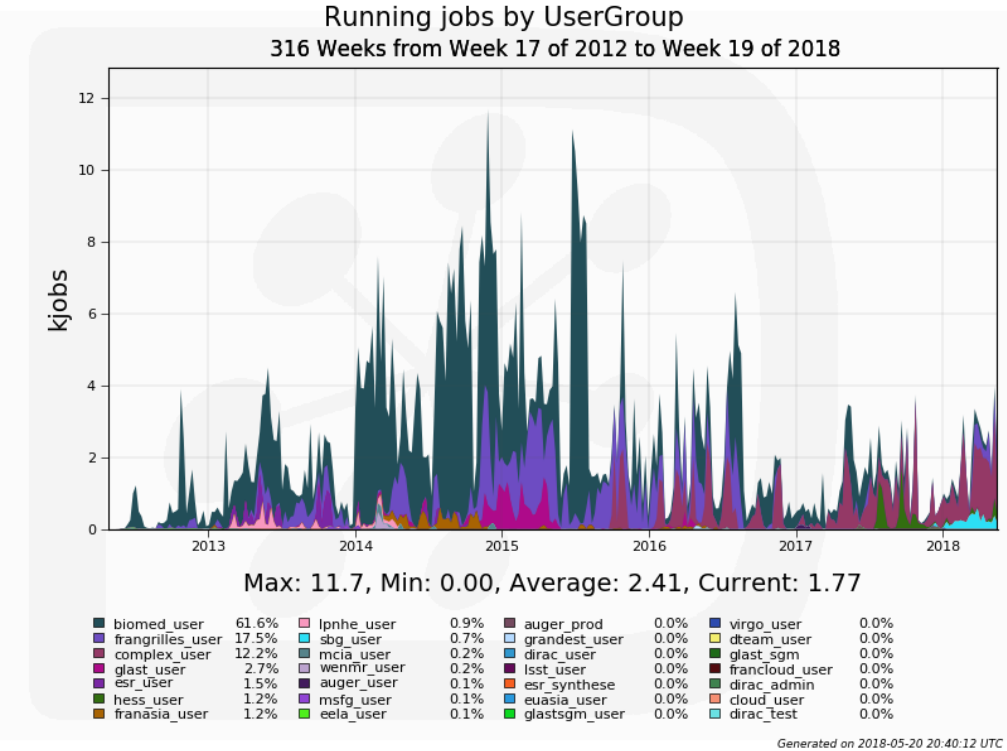


Virtual machines (Openstack)

- 8GB RAM
- 40GB Disk

FG-DIRAC instance

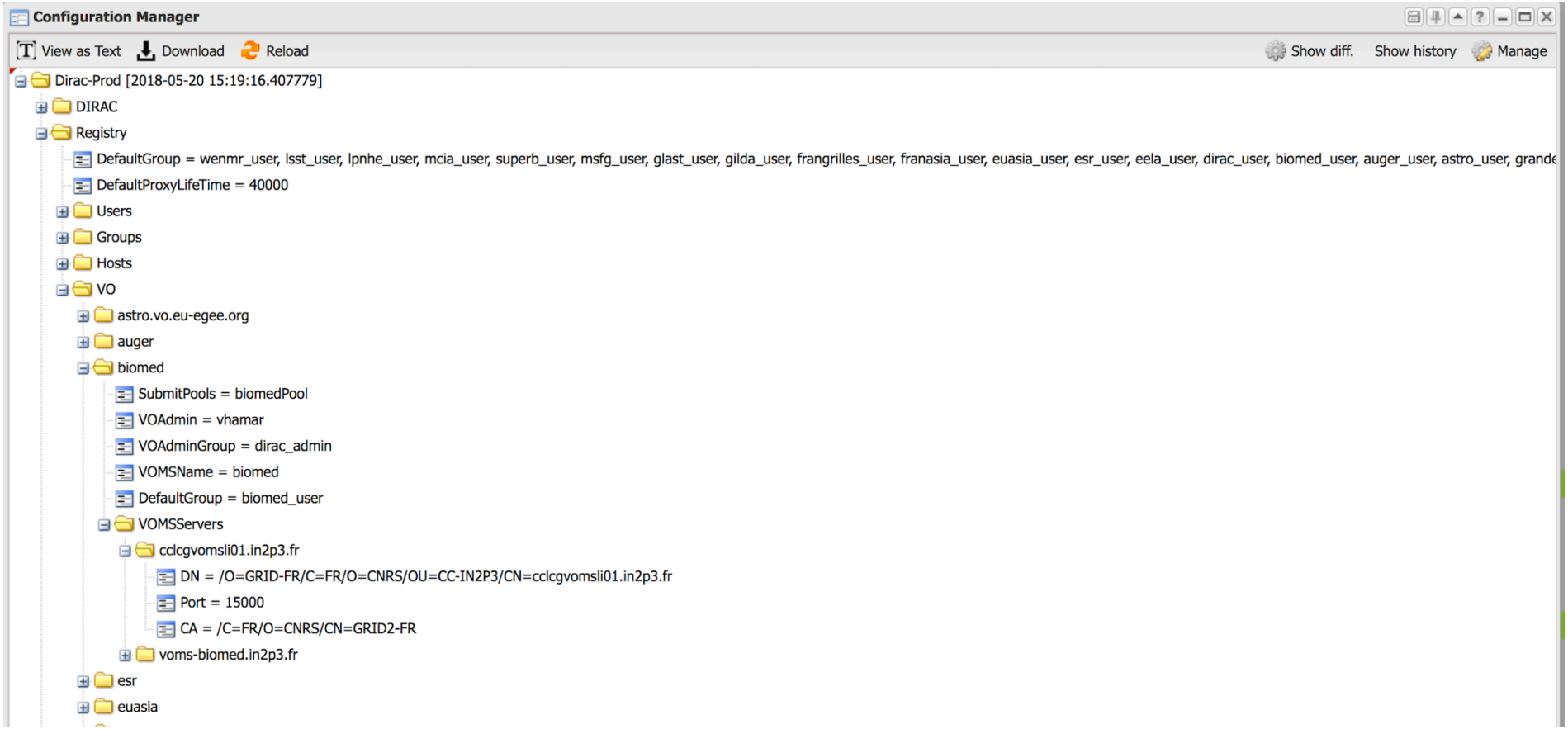
- 22 VOs configured
- > 25 user groups
- > 74.000.000 user jobs since May-2012
- 2 robot certificats



VO administration: Registry

- Definition of a VO
  - VO admin
  - VOMS information
    - The information on VOMS servers must be kept up to date
- Definition of DIRAC groups belonging to the VO
  - Minimal set of groups vo_user, vo_pilot, vo_admin
  - More groups with special properties can be defined
  - For each group should be defined
    - Properties defining rights of the group members
    - VOMS roles mapping

VO administration: Registry



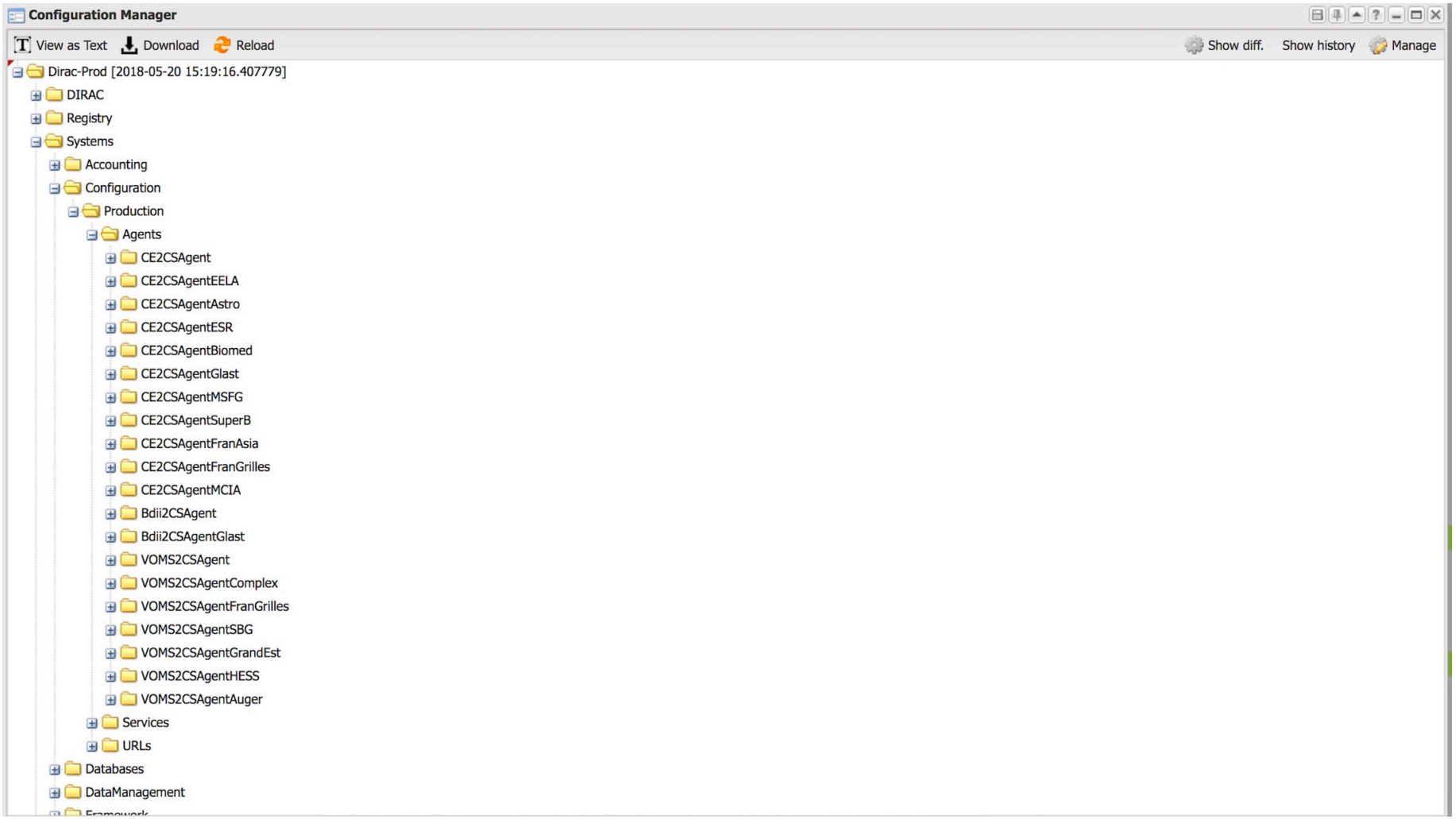
VO administration: Registry

- Adding users
  - By hand
    - Using dirac-admin-add-user command
    - Editing CS with the web editor
  - Running VOMS2CSAgent
- Managing users requires sometimes manual intervention to edit user data
  - Using general CS editor
    - With many hundreds of registered users is quite impractical
- Wish list:
  - Need for a functional web based Registry editor
    - The existing editor should be considerably improved

VO administration: Registry

- VOMS2CSAgent
  - Automatically synchronizes VOMS and Registry information
    - Adds users
    - Modifies user info
    - Optionally creates user home directories in the File Catalog
    - Optionally deletes users
- For many VOs the majority of users in the VOMS database are in Suspended status
  - Before v6r20 the status information was not available for VOMS2CSAgent and for many VOs automatic synchronization was swicthed off.
- Wish list
  - Users can get Suspended status in VOMS after registration in the DIRAC Registry
    - Need to introduce Suspended user status in DIRAC by VO
      - Not allowing most of activities (jobs, uploading data)
      - Keeping existing data

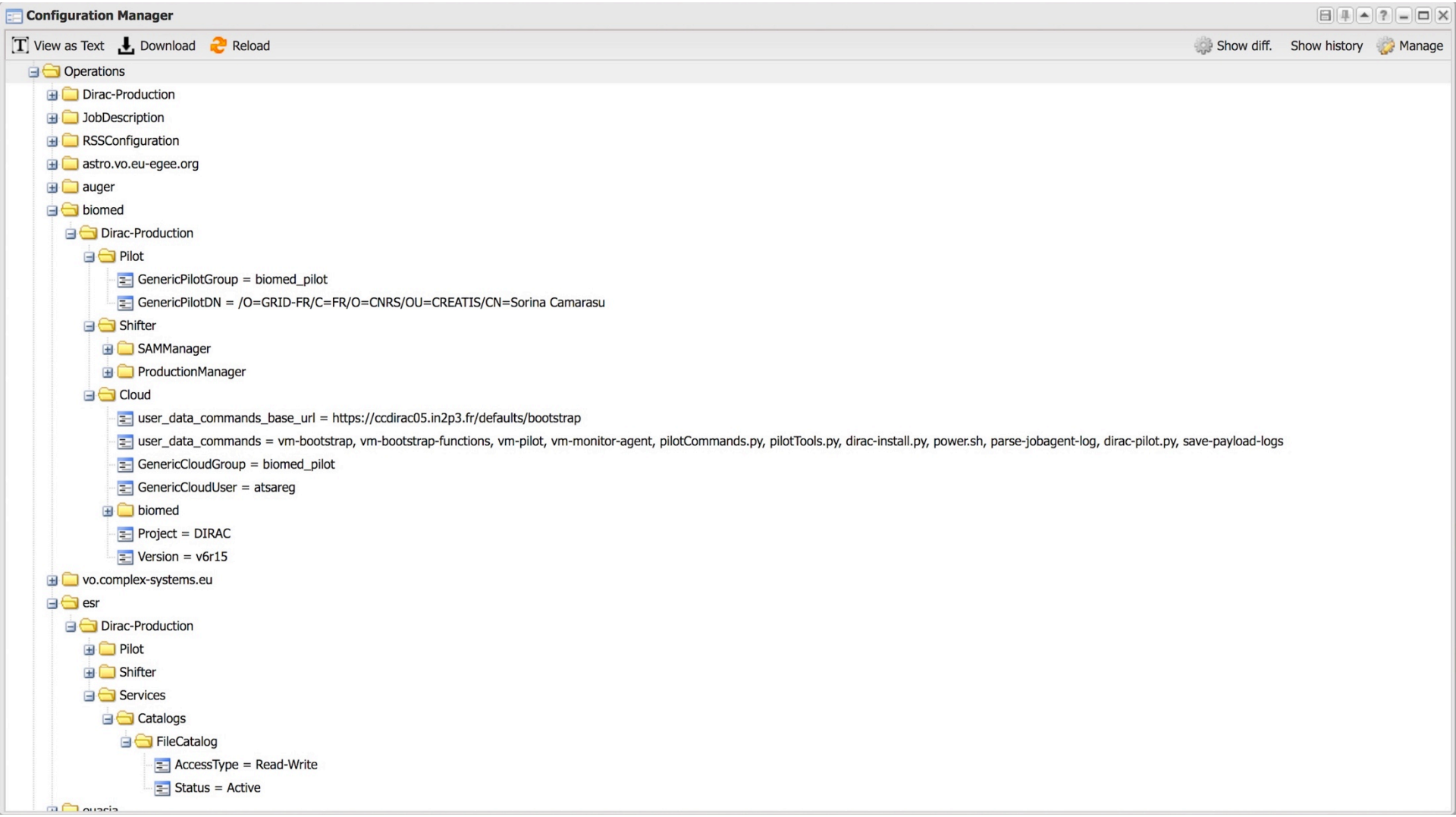
VO Administration: Configuration



VO administration: Operations

- Operational parameters
  - Each VO must have a dedicated section under the /Operations CS category
    - For example, /Operations/biomed/Dirac-Production/
  - Pilot subsection must be present to define properties of VO specific pilot jobs (see below)
  - Services subsection to choose VO specific services
    - For example, auger VO chooses to use AugerFileCatalog service running in FZU, Prague, instead of a general purpose File Catalog common for other VOs
  - Cloud subsection for VM VO specific details, e.g. contextualization information
  - Shifter section to supply user identities for specific activities
    - Is it obsoleted ?
  - Other sections are not defined in FG-DIRAC installation
    - Possibility to define custom sections with information used in VO specific applications

VO administration: Operations



VO administration: Operations

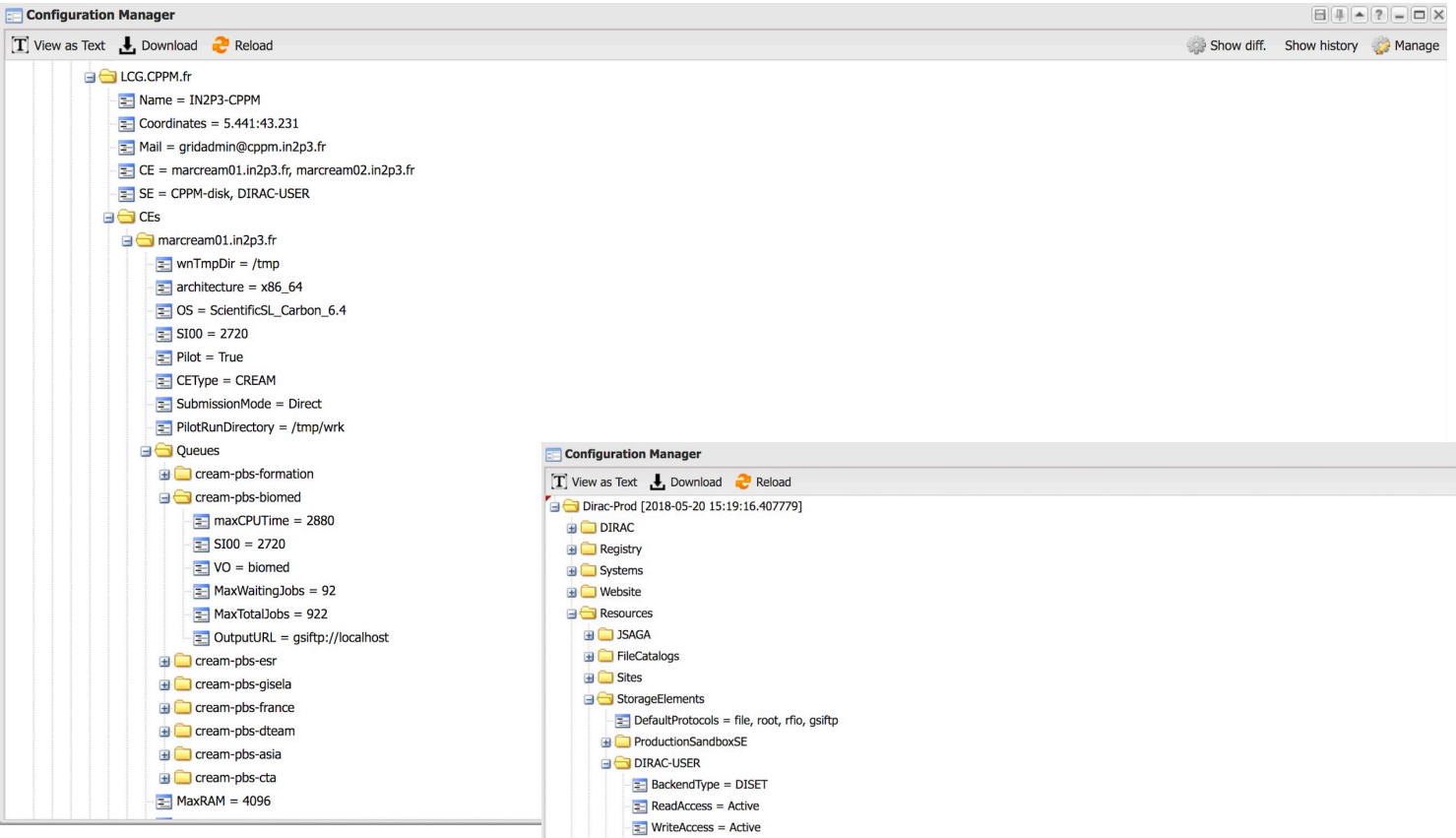
- Wish list:
  - There is a need to clearly define a role of a VO administrator as a very specific activity
    - Need special rights
      - VOMS
        - Usually VO-Admin Role
        - Needed to extract all the user information
      - DIRAC CS
        - Rights to edit specific parts of the CS related to the VO
  - Now there is only a possibility to define a right to edit the CS as a whole
    - Access control per section should be introduced

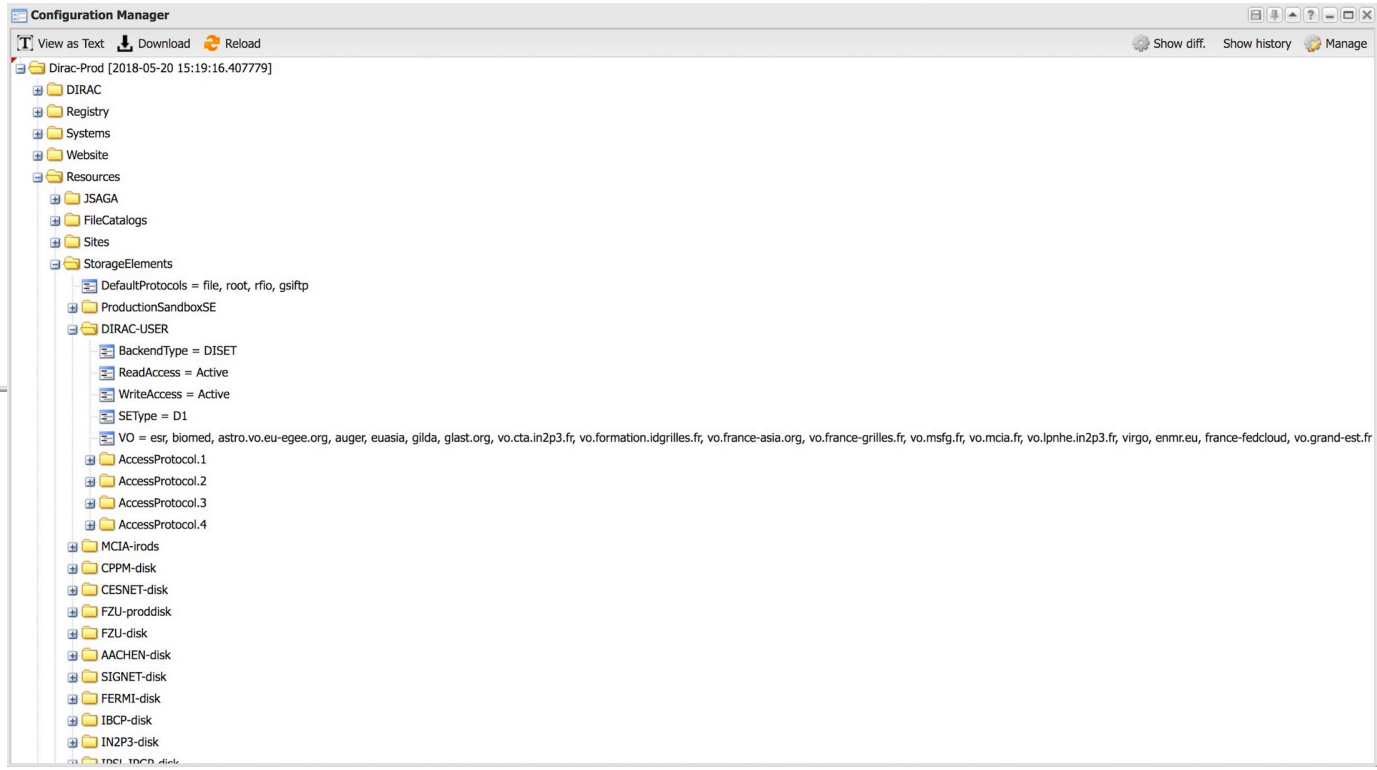
VO administration: Resources

- Keeping VO Resources description up to date is one of the main VO administrator tasks

- Tools
  - Manually editing the CS Resources section
    - Need for a specific Resources editor Web application
  - Checking and Adding new resources with `dirac-admin-add-resources` command
    - Synchronization with the BDII index
    - Allows to add new sites, CEs and SEs interactively
  - Running BDII2CS agent per VO
    - Updating existing resources data
    - Sending reports by mail about newly available resources which should be added by hand

VO administration: Resources



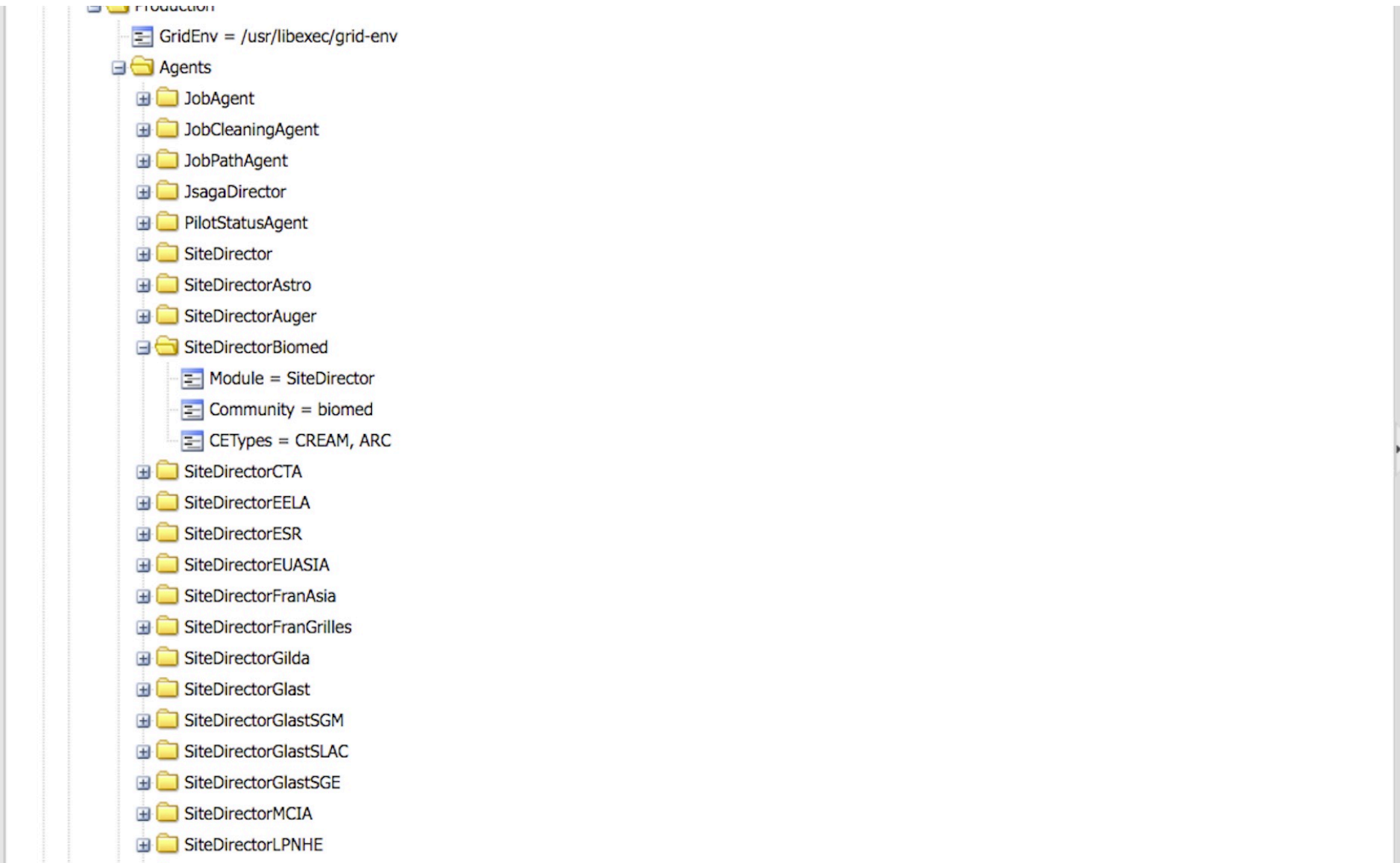


- Wish list:
  - Many resources in the DIRAC CS are obsoleted
    - Need a tool, e.g. enhancing the BDII2CSAgent, for detecting non-existent resources
  - From the user perspective we need a tool to list available resources as defined in DIRAC
    - Analog of the lcg-infosites command
  - The existing `dirac-dms-show-se-status` command is not enough
  - There is no command to list VO specific CEs/Queues with their properties and status

VO administration: Systems

- Each VO has a dedicated SiteDirector
  - Configured as an independent WMS agent for a given VO
- SiteDirectors send pilots according to VO specific configuration parameters:
  - /Operations/<VO>/<Setup>/Pilot CS section
    - Pilot identity
    - DIRAC extensions and versions to make available on WNs
    - Pilot commands to use (if not standard ones)

VO administration: Systems



VO administration: Systems - Specific pilots scheduling

- Sites offer resources to a certain set of VOs
  - Having special queues per VO
  - Having common queues for multiple VOs

- Wish list:
  - Per VO SiteDirectors run completely independently but respect common limits for the number of pilots in a given queue
    - This can create problems with multiple-VO queues
      - Some VOs can be blocked because of activities in other VOs
    - A more complex scheduling algorithm is needed in this case
      - For example, allow a VO to still submit a small number of pilots even if the queue is full with “not-the-same-VO” pilots.

- Wish list:
  - Some VO's have subgroups which can require special pilot properties
    - Example: using special VOMS roles in order to have separate accounting in the given grid infrastructure
  - In this case, separate SiteDirector per such activity can be setup
    - This can quickly become too complicated to manage, might need enhancing SiteDirectors to manage multiple such case by one agent

Conclusions

- Multi-VOs instances allows to small VOs to use grid easily
- Thanks for make life easier to administrators, vo-admins and DIRAC users