

POD

PROOF on Demand

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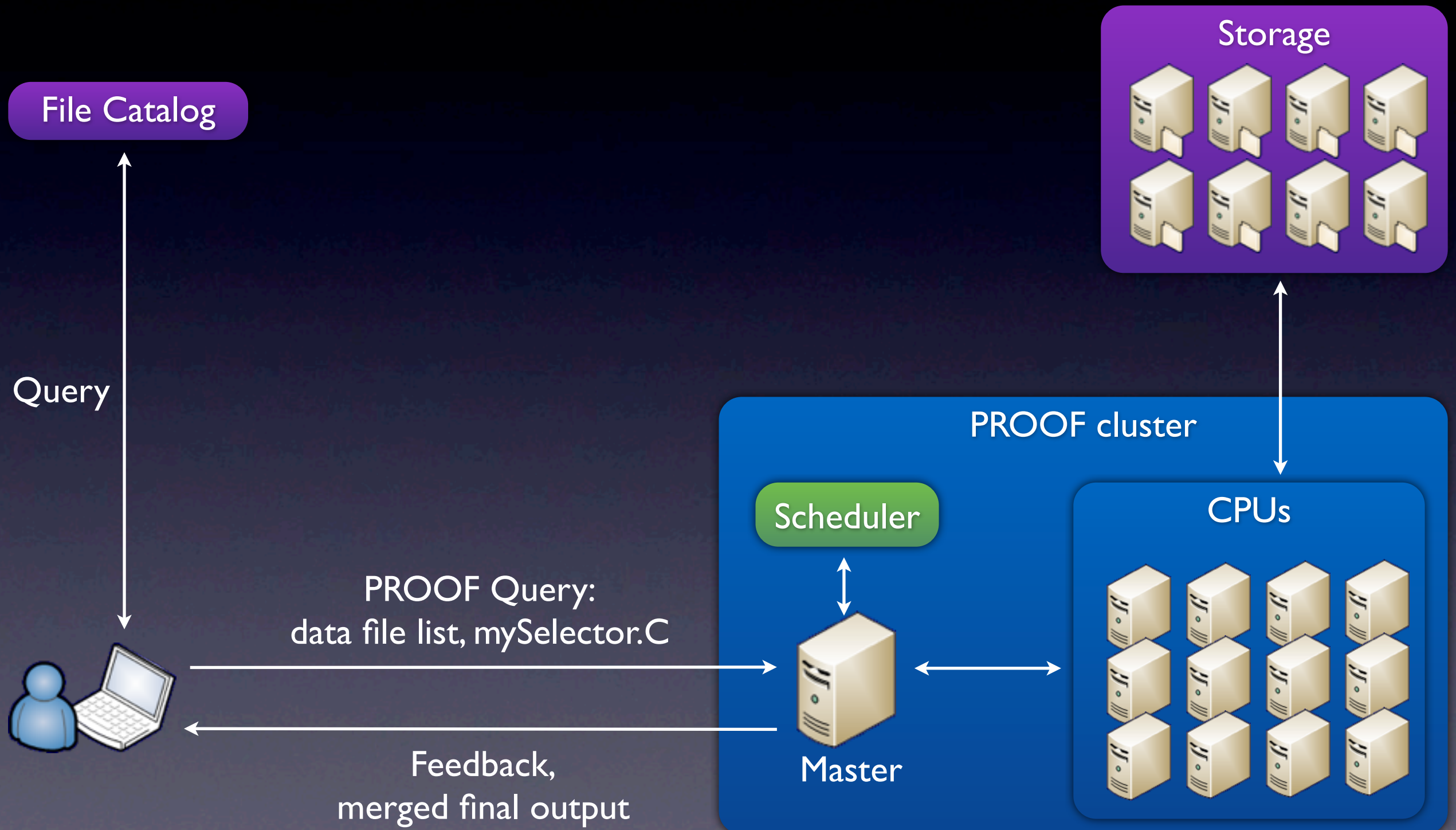
GSI Palaver, 2010-03-09

HEP Data Analysis



Typical HEP analysis needs a continuous algorithm refinement cycle

PROOF



PROOF

- PROOF cluster as extension of a local PC,
- same macro and syntax as in local ROOT session,
- more dynamic use of resources,
- real-time feedback,
- automatic splitting and merging.

Dynamic cluster

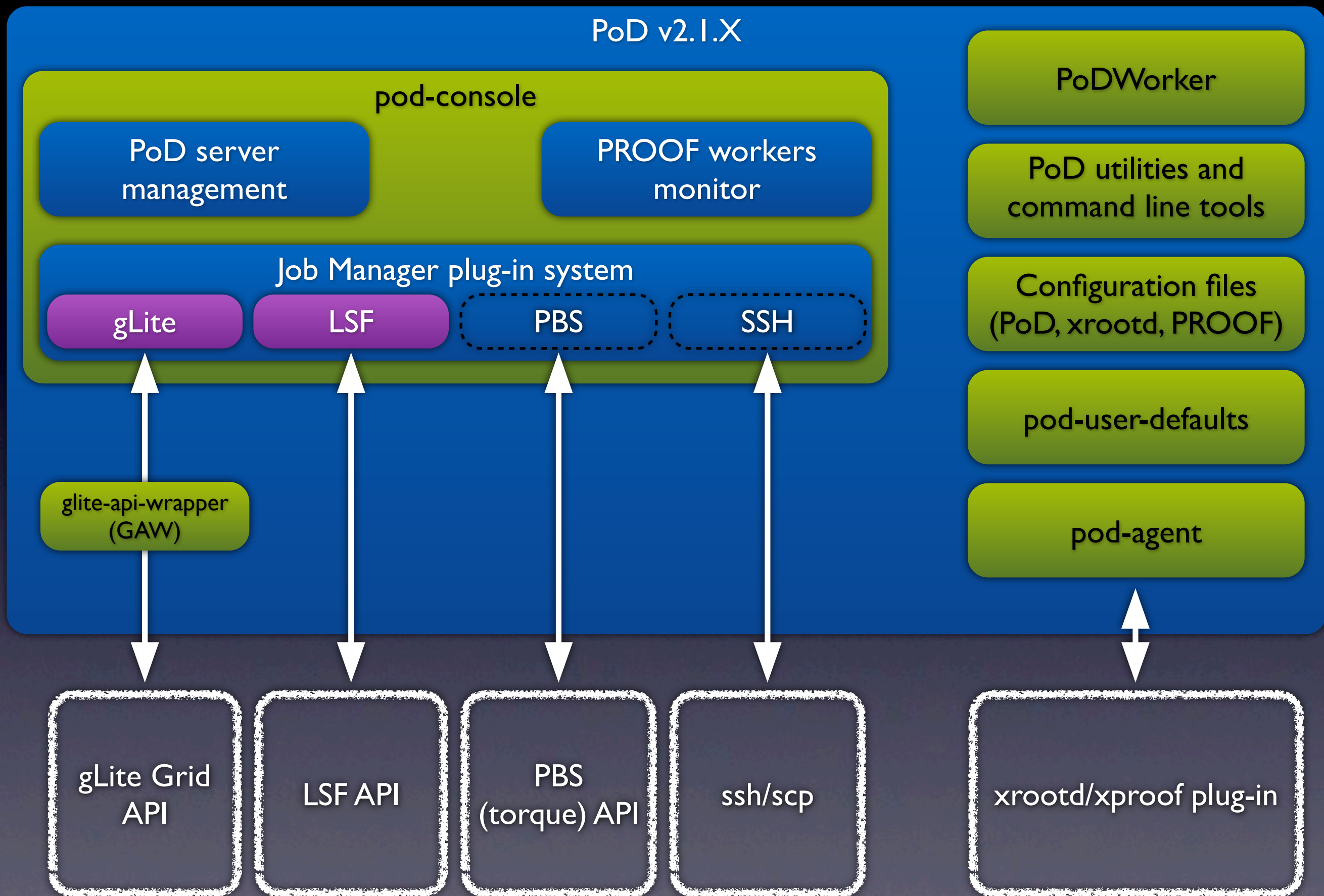
User

- can entirely control it,
- can setup and use it on demand,
- can reserve desired amount of workers,
- can select a preferable master host,
- doesn't need admins to take an action,
- doesn't interact with other users.

POD

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Resource management system



User workspace



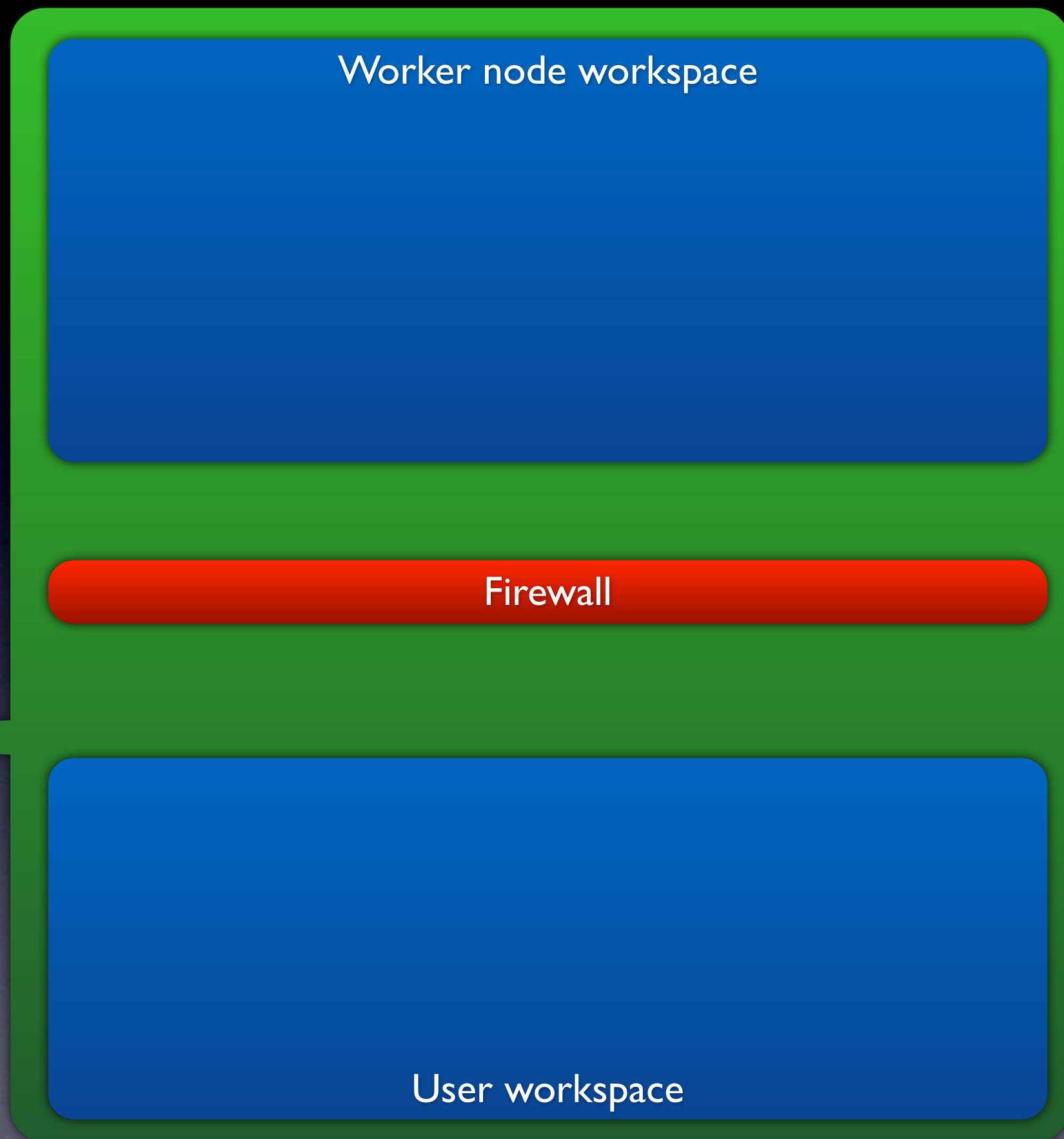
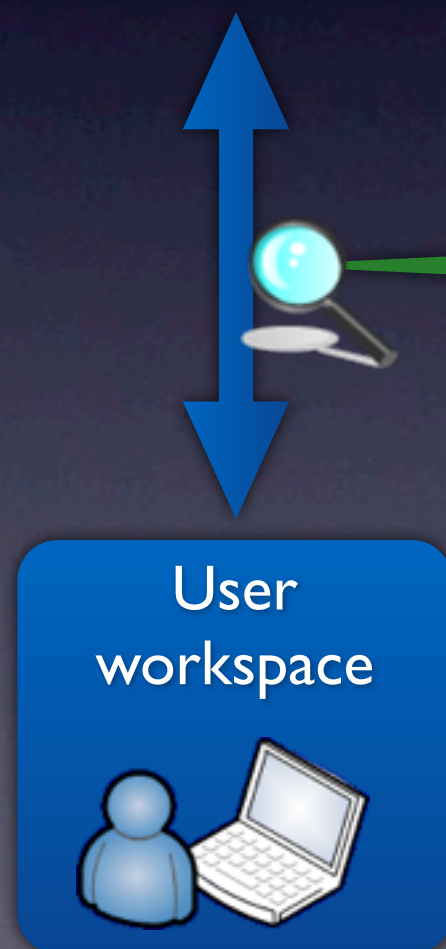
Resource management system

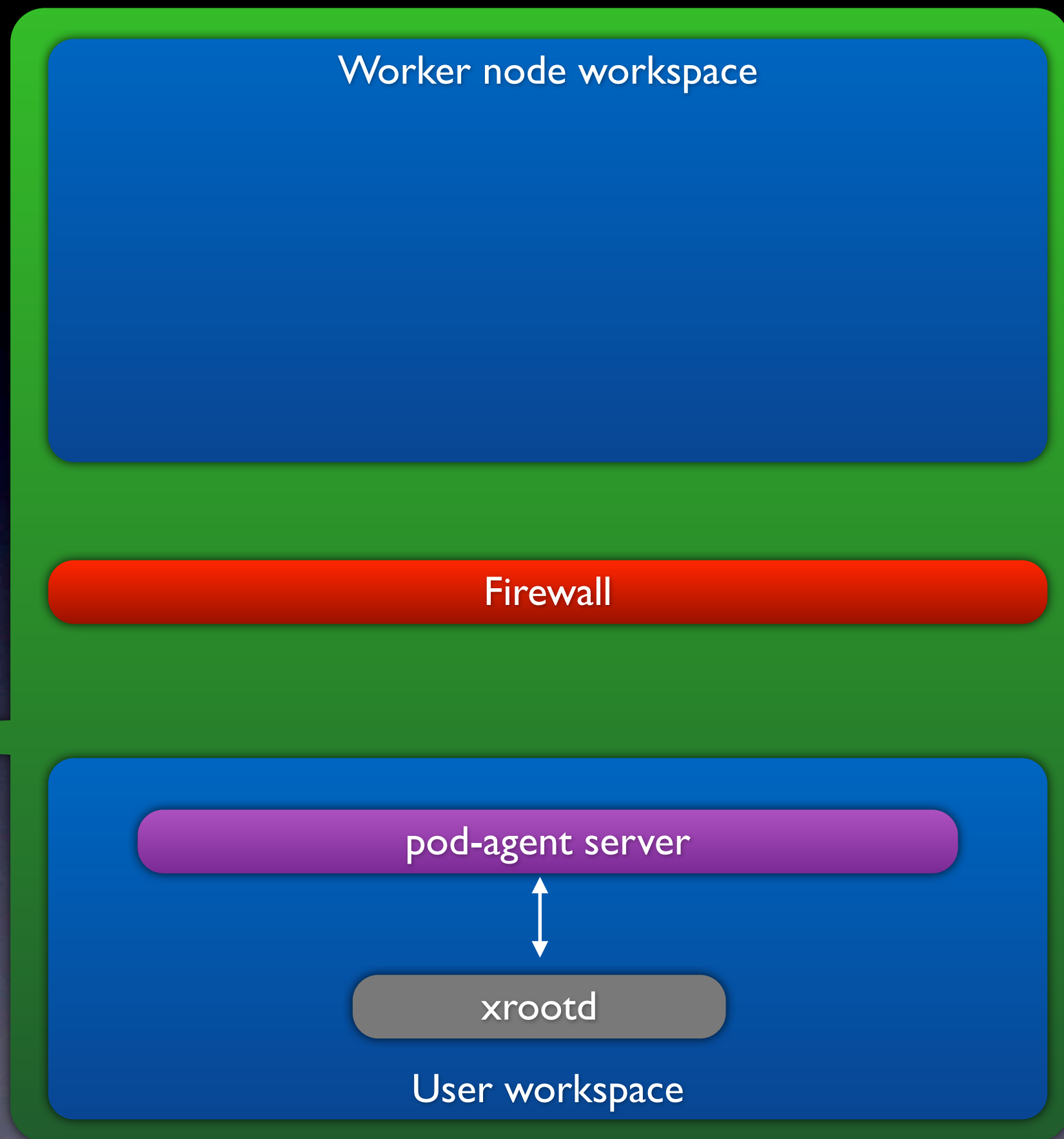
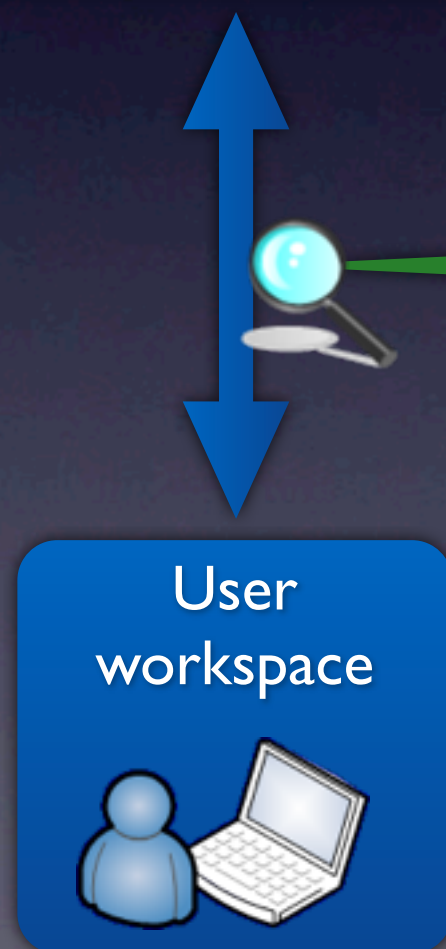


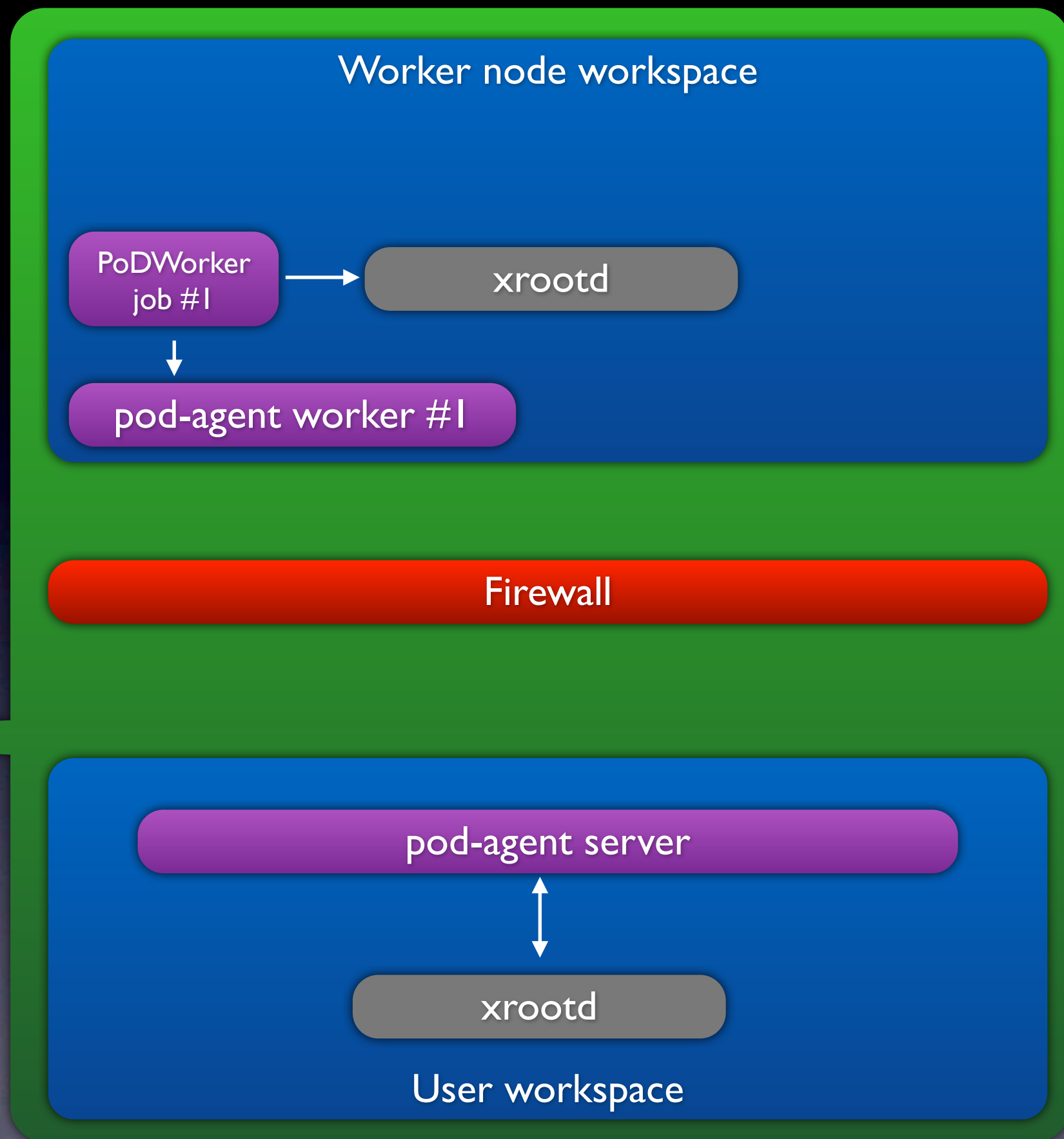
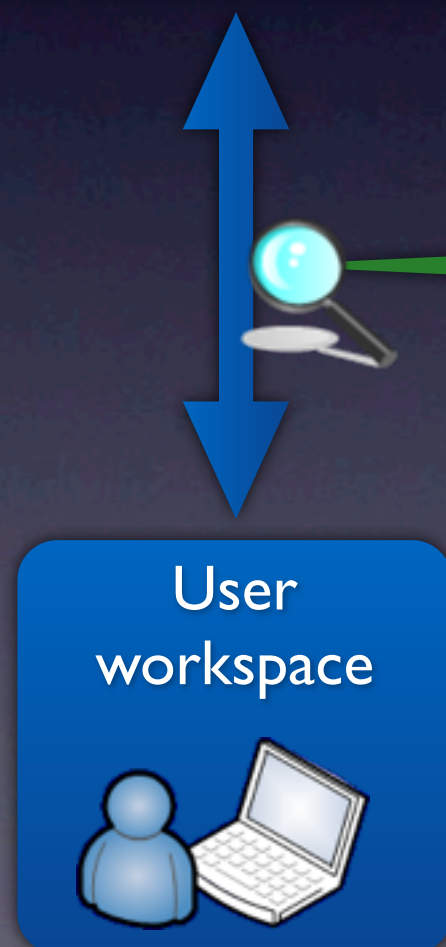
User workspace

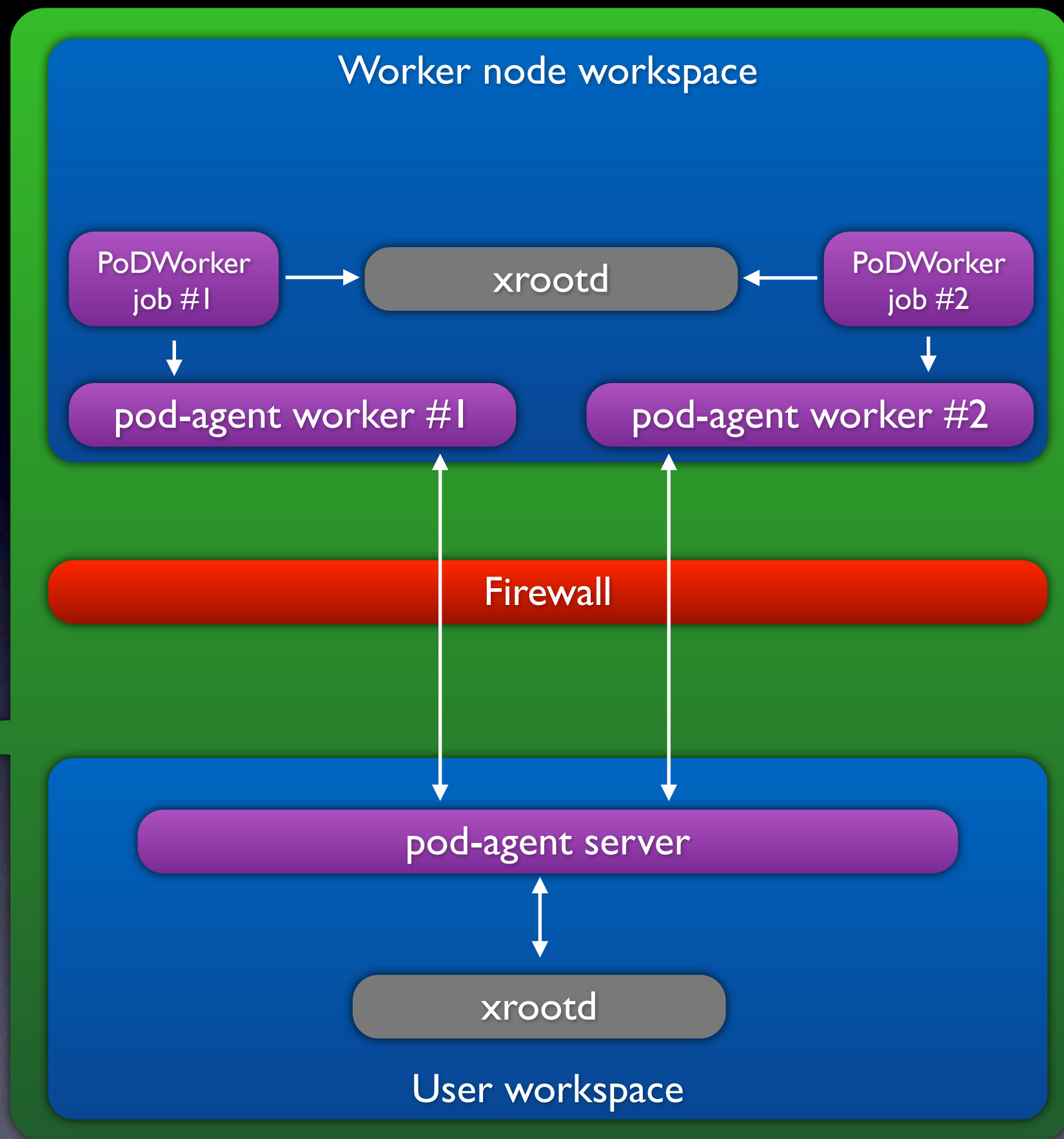
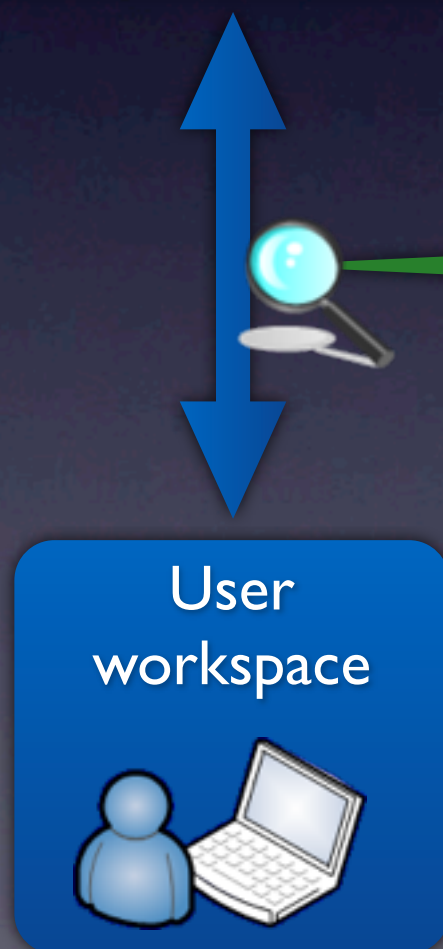


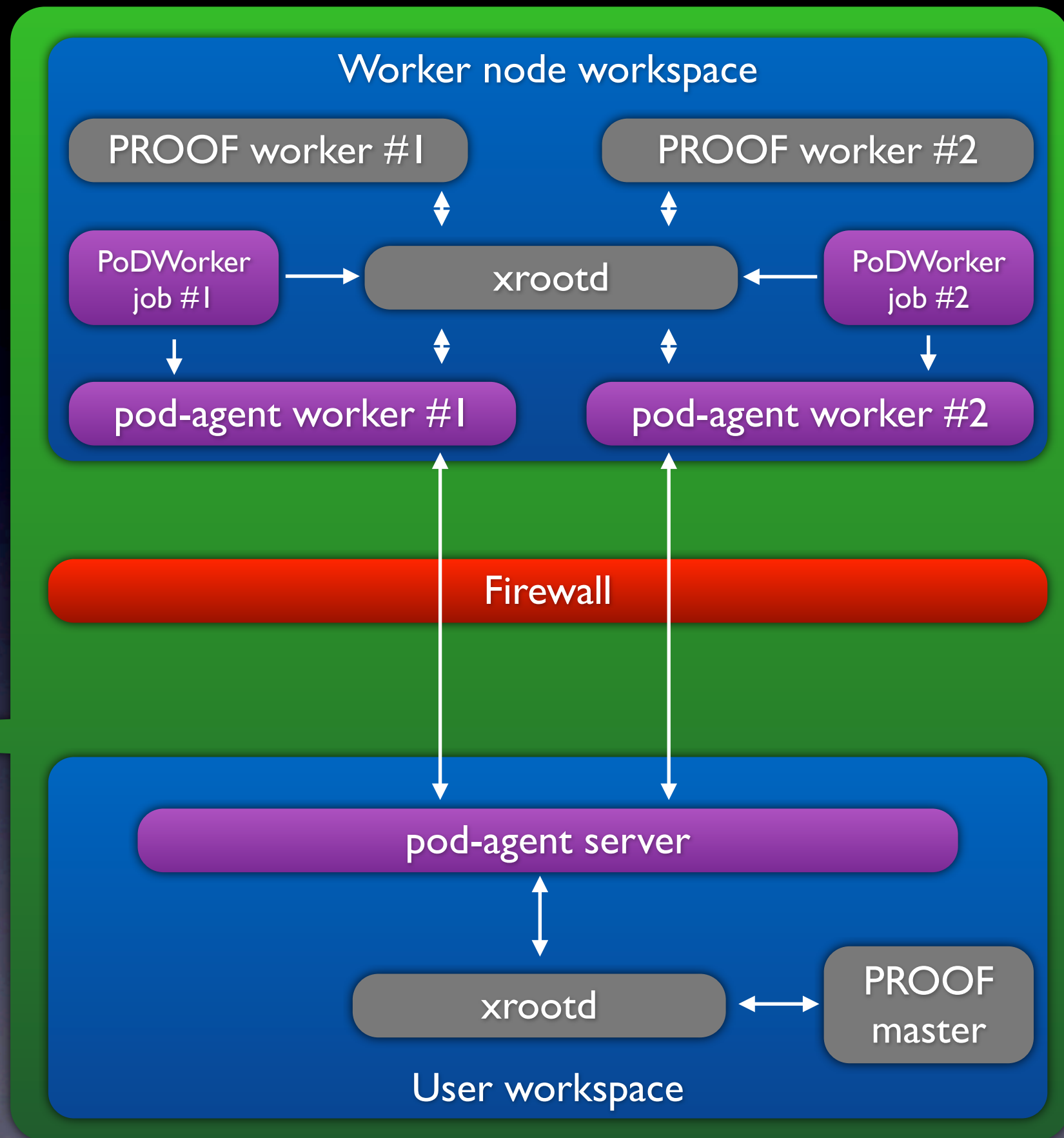
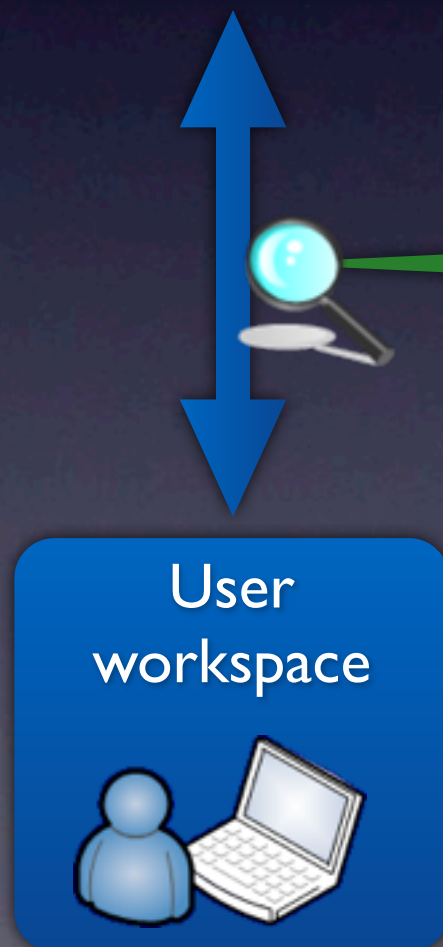


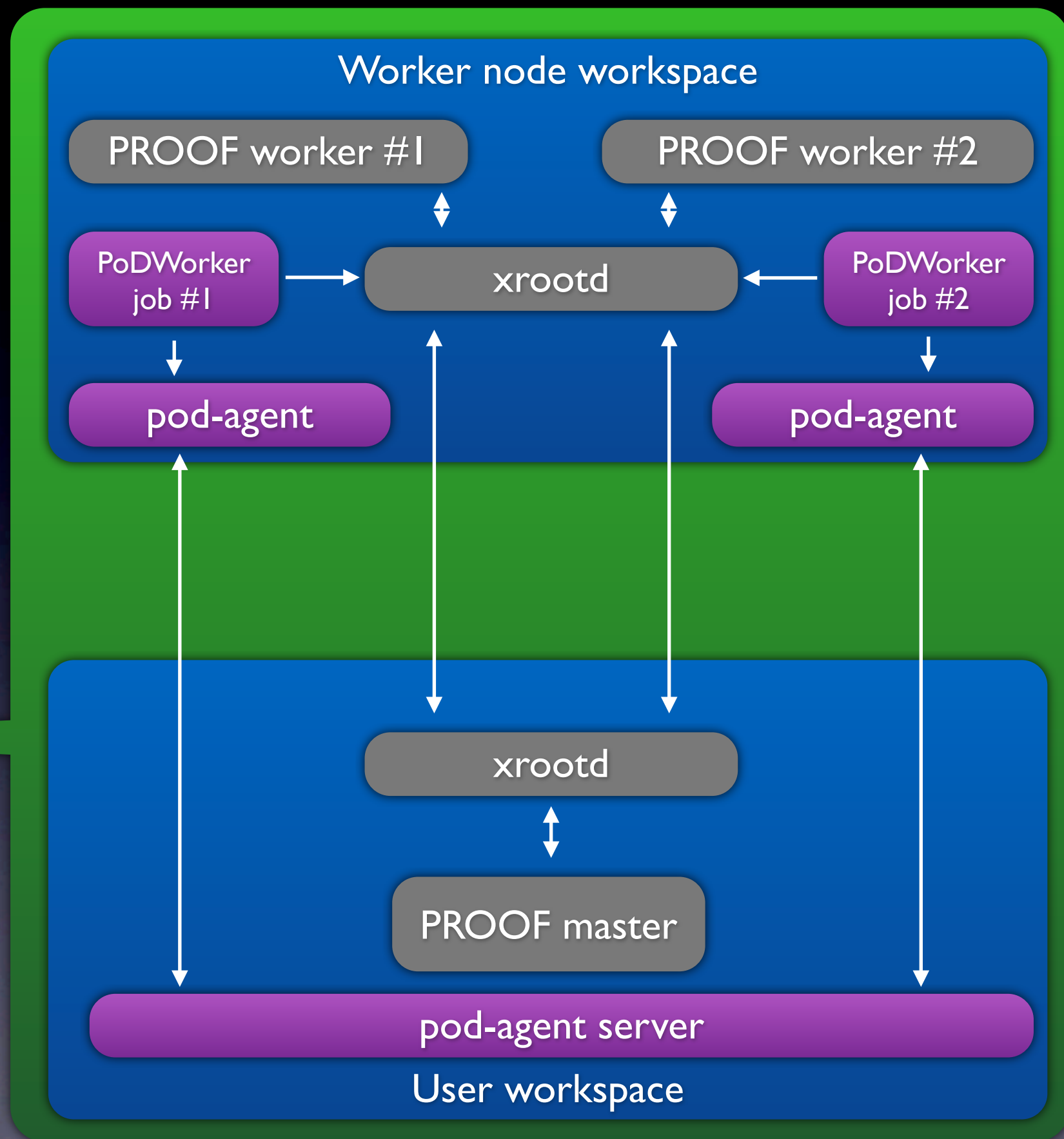












LIVE DEMO

Key features

- Easy to use
- GUI & Command-line
- Different job managers
- Multiuser/-core environment
- Native PROOF connections
- Packet-forwarding
- User defaults - configuration

PoD development

- PoD is about 85% **C++**, 13% Bash, 2% (Python and Perl)
- VCS is **git**: <http://depc218.gsi.de:22222/git/>
- Continuous integration system is **buildbot**: <http://depc218.gsi.de:22000/waterfall>
- Development environment: **Xcode** and **Eclipse**

PoD Development

Build system

- **CMake.**

Documentation systems

- **DocBook** (user manual and web site <http://pod.gsi.de>),
- **Doxygen** (source code doc.).

All docs. and web site are generated automatically every night.

PoD at GSI

Dedicated LSF queue

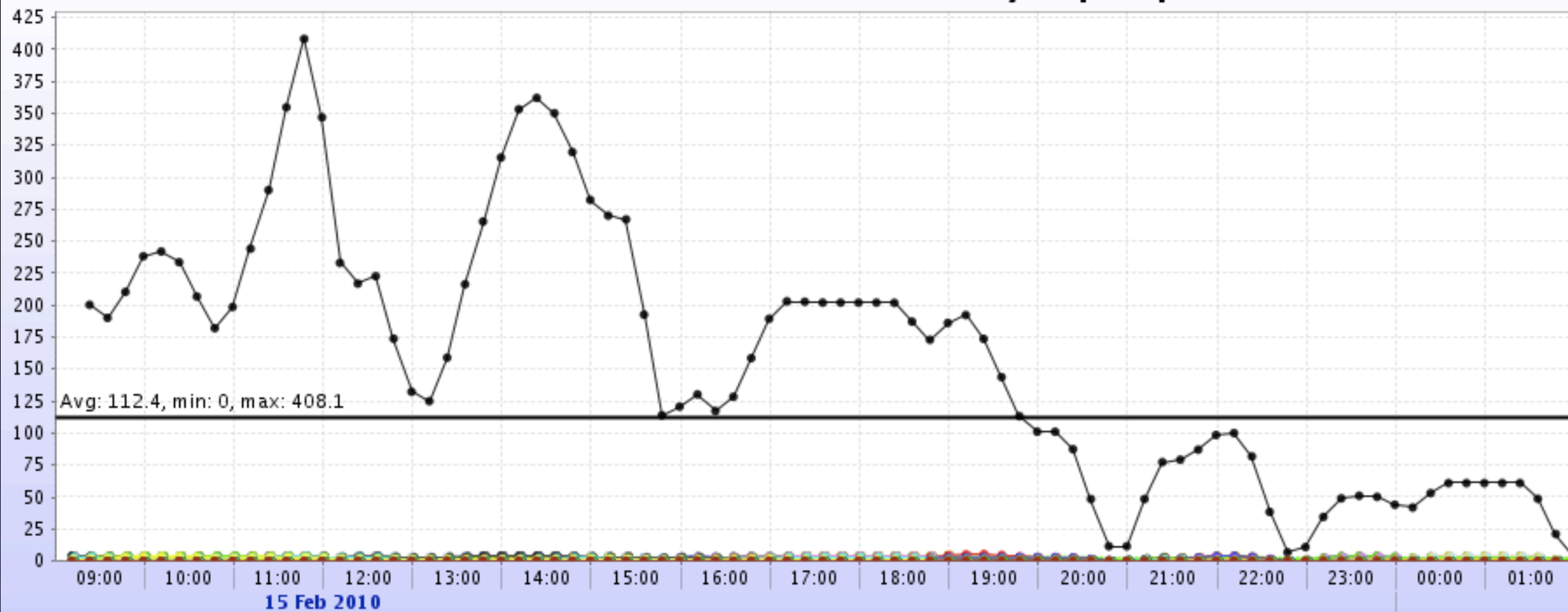
- preemptive, max. 120 jobs per user and max. 4 hours run-time per job.

Data located on the lustre FS.

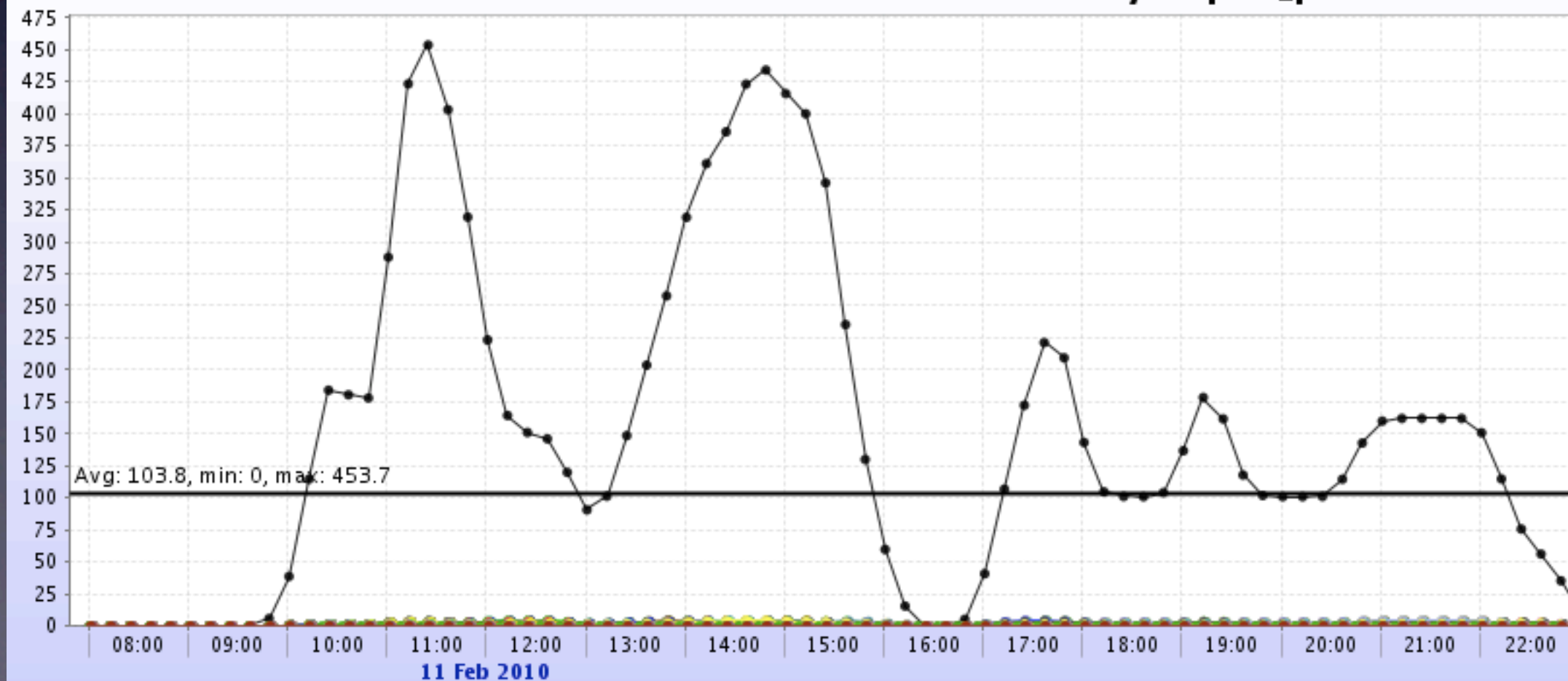
Mainly used by ALICE group (GSI, Heidelberg, Münster).

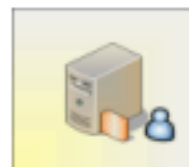
In average we have 2-5 concurrent users with 20-120 workers each.

History of pod_processes

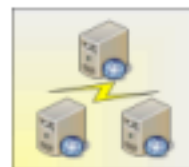


History of pod_processes





Server



LSF
Job Manager



PROOF
Workers



Preferences

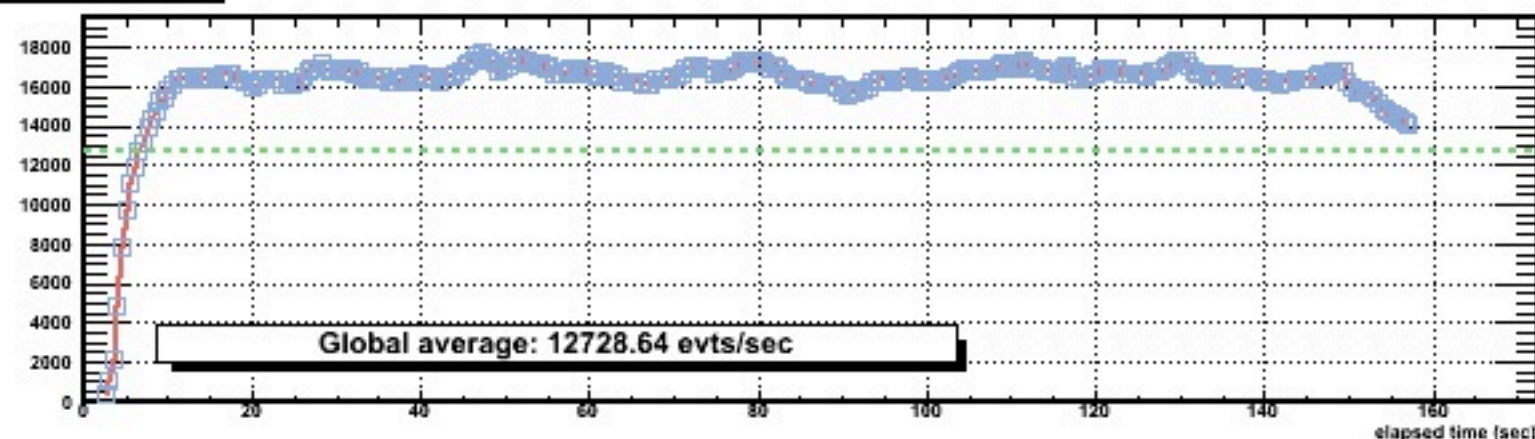
Worker(s)

Available PROOF workers: 317 out of 319

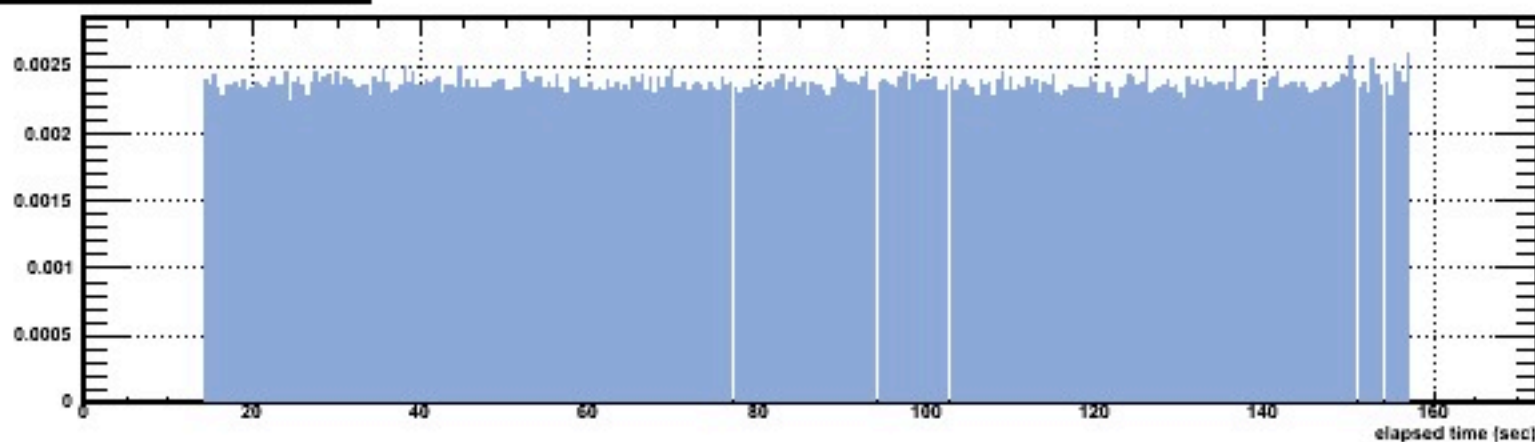
```

master lxb333.gsi.de
worker mfasel@lxb511.gsi.de:21001 (direct connection)
worker mfasel@lxb544.gsi.de:21001 (direct connection)
worker mfasel@lxb541.gsi.de:21001 (direct connection)
worker mfasel@lxb521.gsi.de:21001 (direct connection)
worker mfasel@lxb529.gsi.de:21001 (direct connection)
worker mfasel@lxb556.gsi.d
worker mfasel@lxb400.gsi.d
worker mfasel@lxb505.gsi.d
worker mfasel@lxb449.gsi.d
worker mfasel@lxb407.gsi.d
worker mfasel@lxb396.gsi.d
worker mfasel@lxb519.gsi.d
worker mfasel@lxb462.gsi.d
worker mfasel@lxb495.gsi.d
worker mfasel@lxb386.gsi.d
worker mfasel@lxb466.gsi.d
worker mfasel@lxb429.gsi.d
worker mfasel@lxb477.gsi.d
worker mfasel@lxb384.gsi.d
worker mfasel@lxb524.gsi.d
    
```

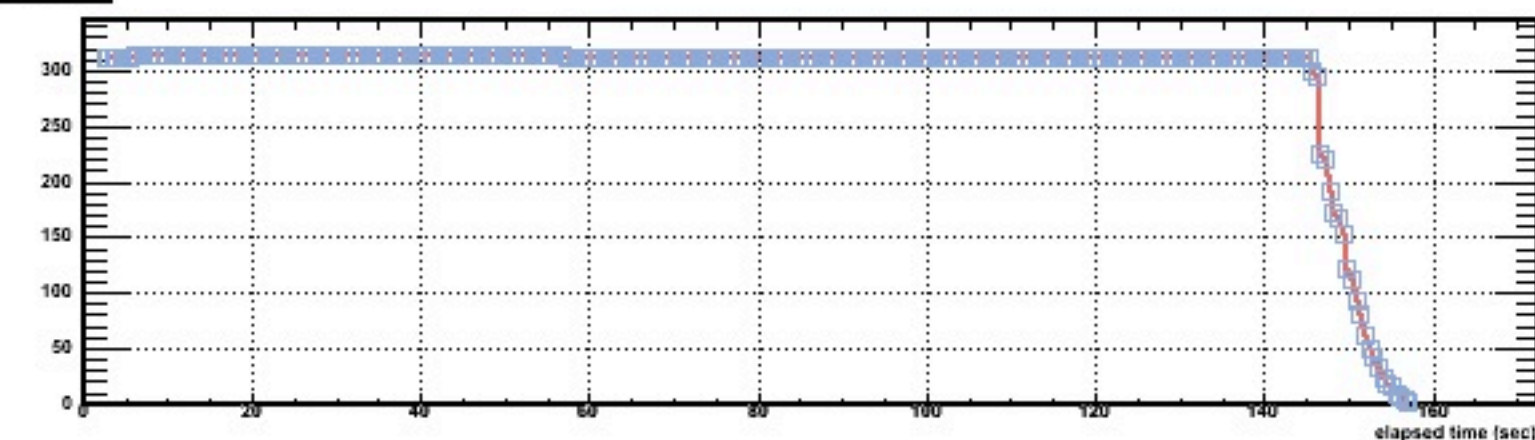
Processing rate (evts/sec)



Average read chunk size (MBs/request)



Active workers



ToDo

- PBS and SSH plug-ins,
- “out of server” UI,
- native Mac OS X implementation of UI.