

PoD

PROOF on Demand

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PoD Development Status Report

What is PoD?

PROOF on Demand (PoD) is a tool-set, which sets up a PROOF cluster on any resource management system.

PoD is NOT a substitution of PROOF!
It is rather a helper tool for PROOF.

“static”/pre-installed PROOF cluster

- One user can disturb other users.
- From time to time admin. interventions are needed.
- There is only one ROOT/xrootd version for PROOF services.
- There is a master node limitation.

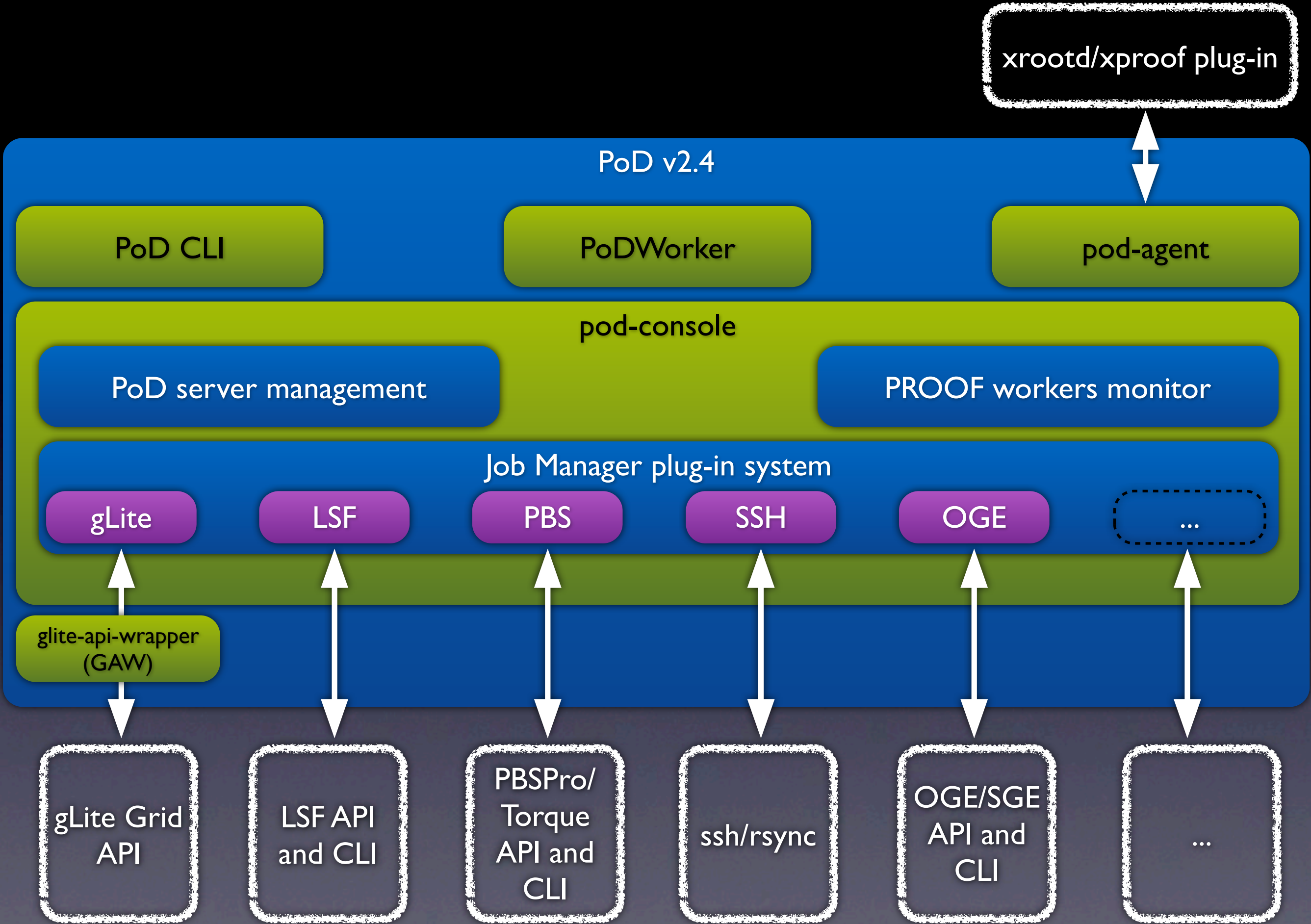
PROOF via PoD

User

- can entirely control his/her dynamic cluster,
- can setup and use it on demand,
- can dynamically change an amount of workers,
- can select a preferable master host,
- doesn't need admins to take an action,
- doesn't disturb other users,
- is free to choose a ROOT version for services.

Key features

- Easy to use
- GUI & Command-line
- Different job managers (gLite, LSF, PBS, SSH, OGE)
- Multiuser/-core environment
- Native PROOF connections
- Packet-forwarding
- User defaults - configuration



Current status

v2.2 was released (2010-09-17)

v2.3 was released (2010-10-03)

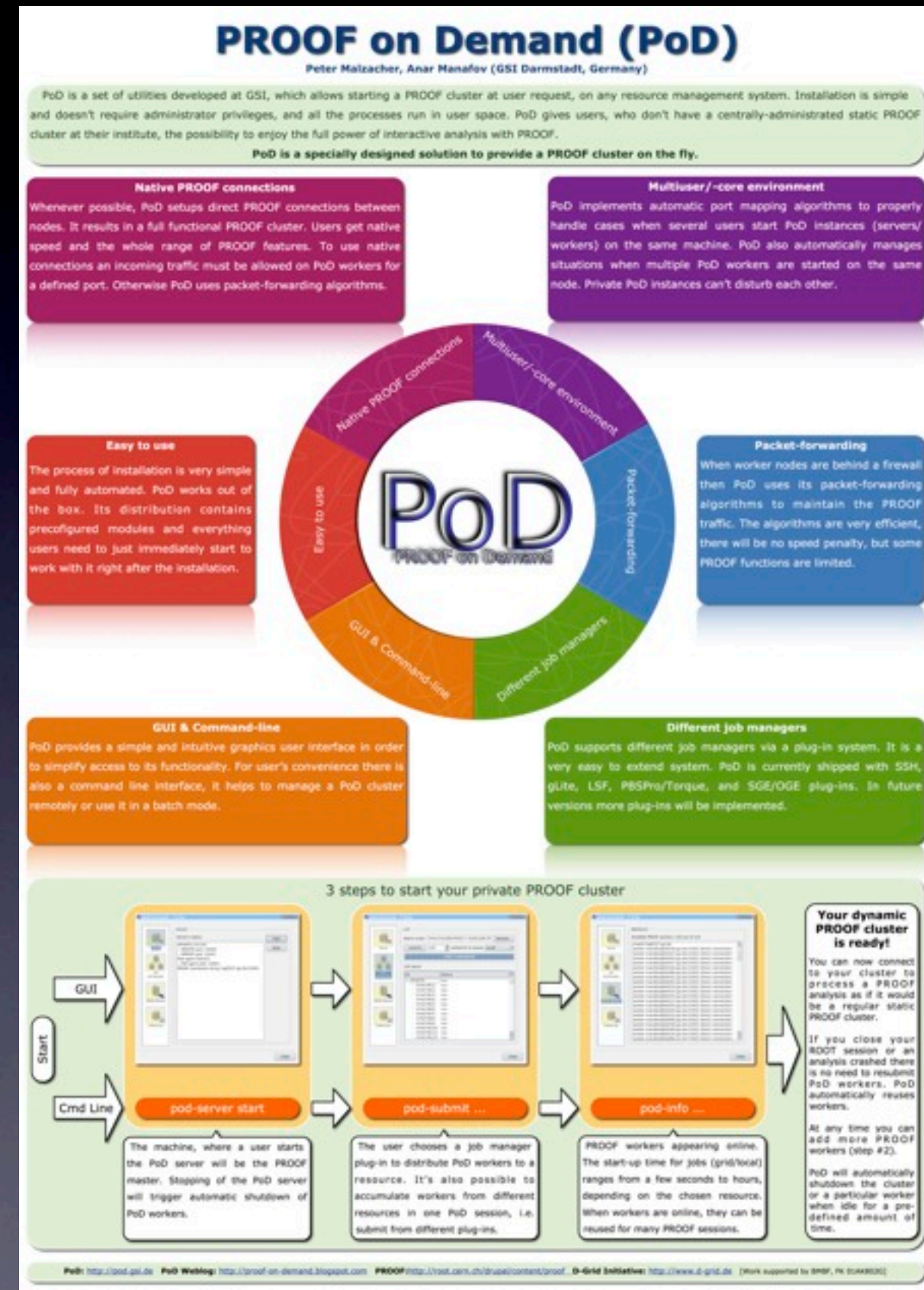
v2.4 was released (2010-11-14)

v3.x - is under development

CHEP 2010 was very successful event for PoD

PoD was a leader in its field :)

- *there was obvious attention on PoD,*
- *big interest in SSH, OGE and Condor plug-ins.*
- *I've shown more than 20 live demos,*
- *during CHEP's week PoD download counts raised,*
- *we got a number of new customers (not single users, but institutions),*
- *there were many new suggestions, feature requests.*

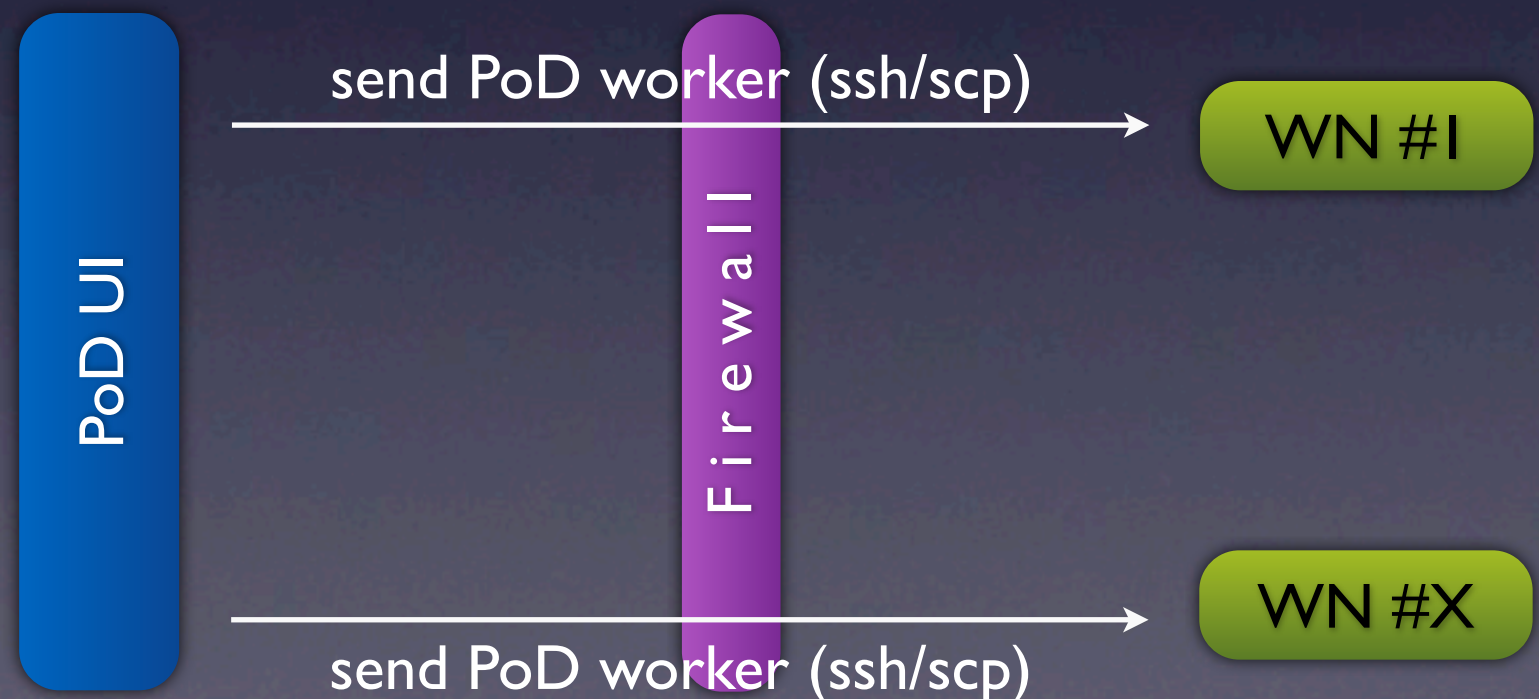


SSH plug-in

a simple CSV file as an input to the plug-in:

<i>id</i>	<i>, login@host</i>	<i>, ssh_params</i>	<i>, wn_dir</i>	<i>, num_of_workers</i>
r1	, anar@lxcg27.gsi.de	, -p24	, /tmp/test	, 10
a2	, user@lxi001	,	, ~/pod_wn	, 8
125	, doom@host.my	, -p22	, /opt/pod	, 16

the plug-in is in PoD
CLI only, so-far



SSH plug-in & cloud

Possible workflow:

- distribute data files,
- prepare an OS image, which includes PoD's worker package (made by pod-prep-worker),
- send the image to a cloud provider, requesting an ssh access to nodes,
- pass the list of workers to PoD ssh plug-in.

Enjoy your cloud based PROOF cluster.

OGE plug-in

- supports OGE v6.0 or higher,
- uses DRMAA v1,
- is implemented in PoD GUI (DRMAA),
- is implemented in PoD CLI (OGE CLI),
- supports so far only a shared home FS.

PoD WNs

- Dependencies have been revised in order to lighten WNs.
Removed dependencies on perl modules and python.
- Now PoD supports a custom user environment script.

PoD WNs

- WNs don't download PoD pre-compiled binaries anymore.
- Automatically detect of a shared home FS.
- Improved start-up time of the workers.

Mac OS X

PoD UI/Server supports Mac OS X

xproofd

PoD uses now xproofd instead of xrootd.

It helps users to run PoD and xrootd (for data)
on the same machines.

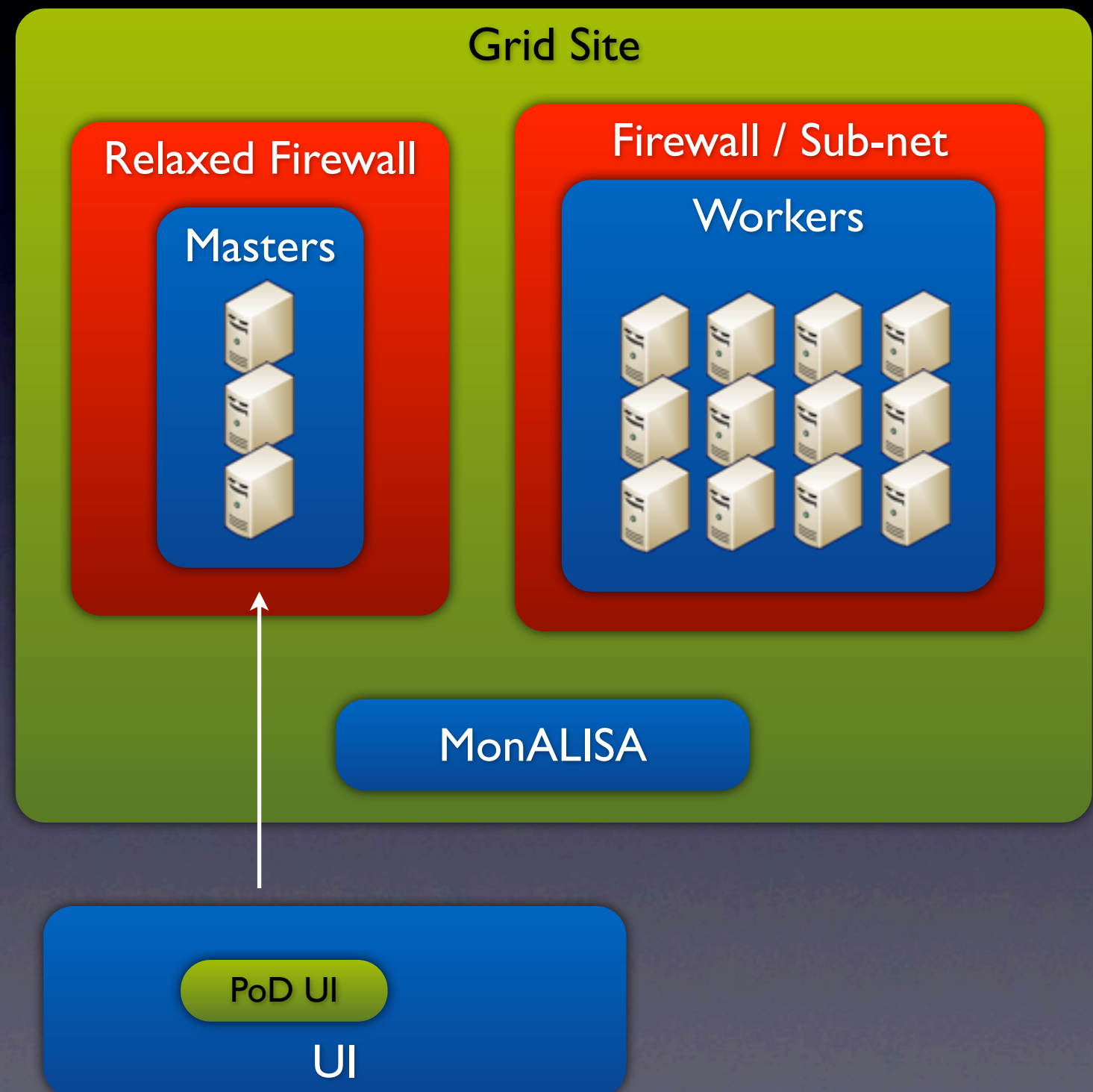
PoD plug-in system

The CLI plug-in system was slightly updated in order to make it much easier to extend with new plug-ins and to support old ones.

AliEn integration

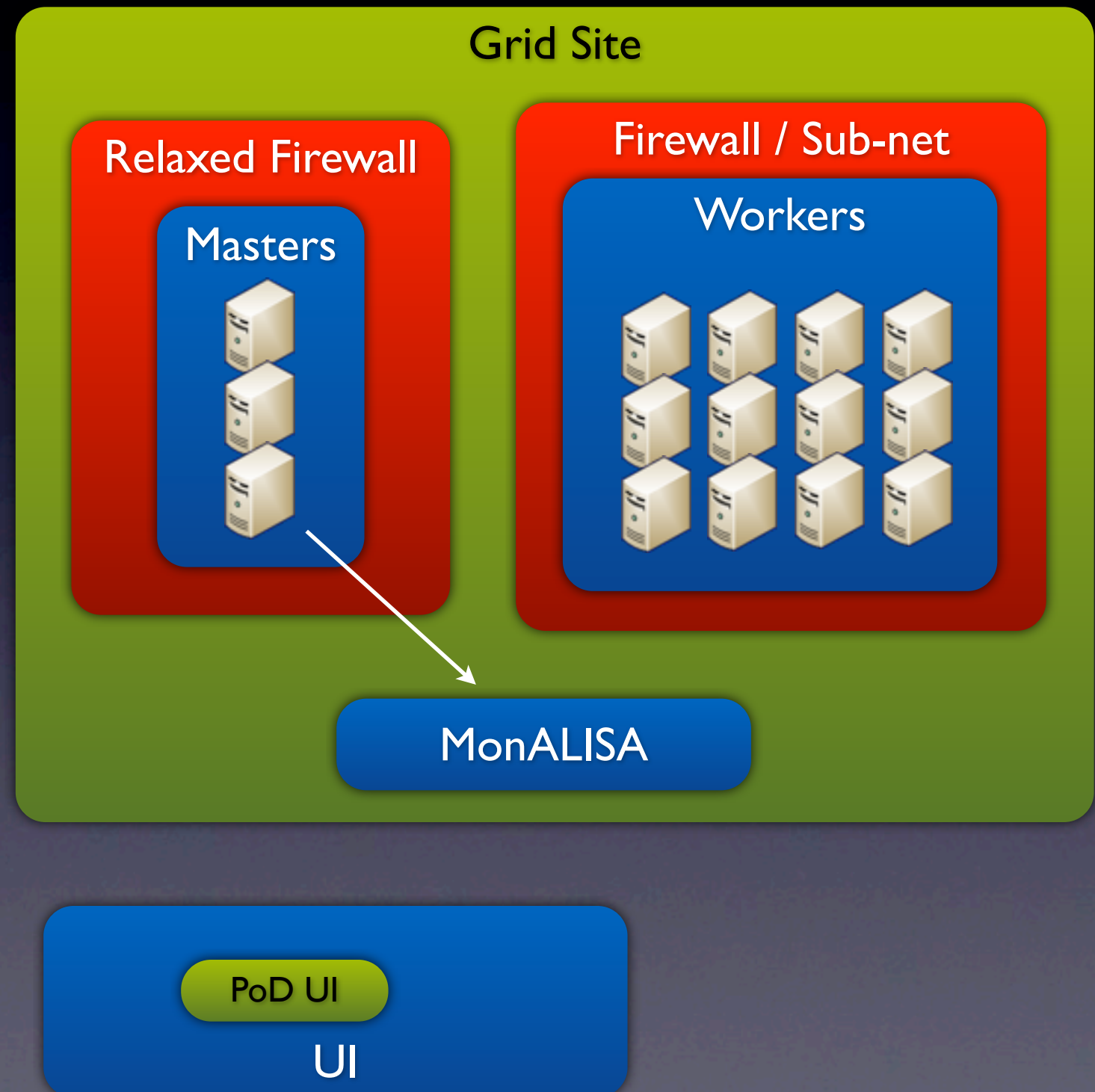
Step #1 User request a PoD server.

- User's request is only a configuration file for PoD server. No binaries are transferred.
- AliEn using master queue starts a PoD server on the PoD-aware master machines, using user's config file.
- User could specify, a minimum and a maximum number of workers and for how long (s)he can wait for the max. number of workers.



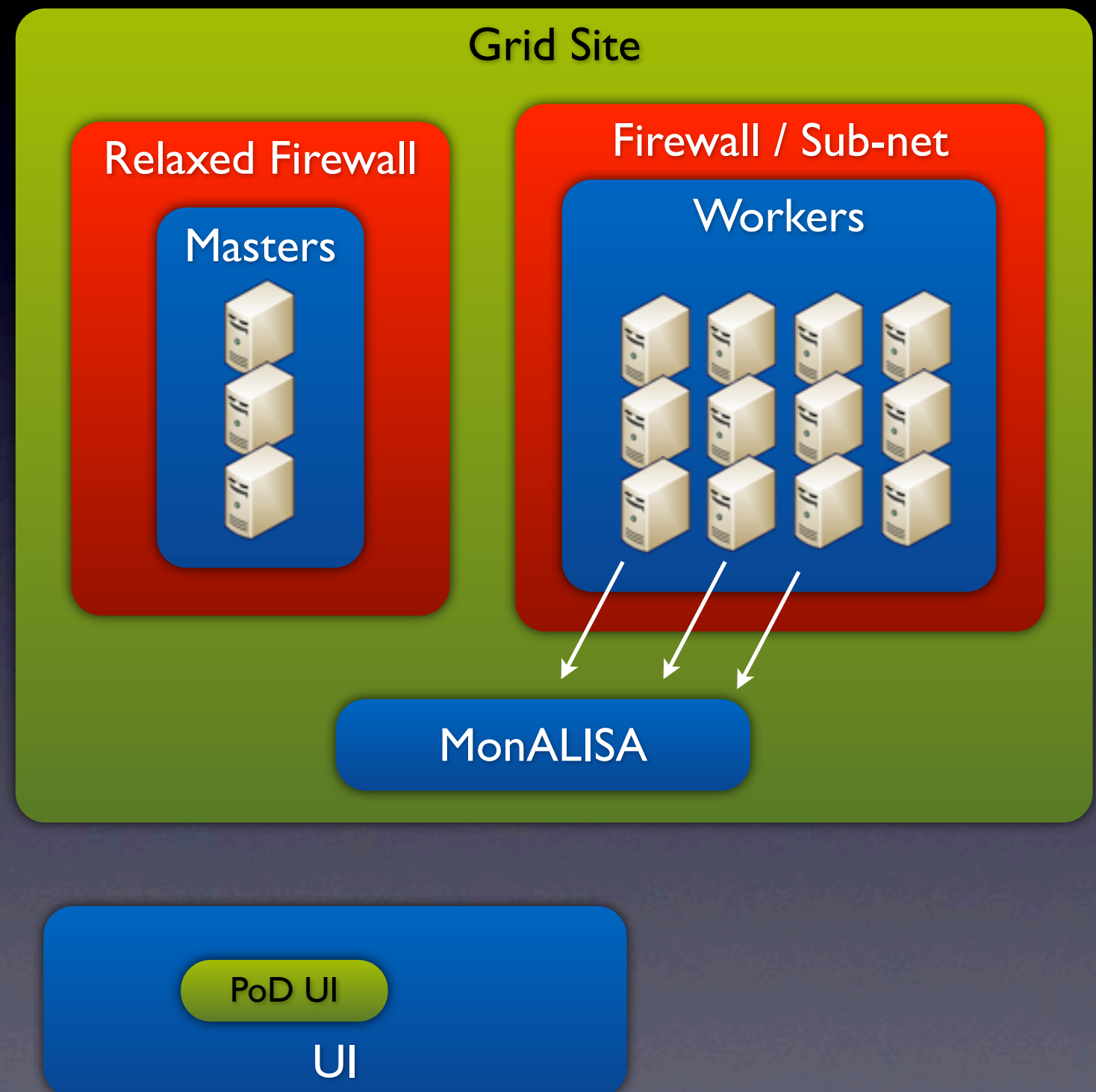
Step #2 PoD server registers in MonALISA.

- Server sends info to MonALISA every X sec.
- Server stops sending info, if:
 - it got enough workers
 - can't wait longer (as user requested)
 - shut down



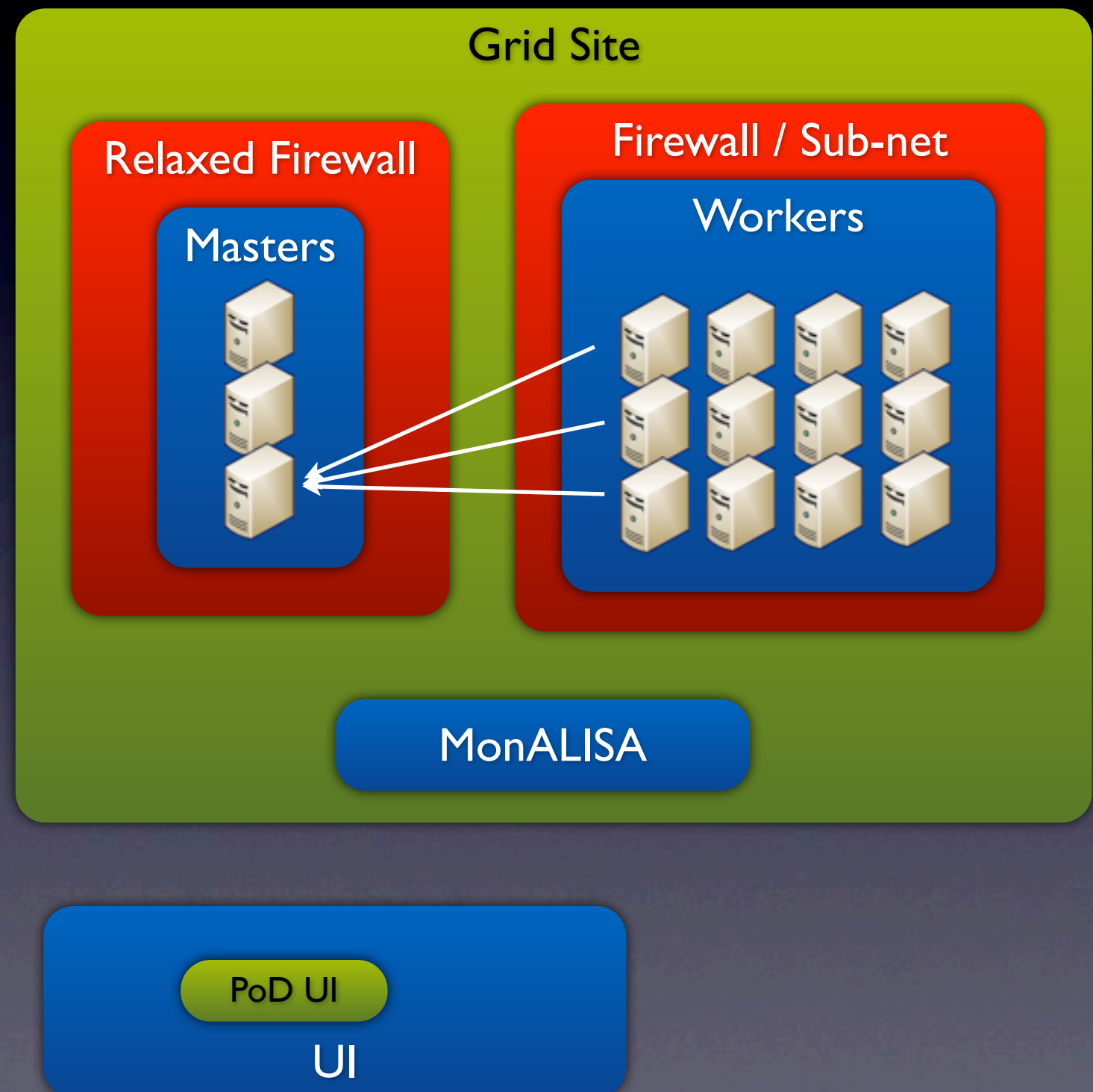
Step #3 AliEn constantly starts PoD workers whenever there are free job slots.

- This is a constant process.
- Before starting a regular job on a free slot, AliEn starts a PoD worker.
- PoD worker checks MonALISA for available PoD servers.
- If there is no servers, PoD worker exits after a define amount of time, so that AliEn job slot could take a normal job.



Step #4 PoD workers connect to available PoD servers.

- As soon as a PoD server got enough workers, it will stop publishing to MonALISA and will stop to except anymore workers.



Step #5 PoD will process its usual routines in order to setup PROOF.

Requirements

TCP Ports (small ranges):

1. WNs: incoming from Masters (required only for native PROOF connections, otherwise PoD will use packet-forwarding),
2. WNs: outgoing to Masters,
3. Ms: incoming from WNs,
4. Ms: outgoing to UI,
5. Ms: incoming from UI on PROOF ports.

Questions to AliEn

Is it possible to start PoD processes under individual users accounts?

Is it possible to fork PoD masters under individual users accounts?

AliEn integration steps to accomplish

- implement a central installation feature,
- disentangle PoD UI and PoD Server,
- teach PoD WN and Server to understand PoD's user defaults configuration via PoD protocol,
- teach PoD server and WNs to talk to MonALISA.

Short term ToDo

- a “central installation” feature,
- a Condor plug-in,
- PoD UI and Server disentangling.

<http://pod.gsi.de>