PoD

PROOF on Demand

Dynamic PROOF clusters with PoD. Status report and future plans

Anar Manafov, GSI Darmstadt

ALICE offline week,
2010-07-08

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.

PoD v2.2

pod-console

PoD server management

PROOF workers monitor

Job Manager plug-in system

gLite | LSF | PBS | SSH | ...

glite-api-wrapper (GAW)

PoDWorker

PoD utilities and command line tools

Configuration files (PoD, xrootd, PROOF)

pod-user-defaults

pod-agent

gLite Grid API

LSF API and CLI

PBS (torque) API and CLI

ssh/scp

...

xrootd/xproof plug-in

Key features

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

Current status

v2.1.4 has been released (2010-05-26)

v2.2 - under development

As the product matures, the support of previous versions is extending...

New version numbers

Old:
maintained manually in VCS and in build config. files.
Old schema: “vX.Y.Z” (X - major, Y - minor, Z - patch).

New:
only set a tag (“v.X.Y”) in VCS (we use Git) and the rest is done automatically, using Git canonical ver. numbers.
“vX.Y” - for a release build
“vX.Y.NN.SSSS” (vX.Y - the latest tag, NN - a number of commits since the tag, and SSSS - object's hash) - for any patch and nightly.

Improved build-system

- The project has been consolidated and cmake is now the only build system of it.
- A much easier/smarter installation procedure has been released.
- Implemented fully automated builds of releases, nightly and specific binary packages.
- Since years the buildbot serves as a continues integration system.

CLI

- pod-server
- pod-info
- pod-submit
- pod-user-defaults
- pod-prep-worker

CLI

- pod-server
- pod-info
- pod-submit
- pod-user-defaults
- pod-prep-worker

Example

```
$ pod-server start (status)
$ pod-submit -r lsf -q queue -n 150
$ pod-info -n (-l)
$ pod-server stop
```

CLI

- pod-server
- pod-info
- pod-submit
- pod-user-defaults
- pod-prep-worker

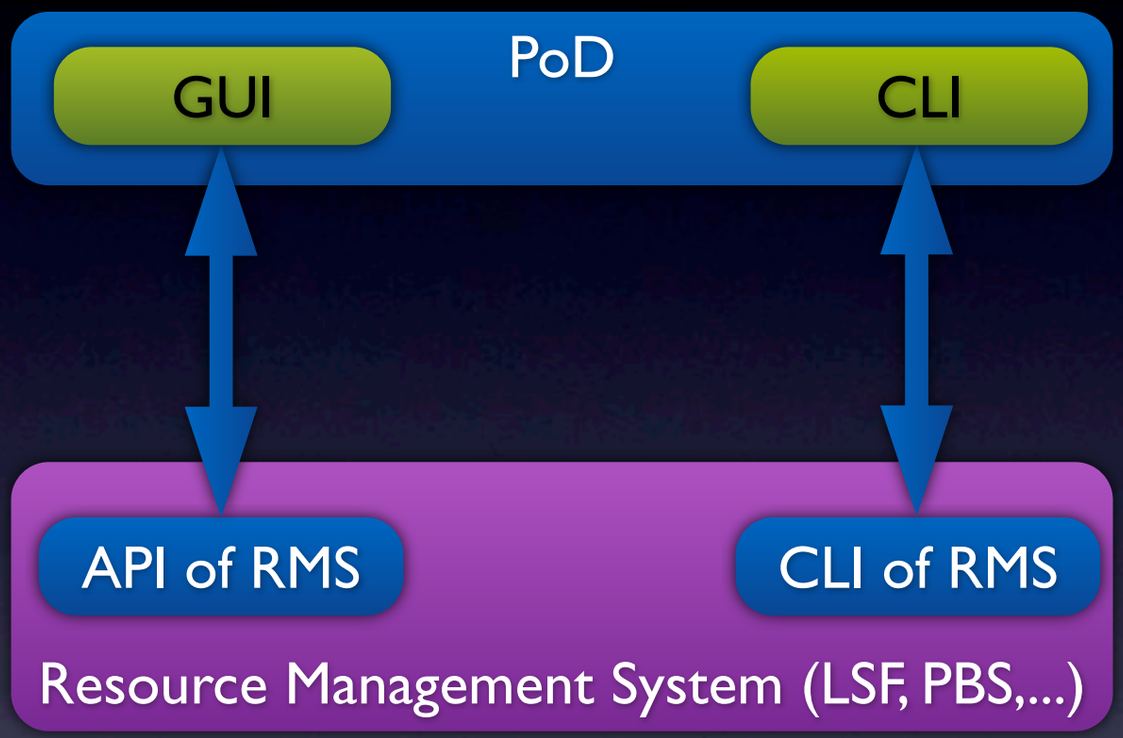
Example

```
$ pod-server start (status)
$ pod-submit -r lsf -q queue -n 150
$ pod-info -n (-l)
$ pod-server stop
```

can be used in the PROOF script

```
TProof::Open( gSystem->GetFromPipe("pod-info -c") )
```

GUI vs CLI



This strategy helps to be more flexible and better integrated into different setups and environments.

gLite plug-in

Updated to support gLite UI 3.2

PBS plug-in

Supports

- PBS Pro and Torque,
- shared and not shared file systems.

SSH plug-in

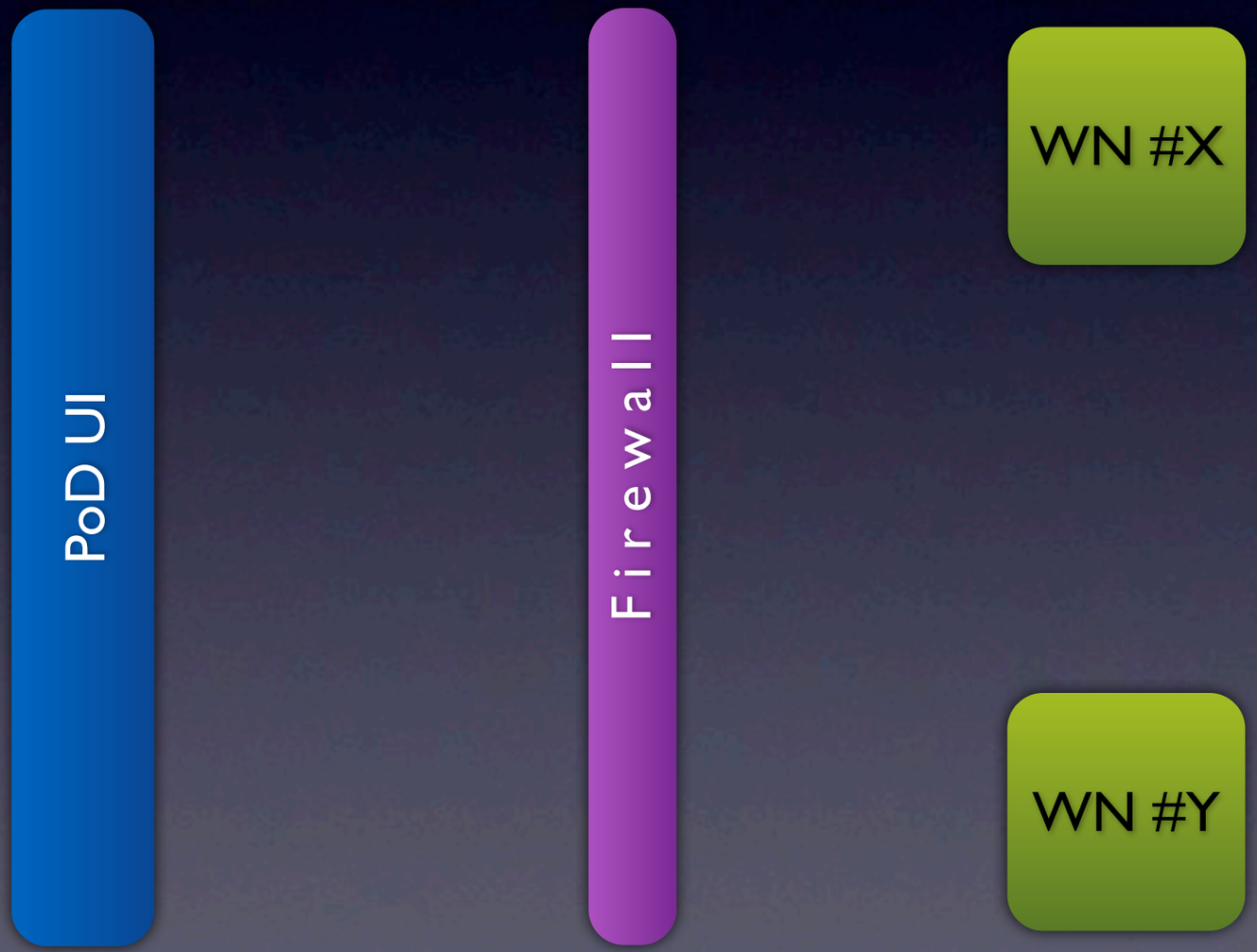
a simple CSV file as an input to the plug-in:

```
id  , login@host          , ssh_params , wn_dir     , num_of_workers

r1  , anar@lxg27.gsi.de , -p24        , /tmp/test , 10
a2  , user@lxi001       ,             , ~/pod_wn  , 8
125 , doom@host.my      , -p22        , /opt/pod  , 16
```

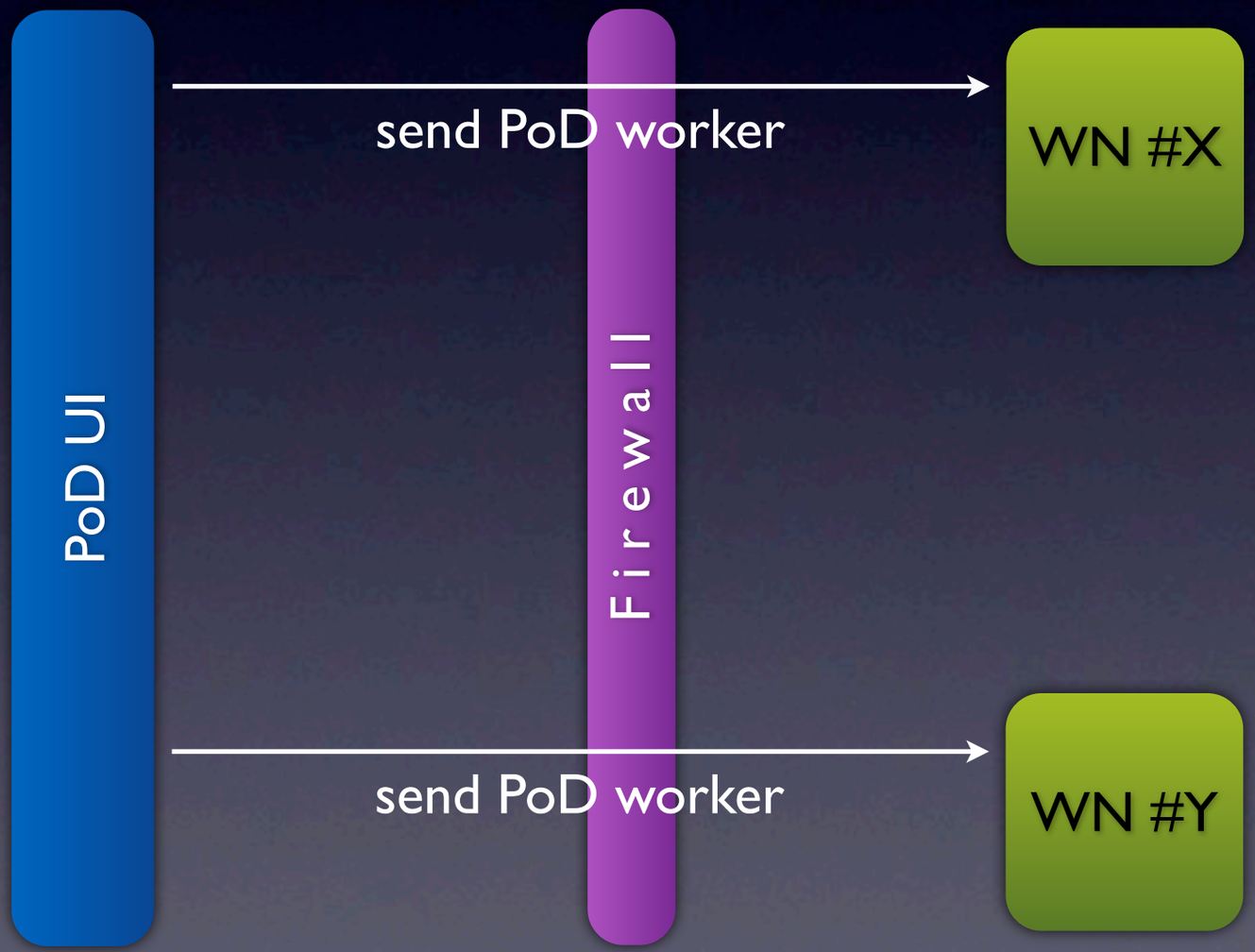
SSH plug-in & tunnel

PoD will optionally create ssh tunnels for nodes behind a firewall.



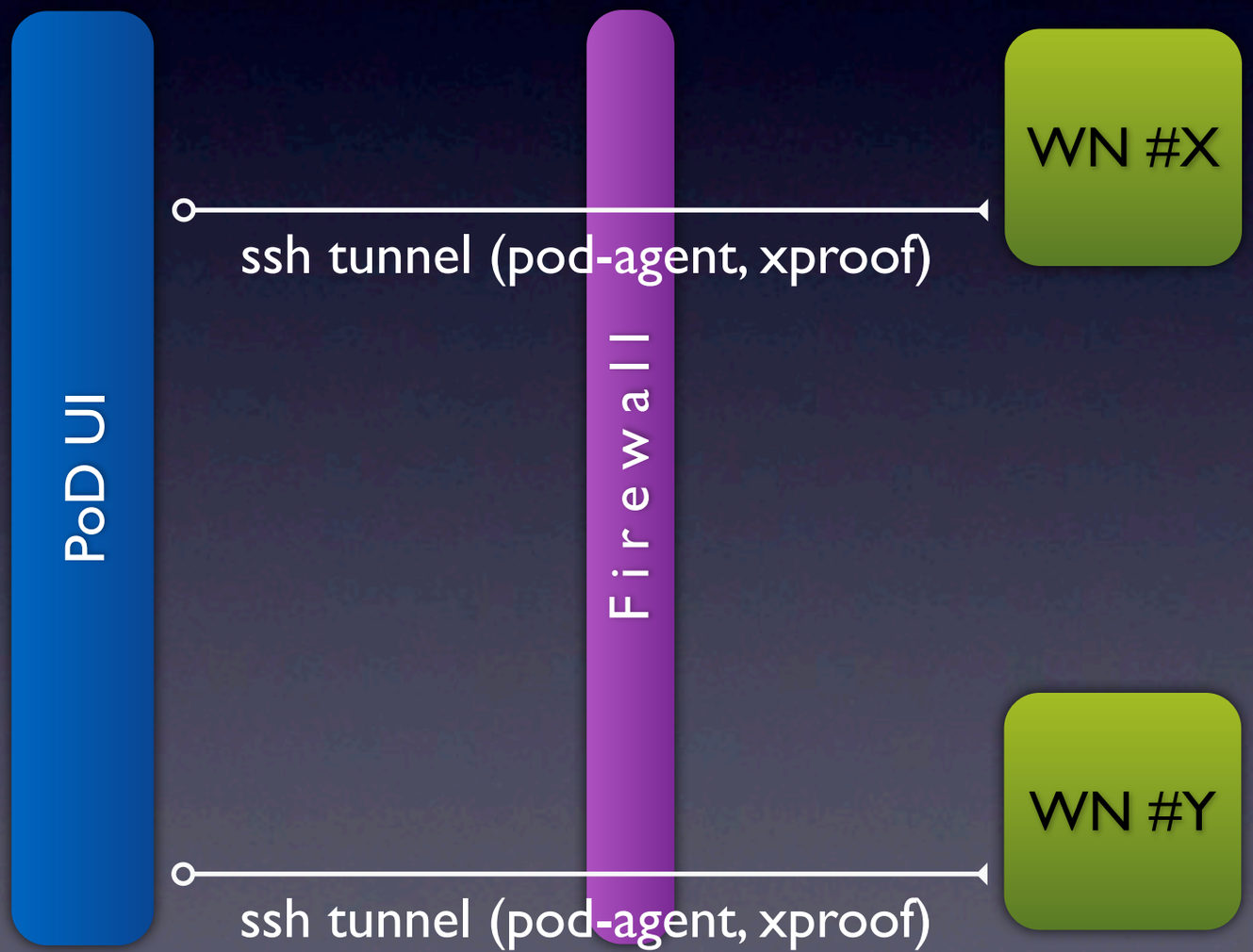
SSH plug-in & tunnel

PoD will optionally create ssh tunnels for nodes behind a firewall.



SSH plug-in & tunnel

PoD will optionally create ssh tunnels for nodes behind a firewall.



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.

ToDo

- “out of server” UI,
- a native Mac OS X implementation of UI,
- an AliEn plug-in,
- a Condor plug-in.

http://pod.gsi.de