

# Experience with Prague computing resources

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# Outline

- Access to farm (user interface)
- (ATLAS) software
- Usage of grid resources
- Tips and tricks

## Access

- standard login: `ssh user@ui8.farm.particle.cz -Y`
- don't use ui5
- To minimize typing, create/edit: `~/.ssh/config`

```
Host ui8
User kepkao
ForwardX11 yes
Compression yes
HostName ui8.farm.particle.cz
```

- and simply use: `ssh ui8`.
- Retyping password is annoying. Use private/public key authorisation <http://www.ece.uci.edu/~chou/ssh-key.html>.
- It is safe! Protect private key by password and use keychain to remember your password for one session → type password only once per day.

```
alias ssh='eval $(/usr/bin/keychain --eval --agents
ssh -Q --quiet ~/.ssh/id_rsa) && ssh'
```

(`ssh-add` may be needed, alias not needed for MacOS)

- Works automatically for `svn/scp/...`

# Software

- old way: use pacman to download precompiled software to /raid7\_atlas/kepka
- new way: CernVM File System - software is distributed on request
- Athena, DQ2, Panda, ROOT, BOOST, gcc, ...setup  
<https://twiki.cern.ch/twiki/bin/viewauth/AtlasComputing/WorkBookSetAccount>

```
export ATLAS_LOCAL_ROOT_BASE=/cvmfs/atlas.cern.ch/repo/ATLASLocalRootBase
source $ATLAS_LOCAL_ROOT_BASE/user/atlasLocalSetup.sh
showVersions
```

- several examples in /home/kepka/ setupsCVMFS

```
setup_atlas.sh  setup_root.sh  setup_voms.sh
setup_boost.sh setup_dq2.sh  setup_panda.sh
```

- CVMFS non-related setup scripts at /home/kepka/ setups

# Athena

- We have SLC6, add slc5 to use older releases.
- here flag sets \$TestArea to the current directory.
- It is possible to setup releases which are only on afs, but they are slower than those installed on CVMFS.
- To inhibit use of afs, specify cvmfsonly.
- possible to setup even nightly releases! rel\_5 in this example
- CVMFS is used on the grid. So one can submit jobs to grid using nightlies too (if they are distributed).

```
source $HOME/setupsCVMFS/setup_atlas.sh
asetup 17.2.8.13,slc5,here
asetup copy,rel_5,64,slc6,gcc47, runtime,cvmfsonly,here
```

# Grid

## Data handling:

- Panda DaTri service – very efficient way to transfer finished datasets to our storage element, requires manual selection of dataset (simple regexp).
- To transfer datasets of many different names, create a container of dataset and transfer the container.
- User can forward results of grid jobs to particular storage.

```
prun .... --destSE PRAGUELCG2_LOCALGROUPDISK  
pathena ..--destSE PRAGUELCG2_LOCALGROUPDISK
```

- That's how we did slimming/skimming of data for WW group (150T → 20TB).
- dq2-get sometimes fails to fetch datasets from certain sites. If you need larger datasets downloaded locally, it is more efficient to request DaTri transfer to PRAGUELCG2\_SCRATCHDISK and only then dq2-get it. Scratchdisk is deleted automatically after some time.

# Grid

## Production:

- User can instruct jobs to go to specific site.
- useful for event generation, or any other fullchain step if input data are in Prague

```
prun .... --site ANALY_FZU
pathena ..--site ANALY_FZU
```

- Our farm very reliable. Personal experience: full simulation - EVNT/HITS/RDO/AOD/NTUP of .5M events in 1 week for AFP physics review two weeks ago. Peak 1.5K - 2day jobs running. Failrate at % level.
- Grid not optimal for day-to-day analysis: slow turn-around, many RootCore packages to deal with (making sure that all successfully compiled and have the needed info uploaded ~ 100M is a nightmare, tried!)

## Local batch system

- Torque queues: iatlas and gridatlas
- iatlas - use for few jobs, interactive access, node iberis01 is reserved, no production jobs, is fast
- Ask for special priorities within gridatlas (higher than ATLAS production)
- Excellent manual for goliath (J. Uhlířová) :  
<http://www.farm.particle.cz/twiki/bin/view/VS/VsGoliath>

Direct access to DPM:

- Direct access to files on the grid (e.g. PRAGUELCG2\_LOCALGROUPDISK) using xrootd protocol

```
TFile * f =  
  TFile::Open("root://goliath100.farm.particle.cz//dpm  
  /farm.particle.cz/home/...")
```

- Reuse existing voms proxy in jobs

```
voms-proxy-info -all -file $X509_USER_PROXY
```

<http://www.farm.particle.cz/twiki/bin/view/VS/VsGoliath>



# Local batch system

- Scaling of data analysis: The nominal WW analysis  $\sim 20T$  is analysed in 6h, with 50 different systematics in 10h, couple hundreds of jobs
- The most (and only) burning issue

<http://www.farm.particle.cz/twiki/bin/view/ATLAS/DPMinPrague>

```
( ERROR ) TXNetFile::Crea... : open attempt failed on  
root://golias100.farm.particle.cz//dpm/farm.particle.cz/home/  
atlas/atlaslocalgroupdisk/rucio/user/mzeman/4e/eb/user.mzeman.  
007119._00591.AnalysisManager.NTUP.SMWZ.PragueSkim.root
```

## Tips, tricks, techniques

- screen - many concurrent ever lasting working spaces
- kerberos - authentication to CERN: kinit your\_cern\_login  
<http://www.farm.particle.cz/twiki/bin/view/ATLAS/Kerberos>
- Replicate to PRAGUELCG2\_LOCALGROUPDISK if you want to backup results of your jobs
- Also replicate if you foresee to process datasets not only once in the future (Rivet analysis, in order to test sim/reco on the grid, panda allows to replicate a certain fraction of datasets)
- Don't hesitate to report problems at [fzu@rt4.cesnet.cz](mailto:fzu@rt4.cesnet.cz)

# Summary

- Our site is just great ;-)