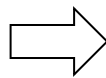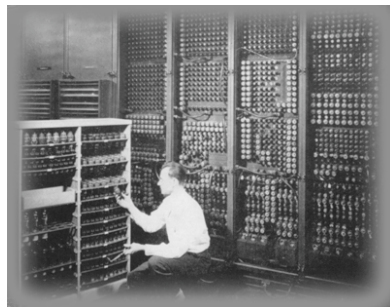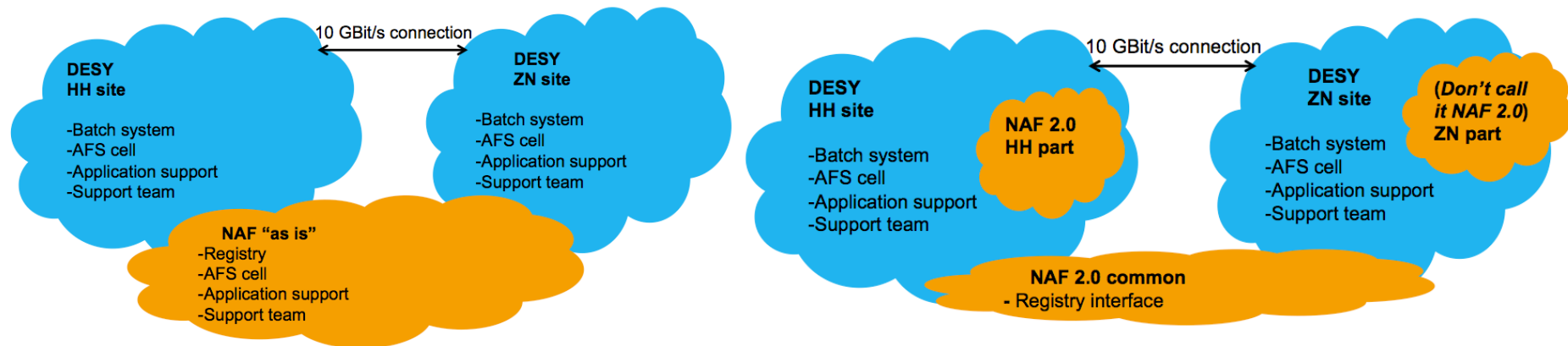# Making the transition to NAF 2.

Guidelines and help for the DESY-ATLAS Group

Friederike Nowak, David South
DESY-ATLAS Meeting
10 December 2013

HELMHOLTZ | ASSOCIATION

DESY

Introduction to NAF-2

> NAF-2 has been in preparation for > 1 year, but now it's really here

> Simply put, the main differences are that NAF is now based solely at the DESY-HH site and is fully integrated into "normal" DESY-IT infrastructure

> Idea behind this being to make things easier: no separate /afs cell, no additional or different software support, a much bigger dCache storage

> Today: just the basic information. More details on NAF-2 are available:

Friederike, CHEP-13: https://indico.cern.ch/getFile.py/access?contribId=37&sessionId=4&resId=0&materialId=slides&confId=214784
Yves, Alliance meeting Dec 2013: https://indico.desy.de/getFile.py/access?sessionId=19&resId=0&materialId=0&confId=8029
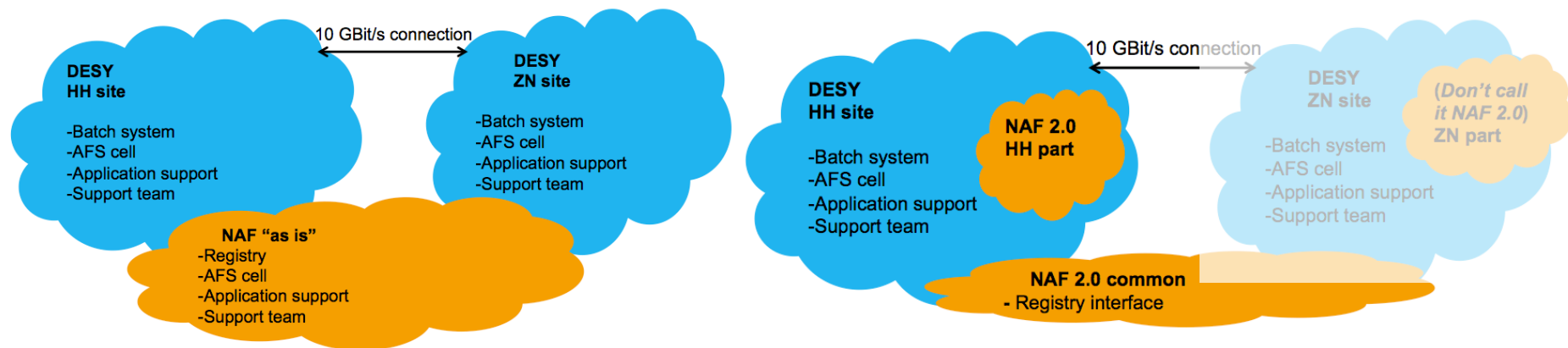
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Working group servers

> In NAF-1 we had 6 wgs, `tcx80, .. 130`, with `tcx090` at DESY-ZN

- Two of these have already been retired (`tcx120` and `tcx130`)

> We now have 6 wgs in NAF-2: `nafhh-atlas01-06`

- All machines are SLD5, except `nafhh-atlas02`, which is SLD6

> Access via usual ssh, but user needs to be a member of "`AF-ATLAS`"

> All SLD5 machines may be accessed via the load-balancing ssh alias "`naf-atlas`"

> SLD5 wgs to be migrated to SLD6 depending on user requirements, some do already need SLD6

> Finally, `xxl` replaces `scratch` in desy /afs cell. You need to ask for this

`nx`-like login to NAF-2

> There are also `nx`-like machines for remote login

> `nx`-like service using products from StarNet (Live-Client)

  ▪ Intended use-case: tool to connect to a "NAF remote desktop"

  ▪ Graphical login, allows you to work as if on a DESY Desktop

  ▪ Much faster than using X11 when opening additional windows

> Two NAF remote desktop servers: `nafhh-x1` (Ubuntu12.04) and `nafhh-x1` (SLD6)

  ▪ Contact `naf-helpdesk@desy.de` if you want to use this product

  ▪ License needed: provided by DESY

Batch system

> SGE batch system, like before in NAF-1 (qsub, qstat and so on)

> Integrated into the Bird system in Hamburg, details can be found here:
  `http://bird.desy.de/info/index.html.en`

> Migration of resources from NAF-1 to NAF-2 on-going

> <u>NAF-1 today:</u>

  - 1500 Cores on SLD5 in Hamburg, 104 Cores on SLD5 in Zeuthen

> <u>NAF-2 today:</u>

  - 1600 Cores on SLD5, will stay as SLD5 for at least 6 months
  - 2500 Cores on SLD6

> Future migrations:

  - Further 1000 cores from NAF-1 to SLD6 NAF-2 in December
  - **Final 500 cores from HH NAF-1 to SLD6 NAF-2 by April 2014**, probably in two steps
  - ZN cores to be moved into the "Zeuthen Farm" or decommissioned (already 6y old)

Batch system (2)
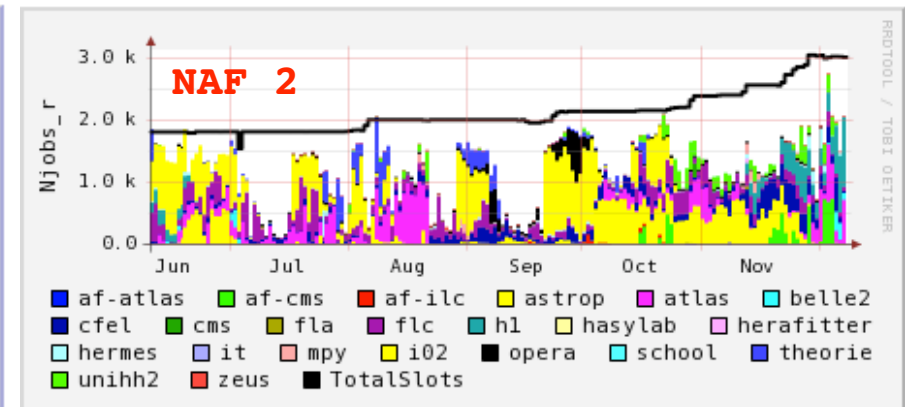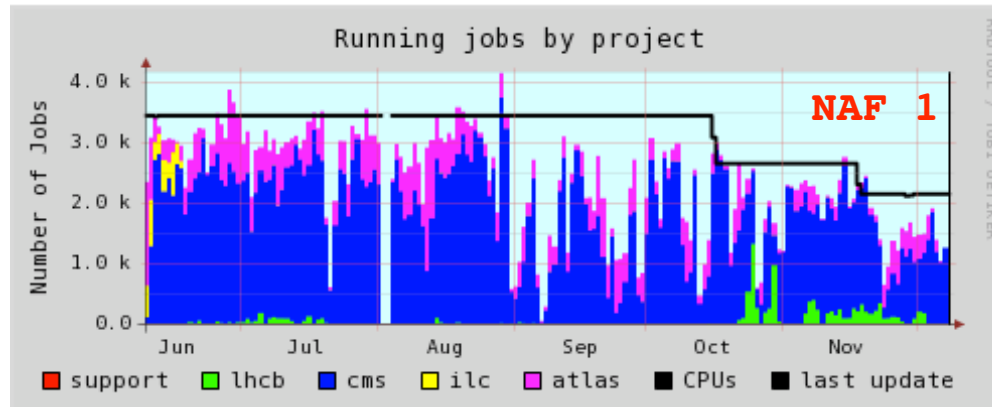
> Note that it the number of cores is not the full story

- As seen recently, a user asking for 15 GB RAM / job means only ~960 of the SLD5 1600 cores are available

- The remaining cores cannot be used because too little memory is available

> Things are still in a transitional state, but are monitored

- If people have difficulties getting their jobs through, they should contact DS and IT and we will try to understand why

Sonas: Scale Out Network Attached Storage

> **Lustre** now gone

> Replaced by **Sonas**, distributed storage, ~850 TB in total

> Appears here: **/nfs/dust/atlas/user**

> Initial quota is 1 TB, can be increased up to 10 TB as required

> This is scratch space – no back up

> A single user *cannot* have both NAF-1 **Sonas** and NAF-2 **Sonas**

> Moving data to NAF-2 **Sonas** from NAF-1 **Sonas** done on request, is fairly quick (no copying, just dataset reassignment)

> NAF-2 **Sonas** is mounted on the NAF-2 wgs, and NAF-2 batch

dCache

> In addition to **Sonas** we have the large **dCache** storage as before

- **DESY-HH_LOCALGROUPDISK** : much larger, 1.6 PB, preferred due to location
- **DESY-ZN_LOCALGROUPDISK** : smaller and being reduced
- No migration necessary: data path and access method remain identical

Space evolution at DESY-HH_LOCALGROUPDISK acc. to DQ2
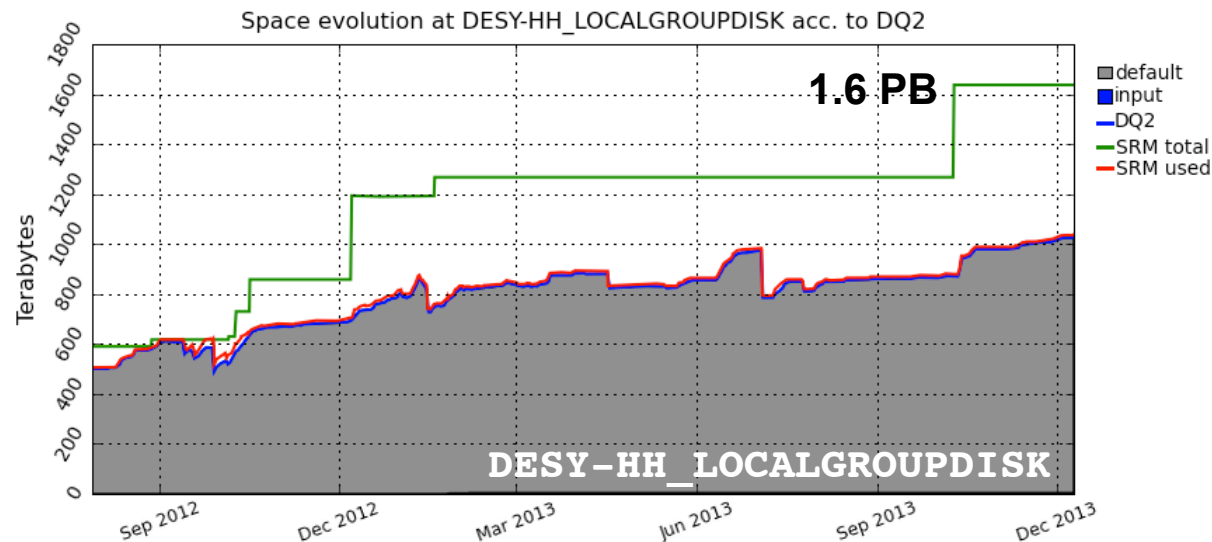
> dcTools and NFS v4.1 **dCache** mount

- SLD5: dcTools maintained for short time (until SL6 migration is done)
- SLD6: Working on a dCache read-only mount using NFS 4.1: makes dcTools obsolete
- Pilot users for NFS 4.1: BELLE running on wgs and batch

Using ATLAS software

> This should now all be a lot simpler!

> No problem to have special versions of ROOT with more modern python or complier or whatever: take whole software stack from CERN

> Three **CVMFS** volumes now available on each of the NAF-2 wgs:

- **/cvmfs/atlas.cern.ch**

- **/cvmfs/atlas-condb.cern.ch**

- **/cvmfs/atlas-nightlies.cern.ch**

- **/cvmfs/sft.cern.ch**

> Software also available to jobs running on NAF-2 batch

> It is still possible to install additional software not available on **CVMFS**, but we hope this will not be needed

> One thing to note here: **ini** command replaced by **module** (see wiki)

CVMFS style set up

> First these run these lines

```
export ATLAS_LOCAL_ROOT_BASE=/cvmfs/atlas.cern.ch/repo/ATLASLocalRootBase

export DQ2_LOCAL_SITE_ID=DESY-HH_SCRATCHDISK

source /cvmfs/atlas.cern.ch/repo/ATLASLocalRootBase/user/atlasLocalSetup.sh
```

> Then you get a list of software available from **CVMFS**

> For example, to get dq2:

```
localSetupDQ2Client
```

> **asetup** as usual, but now with all options available at CERN, such as **devval,rX**

```
Your shell is zsh and extendedglob was set ...
  Now doing unsetopt extendedglob ...
 Your shell is zsh and braceccl was set ...
  Now doing unsetopt braceccl ...

...Type localSetupDQ2Client to use DQ2 Client
...Type localSetupEmi to use emi
...Type localSetupGanga to use Ganga
...Type localSetupGcc to use alternate gcc
...Type localSetupGLite to use GLite
...Type localSetupMana to setup mana
...Type localSetupPacman to use Pacman
...Type localSetupPandaClient to use Panda Client
...Type localSetupPyAMI to setup pyAMI
...Type localSetupPoD to setup Proof-on-Demand
...Type localSetupROOT to setup (standalone) ROOT
...Type localSetupRucio to setup Rucio
...Type showVersions to show versions of installed software
...Type asetup [--help] to setup a release
...Type changeASetup [--help] to change asetup configuration
...Type diagnostics for diagnostic tools
...Type helpMe for help
```

NAF-2 summary: making the transition

> You need to be a member of **AF-ATLAS** (DS can do that)

> Use NAF-2 batch system: would also be useful to try running SLD5 executables on the SLD6 queues. But SLD6 will be necessary soon

> Ask for an **xxl** afs directory for scratch space

> Ask for **Sonas** NAF-2 space (new user) or ask for your NAF-1 **Sonas** data-set to be migrated to NAF-2

> Further details are available on the NAF-2 wiki (e.g. for Ganga, Pathena), which you are also invited to contribute to:
https://wiki-zeuthen.desy.de/ATLAS/WorkBook/NAF2

> Any problems:

  ▪ ATLAS related: **naf-atlas-support@desy.de**

  ▪ NAF related: **naf-helpdesk@desy.de**