

ATLAS Tier-3 within IFIC-Valencia analysis facility



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IFIC-Valencia

Instituto de Física Corpuscular (IFIC) is a joint centre of CSIC (Spanish Research Council) and University of Valencia.

- It is dedicated to astrophysics, nuclear and particle physics and their applications (GRID computing and e-Science, medical physics, research and development in detectors)
- It hosts about 30 research lines between theoretical and experimental physics.
- There are currently more than 240 people working at IFIC.



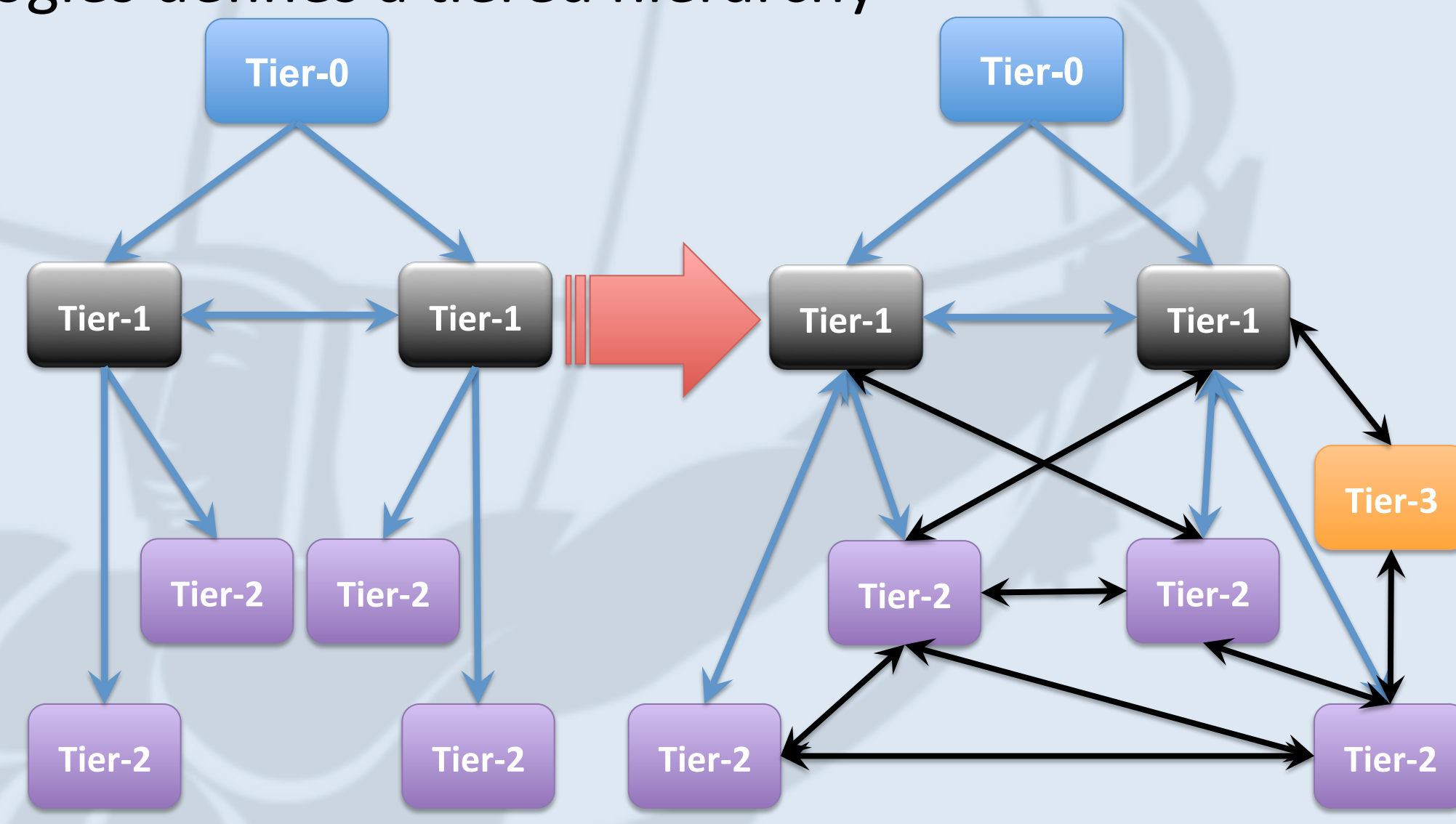
ATLAS Computing Model

- 25k TB of data have been exported from CERN to Tier-1 sites since January 2010.
- Model based on GRID technologies defines a tiered hierarchy

- Tier-0 at CERN.
- 10 Tier-1 and 78 Tier-2 distributed world wide.
- End-user private analysis facility (Tier-3)

Original model found insufficient.

- Model changed to improve usability and to reduce dependency on Tier-1 sites.
- Now Tier-2 can directly exchange data with any Tier-1 and other Tier-2 sites.



Tier-3 are not part of the computing model. Nevertheless, the recent changes do affect Tier-3 sites indirectly.

Tier-3 at IFIC-Valencia

Tier-3 centres are institution-level non-ATLAS funded or controlled centres that participate presumably most frequently in support of the particular interests of local physicists.

IFIC's Tier-3 is attached to a Tier-2 that has 50% of the Spanish Federated Tier-2 resources. Tier-3 resources are split into two parts:

- Some resources are coupled to IFIC's Tier-2 in a GRID environment.
 - The users have access to ATLAS software and can use GRID tools.
- A local batch farm to provide additional storage and computing power for analyses that need to run on local resources.

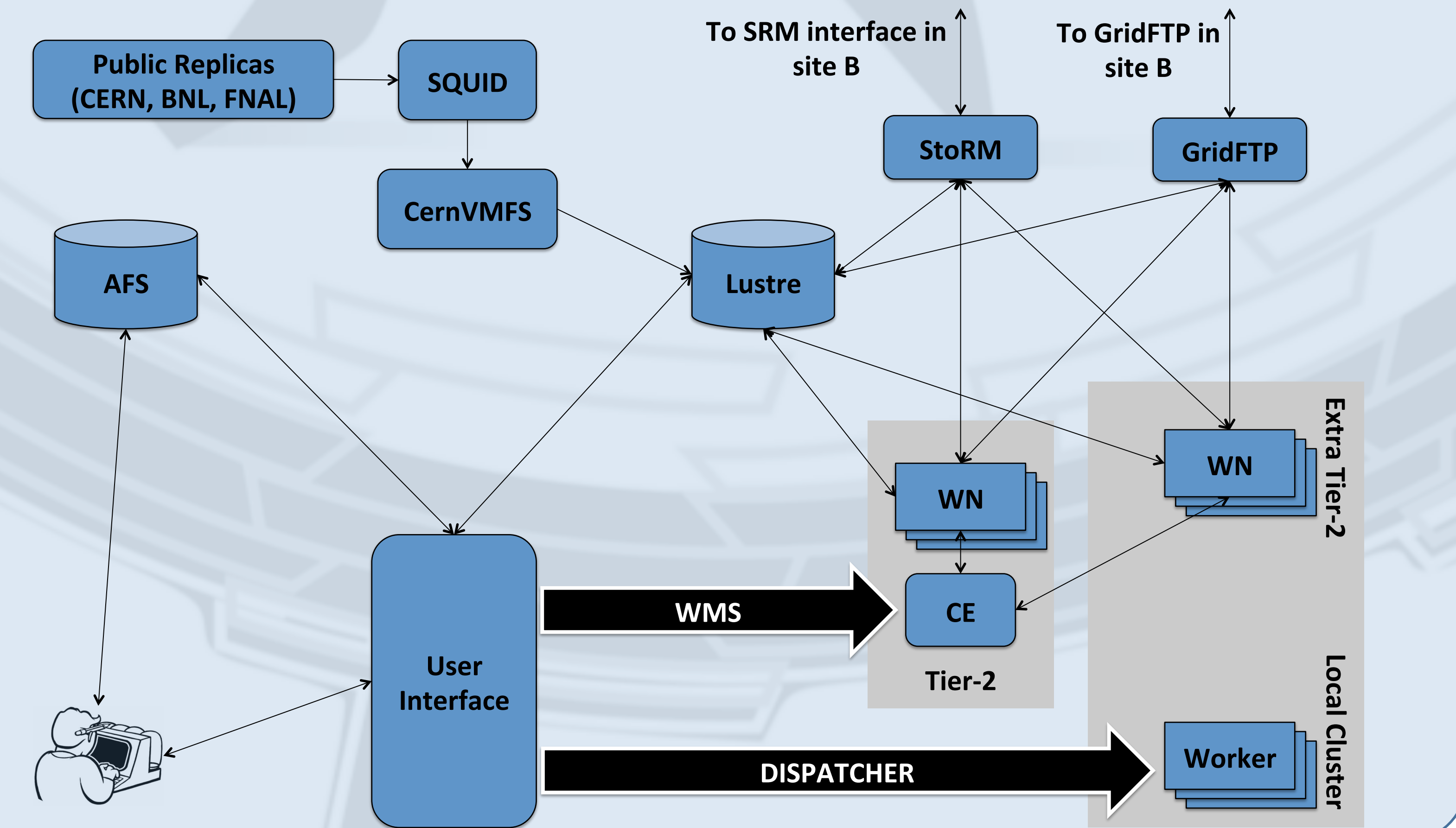
Same storage system as Tier-2, Lustre.

- POSIX-compliant UNIX file system interface.
- The meta-directory server (MDS), a catalogue, is the only shared resource between Tier-2 and Tier-3.

3 disk servers dedicated exclusively to Tier-3 to avoid overlap with Tier-2.

Resources

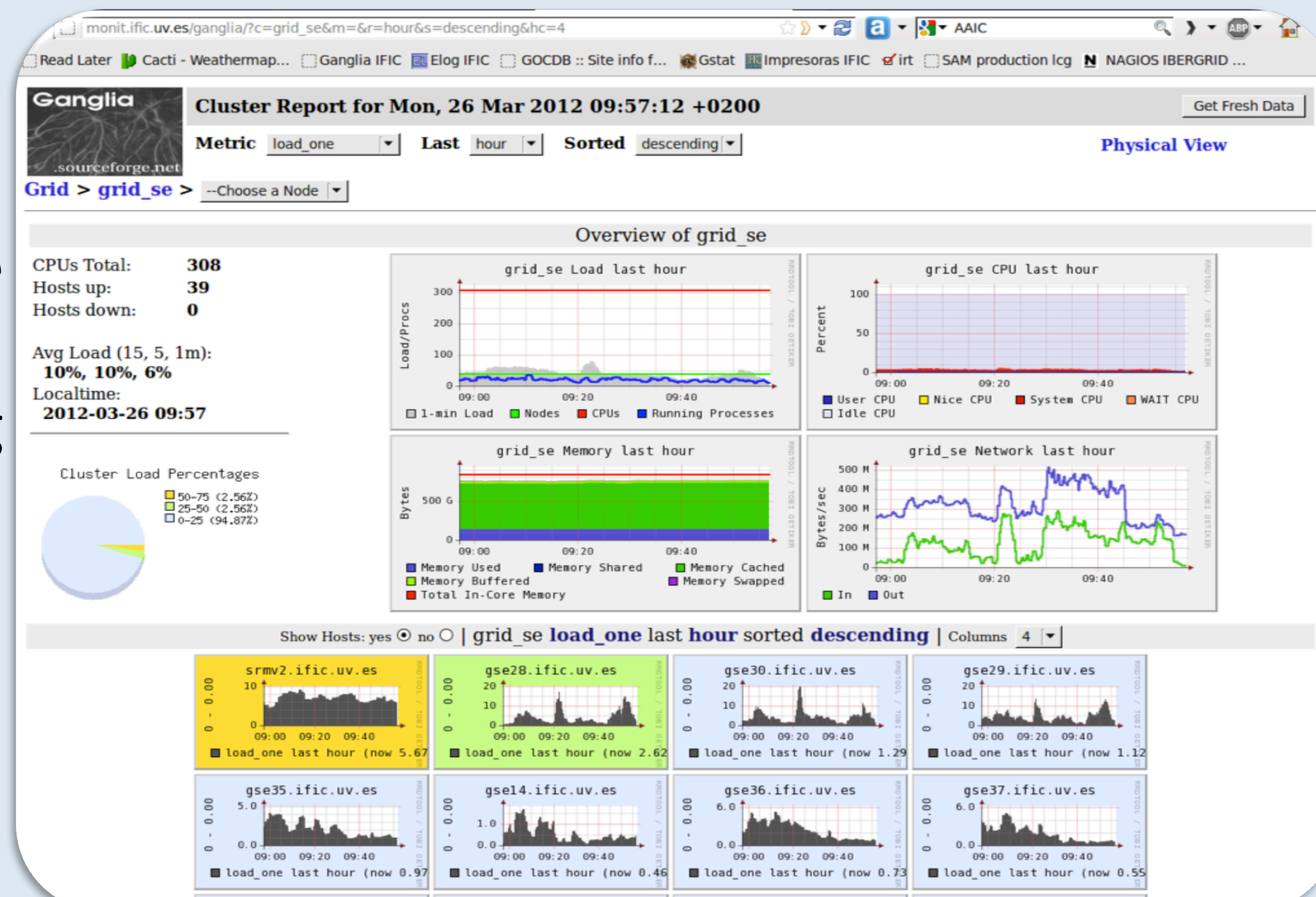
- Around 100 TB → 60 TB under DDM control + 40 TB under IFIC control.
- ATLAS space token dedicated to Tier-3, ATLASLOCALGROUPDISK.
- To manage local users' data it has an area on a SE but points to non-pledged space.



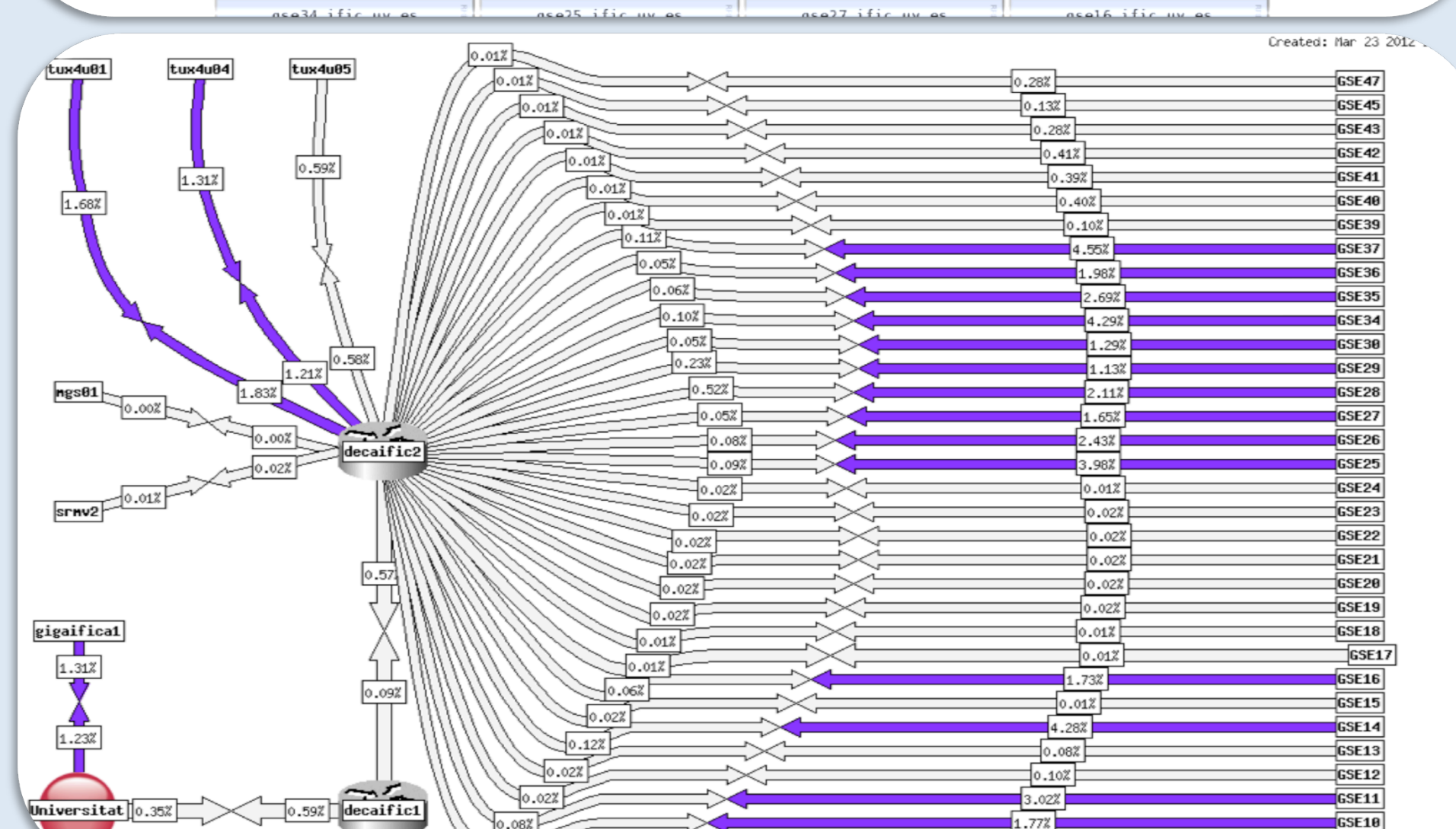
Monitoring

Tools used for monitoring are the same for the entire infrastructure.

To monitor data transfers we are using **CACTI** as a tool for checking links to data servers.



For node monitoring, including computing and storage, we are using **GANGLIA**.



Co-existence with other scientific applications

The Tier-3 is part of the e-Science environment of IFIC, which consists of two infrastructures targeting both scientific and technological applications: ATLAS Tier-2 and GRID-CSIC.

GRID-CSIC provides:

- distributed computing and storage resources
- emphasis in multidisciplinary projects.

The **experience** acquired by the ATLAS Tier-3 is being **exported to other physics groups**: neutrino physics, medical physics (in particular, hadron therapy), medical imaging, lattice QCD calculations, nuclear physics, etc.

The **most demanding parts** of the infrastructure are as **isolated** as possible to prevent interferences. For example, disk pools are different for the different projects.

