SÃO PAULO ATLAS Tier 2

Marco Leite
Feb 17th 2021
ATLAS ICB meeting

USP
Universidade
de São Paulo

This will be part of the WLGC Latin America Federation

- MoU with WLGC signed in 2013

  - LHC sites currently operating under this agreement :

    - CBPF   (BR, LHCb) **ROC-LA**
    - UTFSM (Chile, ATLAS)
    - USP   (BR, Alice)
    - USP   (BR, ATLAS)
    - ICN-UNAM (Mexico, Alice)
    - SUPERCOMPUTO-UNAM (Mexico, Alice)
    - UERJ (BR, CMS)

  - and few others outside LHC experiments

WORLDWIDE LHC COMPUTING GRID COLLABORATION

Centro Latino-Americano de Física (CLAF)

and

The European Organization for Nuclear Research (CERN)

declare that they agree on this Memorandum of Understanding for collaboration in the deployment and exploitation of the Worldwide LHC Computing Grid.

Done in   Rio de Janeiro, Brazil   Done in   Geneva, Switzerland

on   17/09/13   on   4/09/13

For the Centro Latino-Americano de Física   For CERN
(CLAF)

Carlos Trallero-Giner   Sergio Bertolucci
CLAF Director   Director of Research
and Scientific Computing

Signatories shall note that notwithstanding that stated in the MoU, the General Conditions for Experiments Performed at CERN have binding effect since 20 February 2008.

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Deployment of an ATLAS T2 at Sao Paulo University

- São Paulo ATLAS T2 system specs in deployment :

  - Working nodes :
    - 300 CPUs (Xeon E5-2650)
    - Form Factor : HP DL 360
    - RAM: 4 GB/WN
    - Total HepSpec: ~ 3k

  - Storage :
    - 200 TB
    - Raid5

  - Internal network
    - 10GB Ethernet

- Part of a larger cluster serving as an ALICE T2
  - In operation since 2013 (profit from experience)
  - 98% uptime as an ALICE T2
  - 2048 working nodes (Alice+ATLAS+Local) ...
  - ... in 64 blades in 4 enclosures
  - 2 Servers for 1 PB storage (total)
  - 1 FTE (permanent staff) dedicated for ATLAS+Alice cluster management
  - Hosted in the datacenter infrastructure of USP Physics Institute (AC, Generator, Network etc.)

- Services
  - HTCondor (OK)
  - Grid setup (OK)
  - EOS setup (ongoing...)
  - Should sometime soon be exercised with hammer-cloud jobs

CRIC output of University of São Paulo (SAMPA) site

Research Network Map in Brazil

- External Network connection
  - 2x10Gb dedicated fiber links to the University Point of Entry
  - connected to LHCONE
  - main link through US (100Gb)
  - low occupancy
  - globus-url-copy performing at ~1Gb/s speeds (in production environment, so this test shares BW with the running ALICE site)

- We *should* be able to pump (in/out) more data through it ...
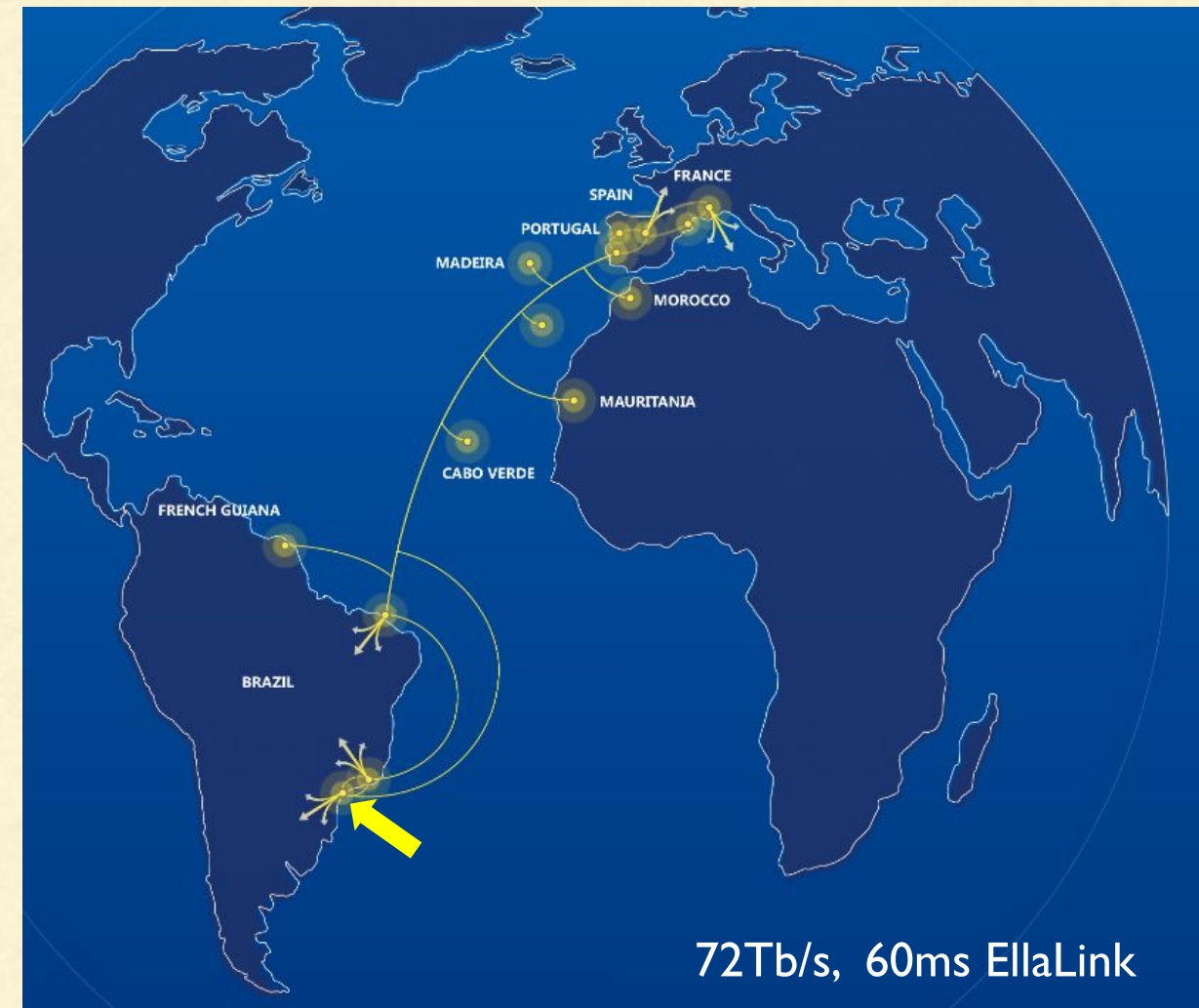 - Currently evaluating how we can do it

https://www.rnp.br/sistema-rnp/ferramentas/panorama-de-trafego
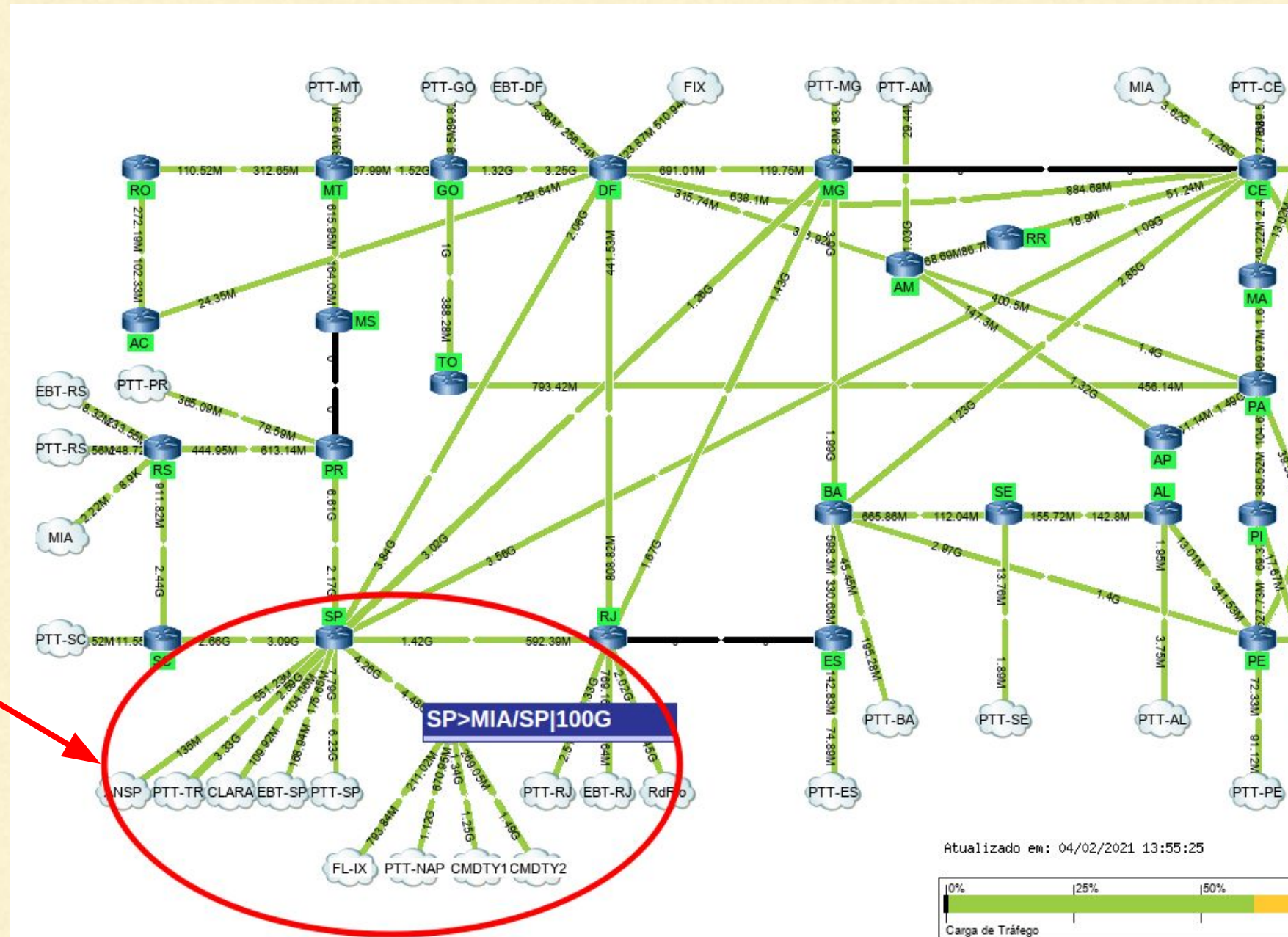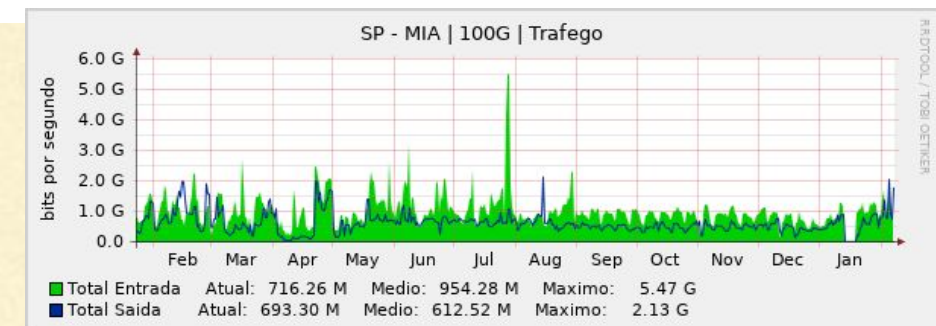
Plans for the (near) future

- Priority: get everything working & stable …

- We have put a grant proposal to expand the system for ATLAS and ALICE
  - Part of a much larger/broader research proposal
  - 1st phase: creates room for expansion (more enclosures for WN, Storage, 100G Network)
  - With FA, long & difficult process ahead (as usual ...)

- We also think it makes sense to have a local Stratum-1 CVMFS
  - It could serve all LA sites .
  - Not a huge investment, but will need specific funding & coordination with other LA sites .

- This year (2021) a direct transatlantic optical link to Europe will start operation
  - We are not (yet) BW limited, but this is a very welcome upgrade.

- A very special thank you to R. Romão (USP), A. Pages (IFAE) and H. Holters (LIP) for all the work .

72Tb/s, 60ms EllaLink

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