Centre de Calcul de l'Institut National de Physique Nucléaire et de Physique des Particules

中國科學院高能物理研究所
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Computing for HEP experiments

On behalf of:

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IN2P3: Fabio Hernandez, Ghita Rahal, Vanessa Hamar, Eric Fede, Andreï Tsaregorotdsev

CCIN2P3

Computing Platforms R&D

- Collaboration initiated in 2007, continuously followed and enriched.
- Goals:
  - Share know-how and explore new technologies in the framework of big data centres.
  - Serve a community of users with similar needs

2018 activities and achievements

Dissemination activities

- 8th Dirac workshop
  - More users and groups installing or evaluating the product
    - IHEP: BESIII, Juno, CEPC
    - IN2P3: FG-DIRAC, DIRAC4EGI,….
    - Ongoing evaluations for Auger, ELI, NICA, Virgo

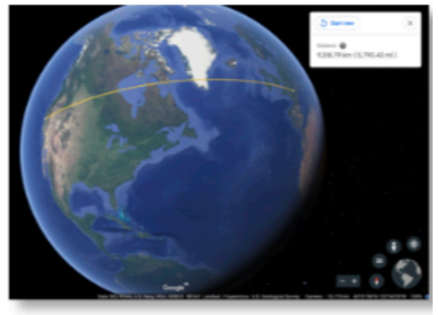
Andreï Tsaregorotdsev

Connectivity and Data exchange

- Improving transferts tools for bulk inter-site transfer over long distance networks
  - Acquiring experience by exchanging simulated LSST data between CC-IN2P3 and NERSC (Berkeley, USA).
    - Need to demonstrate the capacity of importing 20TB of Raw data per night from NCSA
      - NCSA is 110ms-RTT far from CC-IN2P3
      - Allocated bandwidth between NCSA and CC-IN2P3: 20Gbps
        - ➡ Bottleneck link is currently 10Gbps
        - ➡ Expecting an upgrade to 20Gbps coming …. soon
  - Currently exercising this with NERSC (150ms-RTT)

Connectivity and data exchange (cont'd.)

Data flow: **NERSC** (GPFS) → **CC-IN2P3** (GPFS) [3 servers, 4 clients]



Aggregated application-level network throughput: **1.5 GB/s (12 Gbps)**

secure HTTP ⇒ integrity, confidentiality

pull model, disk-to-disk transfer, wide area network, 150ms RTT

Connectivity provided by

RENATER

Courtesy Fabio Hernandez

Deep Learning

- Explore how Machine Learning techniques can be exploited to operate complex storage systems.
  - ==> Presentation from Zhenjing Cheng

2019 and next years plans

- Proceed with our joint activities
  - Continue the long standing collaboration about DIRAC
    - More and more groups are joining thanks to this dissemination action
  - Continue with exploring ML techniques
    - Apply it to other section of data
      - Understanding job schedulers behaviour in the waiting time of the jobs for example
  - Explore new technologies in the framework of DOMA
    - Data Organisation Management Access launched in 2018
      - Exploratory work in CMS/ATLAS framework between IHEP and CC-IN2P3
- No funding was requested for next year on the French side
  - Use residue of 2018 budget

谢谢 Merci

Next presentation: Zhenjing Cheng