HPC projects in ALICE

Costin.Grigoras@cern.ch

Project #1 - **CCIPL**

- Supported by the framework CPER «Contrat de Plan Etat-Region»

  - Funding request to «Region Pays de La Loire»

  - 300K € for 5 years

- In collaboration with **CCIPL** Nantes - *Le Centre de calcul intensif des Pays de la Loire*

  - A **10Tflops** computing centre

CCIPL parameters

- **CCIPL** will host the additional CPUs and ALICE will be able to use also 'unused' cycles on their current system

- Installation and support of the system by Subatech (J-M Barbet)

CCIPL - status

- Prototype installed by Jean-Michel
  - Direct batch submission
  - No storage at the centre
  - Entirely external support

- VO-box and test machines installed
  - Already visible in MonALISA: *Subatech_CCPIL*

CCIPL – work points

- Configuring the batch system and sandbox

- Potentially no *CVMFS* at the final place (**CCIPL**)

- Work is continuing at normal pace

Project #2 – Titan

- **20Pflop** supercomputer, 18688 machines
  - x16 AMD Opteron cores = ~300K cores
  - 2GB RAM/core
  - One NVIDIA K20 Tesla card / box

- Located at *Oak Ridge*, home of the new US (replacement of LLNL) T2 centre

- 'Free' resources (in addition to the T2 allocation), potentially up to **10% of the Titan capacity**
  - Use comes with some limitations

Titan - limitations

- Limited network
  - No incoming connectivity
  - Limited bandwidth for outgoing connections
  - Infinitely better wrt initial plan!

- Access to batch through specific interface
  - Titan likes PanDA (ATLAS) for job management

Titan - specifics

- AliEn – PanDA interface
  - Prepared by Andrey Kondratyev (JINR)
  - Two PanDA test instances, @Amazon, @JINR
  - `hello world` job submission OK
  - There is a bit of manual work involved on the border PanDA/**Titan**

- **Titan** job specifics
  - Only suitable for **MC** jobs
  - Strict time limits for execution – undefined, known only at job start
  - Access to **Titan** strictly regulated

Titan – Ongoing activities

- Getting expert access to **Titan**
  - login and test on the system itself

- Test the application code on 'Titan-like' machine (*Supada Laosooksathit – ORNL*)
  - Tried with ROOT/AliRoot/G3 combo and existing production setup
  - Did not work (suspect too early compiler)
  - Waiting for same code to be compiled with modern *gcc*

Titan – more work

- Preparing a 'full node' *JobAgent*
  - **Titan** is providing entire node per submission

  - Miguel is implementing it in Java ;-)

- Specific payload JDLs for **Titan**

  - Explicit target SE for output data

  - To be combined with the newly available 3rd party transfer methods

Summary

- Two HPC projects in ALICE
  - **CCIPS**, supported by Subatech, Nantes
  - **Titan**, supported by ORNL, Tennessee

- The projects have specific technical hurdles to overcome
  - No show stoppers so far, good progress on both in parallel

- Expecting production environment ready (even if not full steam) by end of year