

“The HEP Cloud Facility: elastic computing for High Energy Physics” Outline

- Computing Facilities for HEP need to evolve to address the new needs of the field. Drivers are Capacity, Cost, and Elasticity
- HEPCloud is envisioned as a portal to an ecosystem of diverse computing resources commercial or academic
- The basic idea is to add disparate resources (HPC slots, Cloud VM, OSG nodes, local resources) into an HTCondor pool
- HEP Cloud is taking early steps to adapt HTC workflows to HPC facilities and has demonstrated integration with Commercial clouds (AWS)
- Integration challenges are many, in particular resource provisioning at scale / cost and providing services on-demand
- HEP Cloud has demonstrated the feasibility of using commercial clouds for 3 use cases: CMS, NOvA, and DES.
- CMS has run workflows at 60k slots for 2 weeks, corresponding to a 25% increase to the global resources available to the experiment
- NOvA has run data intensive jobs at 7,3k slots, almost 4x their dedicated slots at Fermilab
- Costs in the cloud are discussed and range from 1.4 to 3.0 cents per core hour, compared to an on-premises cost of 0.9 cents per core hour.