Integration of Titan supercomputer at OLCF with ATLAS production system

Outline

- Introduction and motivation
- ATLAS ProdSys and PanDA workload management system (WMS)
- PanDA setup for integration with Titan
- Results
- Summary
We completed integration of Titan supercomputer at OLCF with PanDA and ATLAS production system in 2015, as a part of US DOE ASCR funded research project - “BigPanDA”

Tasks for Titan are submitted via ATLAS Production System (ProdSys 2).

Job submission and data movement between Titan and ATLAS Grid are fully automatic.

In 2015 Titan was officially validated by the ATLAS to run Geant4 simulations.

Since June 2015 we are running ATLAS Geant4 production tasks on Titan continuously.

Pure backfill operation, running multiple multi-job pilots with MPI wrappers (currently up to 76800 cores).

From September 2015 to October 2016, ATLAS consumed ~61M Titan core hours, ~1.8M detector simulation jobs were completed, ~132M events processed.

We have shown that we can improve overall Titan utilization by ~2%, while consuming up to ~27% of otherwise unutilized resources, all without negatively impacting Titan’s operation and other users on Titan.

In July 2016 DOE ASCR has funded BigPanDA for another 2 years, to expand operations on Titan.