HPC resource integration into CMS Computing via HEPCloud
Dirk Hufnagel (FNAL)
for CMS Offline&Computing and FNAL HEPCloud Team

Why HPC ? Why now ?

The LHC experiments have their own computing infrastructures which have been successfully used during Run1 and Run2 of LHC. Why are we looking at using HPC sites to complement our own resources now? The reason is resource extrapolations for the planned LHC upgrade to the HL-LHC.

HEPCloud is envisioned as a portal to an ecosystem of diverse computing resources, commercial or academic. It will provide “complete solutions” to users, with agreed-upon levels of service. It will route to local or remote resources based on workflow requirements, cost, and efficiency of accessing various resources. USCMS is planning to use HEPCloud to provide access for CMS to US HPC.

What is HEPCloud ?

HEPCloud is planned to go into operations later in 2018. CMS has been using the existing HEPCloud prototype to send production jobs to NERSC since May 2018.

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Summary and Outlook

NERSC is currently usable for (almost) all CMS workflows. This means CMS can run it’s highest priority workflows at NERSC as needed. If another workflow with even higher priority needs to be run, switching to it is automatic within a short time window (like at any other CMS resource).

CMS has full flexibility in what jobs it can run at NERSC. Due to the tight integration into our production system, (almost) any workflow can end up running jobs at NERSC. The plot to the left shows some of the campaigns and workflows that had jobs at NERSC in the last 2 weeks (not all shown here, but almost 50 workflows in total).

Next steps are to increase scale of operations at NERSC and to add more HPC sites to also run CMS production jobs (XSEDE Bridges and Stampede2 are very close).