

The next generation PanDA Pilot for and beyond the ATLAS experiment

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The Production and Distributed Analysis system (PanDA) is a pilot-based workload management system that was originally designed for the ATLAS Experiment at the LHC to operate on grid sites. Since the coming LHC data taking runs will require more resources than grid computing alone can provide, the various LHC experiments are engaged in an ambitious program to extend the computing model to include opportunistically used resources such as High Performance Computers (HPCs), clouds and volunteer computers. To this end, PanDA is being extended beyond grids and ATLAS to be used on the new types of resources as well as by other experiments. A new key component is being developed, the next generation PanDA Pilot (Pilot 2). Pilot 2 is a complete rewrite of the original PanDA Pilot which has been used in the ATLAS Experiment for over a decade. The new Pilot architecture follows a component-based approach which improves system flexibility, enables a clear workflow control, evolves the system according to modern functional use-cases to facilitate coming feature requests from new and old PanDA users.

The paper describes Pilot 2, its architecture and place in the PanDA hierarchy. Furthermore, its ability to be used either as a command tool or through APIs is explained, as well as how its workflows and components are being streamlined for usage on both grids and opportunistically used resources for and beyond the ATLAS experiment.

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