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Containers usage on the ATLAS grid infrastructure

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Containerization is a lightweight form of virtualization that allows reproducibility and isolation responding to a number of long standing use cases in running the ATLAS software on the grid. The development of Singularity in particular with the capability to run as a standalone executable allows for containers to be integrated in the ATLAS (and other experiments) submission framework. Operating System upgrades, data and software preservation, users' development cycle, software distribution at sites that don't have middleware and cvmfs, and isolation of the payload from the pilot environment are all use cases which can find a solution in using containers. While singularity seems easy enough to run, the variety of grid sites configurations and workflows still makes it a challenge to use everywhere seamlessly. As usual the answer is to maintain a flexible system. This paper will describe the deployment of containers in the ATLAS experiment.

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