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Cloud-based grid computing services for the Belle II and ATLAS experiments at the University of Melbourne

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The grid storage at Melbourne has been provided by a Disk Pool Manager (DPM) storage system which is now reaching the end of software support this year, as well as the end of the disk lifetimes. Additionally the IBM Jet cluster that provided compute for ATLAS at Melbourne has also had to be turned off due to hardware failures.

Continuing to provide grid storage and compute for the ATLAS and Belle II experiments requires that we move to new solutions; ones that can be supported with minimal manpower and funding by taking advantage of existing resources at Melbourne. At Melbourne the Research Computing Services (RCS) provides scalable common resources across the university faculties, as well as expertise and support. This includes the Melbourne Research Cloud (MRC) using OpenStack, and a separate S3-compatible endpoint powered by a RADOS Gateway (RGW) providing access to a Ceph object store.

Based on experience from the University of Victoria Canada (U. Vic.) we have created a Dynamic Federations project (Dynafed) frontend server on the MRC to provide a WebDAV interface to the S3 endpoint for the Belle II experiment. This model leaves the installation and maintenance of all hardware, the Ceph cluster, and the RADOS Gateway under the control of the RCS team while the grid group maintains the virtual machines handling grid requests. In addition we are investigating the creation of a HTCondor node to submit ATLAS grid jobs to VMs in the MRC, in a comparable way to the Belle II jobs currently being submitted by U. Vic. to our cloud. We describe the implementation details and various challenges for these services in the future.

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