



Contribution ID: 148

Type: **Presentation**

Forget 2020: Building an integrated AARNet Cloud Ecosystem in 2021

Tuesday 26 January 2021 09:00 (15 minutes)

2020 has been a terrible year for everyone and has delivered significant challenges for AARNet (Australia's Academic Research Network provider) in the delivery of online researcher facing services. A surge in demand across multiple services from March onwards has kept the operational teams busy, while online-only work practices initially slowed our development activities. However AARNet have embraced these challenges by starting the build on a more comprehensive cloud ecosystem that extends the research value of AARNet's CloudStor, and has laid the foundations for a productive 2021.

The AARNet Cloud Ecosystem (working title) brings together compute, storage and data movement across a range of services. At the foundation layer are three separate file storage platforms: CloudStor which provides EFSS services, as well as SWAN Jupyter Notebooks compute capability; S3 Storage providing direct high performance disk storage; and Sensitive Data providing isolated high security sensitive data storage and management services in an ownCloud/EOS stack. Integrated with these storage platforms are multiple OpenStack based compute platforms providing PAAS+ hosting services for high value research community applications such as the Galaxy bioinformatics suite. Then, to provide long term low cost storage services we are implementing a tape based Cold Storage service, based on the CERN Tape Archive (CTA) platform. And finally, to enhance our data movement capabilities and make the most out of our network, we are licensing Globus Data Transfer for our research customers and plan to integrate it into our Cloud Ecosystem.

This talk will discuss the business drivers, the high level architecture and the logistical challenges of delivering this scaled up service ecosystem. It will also discuss the value of the multiple technologies used to build and deploy the services (OpenStack, Terraform, Kubernetes, etc). It will finish with highlighting the importance of the REVA storage driver and the CS3 APIs as they are being implemented by our software partners, and the opportunity this program of work represents for AARNet's integration with the EU Science Mesh.

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Session Classification: Novel Data Science Environments

Track Classification: Main session: User Voice: Novel Applications, Data Science Environments & Open Data