# THETA

The Higher Education Technology Agenda

# Network futures: AARNet4, Science DMZ and SDN

As a National R&E Network (NREN) operator, our goal is to render the network invisible: it should function so well and seamlessly that our users need no longer even think about it.

But regardless of our ongoing efforts towards achieving this, the network is now only part of the solution when it comes to providing a useful service to our users, whether they be in the domains of research, teaching & learning or support. Compute power and storage are necessary additional building blocks to create the infrastructure which our users now require a daily basis. And for that infrastructure to be used to its full potential, it is equally necessary for software tools to be developed and the right people and practices put in place.

AARNet, Australia's Academic and Research Network, has been for some time testing and developing different combinations of these various elements: network, compute, storage, tools and people. This talk will present some of the successes and challenges we have encountered to date:

- Network: a review of progress on the AARNet4 100Gbps network backbone upgrade
- Network+storage: deployment of the "Science DMZ" architecture, and learning from the take-up thus far,
- Network+tools: rolling out the international AARNet SDN testbed with some exciting initial test-cases,
- Network+compute+storage: examining various attempts to better integrate the network with OpenStack, from the sublime to the ridiculous,
- People+tools: attempting to simplify migrations of our customers to the cloud,
- People+practices: supporting collaborative efforts between NRENs and eResearch organisations to better pool our collective resources.

To close, some promising future directions will be proposed.

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