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NCI InfiniCloud: Extending high performance InfiniBand capabilities in the NCI OpenStack Clouds

NCI operates compute resources on the Raijin supercomputer and a number of OpenStack based Cloud facilities which provide a variety of flavours of HPC capabilities for Australian researchers.

The existing NCI HPC and Cloud offerings differ in their I/O capabilities. With HPC providing high speed InfiniBand connected storage and interprocess communication and Cloud traditionally using locally connect solid state disks and Ethernet based interprocess communication.

To support a more homogenous mix of capabilities the NCP Cloud team have extended the HPC InfiniBand fabric into Virtual Machine instances enabling flexible resource provisioning for Cloud while supporting a common framework shared with the Raijin supercomputer for high speed communications and storage access.


Using the RDMA capabilities of Infiniband combined with an intercontinental fabric connection, large datasets transfers of bioinformatics at around 9 Mbytes/s between Australia and Singapore has been demonstrated.

Andrew Howard and Jakub Chrzesczyk
National Computational Infrastructure

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