Space
.intersect.org.au

Deep**Space**
Archive and preserve data assets

What is Deep**Space**?

Deep**Space** is a low cost storage solution for researchers requiring long-term networked data storage. It is ideally suited for large amounts of data and complete collections or published datasets that are accessed infrequently. **Deep**Space optimises for maximum retention integrity by trading off retrieval performance to keep costs lower than Intersect **Space**Shuttle and **Space**Lab active storage. Three synced copies of your data are stored on tape and disk at two different locations, so you can be confident of integrity and security.

Who is it for?

Individual researchers or groups (for example, faculties, facilities or institutions) with datasets requiring highest fidelity retention, publication citation, digital object referenceability, or massive scale for infrequent access/download. Deep**Space** forms a crucial part of responsible data management planning, particularly to archive published datasets at the end of their research cycle, and can be relied on to outlast consumer grade products or in-house file servers.

Why use Deep**Space**?

With Deep**Space**, you can:

- Transfer data via the dedicated high-speed AARNet.edu.au optical fibre network with no ingress or egress charges between AARNet destinations.
- Effortlessly scale to petabytes of storage.
- Manage access to your data safely and securely, typically using your own organisation's credentials.
- Share simply and seamlessly with people across organisational boundaries.
- Optionally arrange and purchase offline tape archive copies of your data.

How does it work?

Deep**Space** provides a suite of tools to help relocate your data with integrity. Move your data - *confidently* - to and from active storage by leveraging AsperaSoft FASP™ transfer technology with built-in payload checksumming for reliability (learn more at asperasoft.com).

Transfer

- Transfer information at maximum speed using state-of-the-art network protocols for high volume data.
- Transmit securely using AES-128 data encryption, with the confidence that your data remains private over the wire.
- Automate workflows using scriptable command line tools (optional).
- Automate integrity checking to be sure that what you wrote is what is stored.

INTERSECT

Store

- Your data is securely held in Tier 3 data locations in Sydney, with the highest levels of accredited security, availability and reliability.
- It is kept safe by industrial-grade storage with three synchronised copies of your data written to tape at two locations.
- Intersect is a Not-For-Profit organisation operated by NSW and ACT Universities with all data stored on Australian soil under NSW jurisdiction to preserve data sovereignty.

Manage

- Manage your own data using a convenient self-serve web browser interface.
- Control who has access to your data autonomously.
- Sync data regularly using delta-only transmission technology to save time and bandwidth.
- Integrate your applications using Aspera SDK web service APIs (REST and SOAP) and native libraries for Java, .NET, and C++.

Minimum Requirements

- Windows: 7+; Mac OS X 10.7+; Linux 64-bit
- Firefox 27+, Google Chrome 32+, Internet Explorer 8+, Safari 7+
- Optional Linux ssh command line implementation
- AAF account for authentication. Access for non-AAF members available through your affiliated university/institution via the AAF Virtual Home, aaf.edu.au/technical/vho
- Network ports: tcp/33001 (FASP), udp/33001 (FASP).

Nominal Performance

- Interconnect speeds: AARNet: 10 Gigabits per second (Gb/s), Orange.intersect.org.au: 10 Gb/s, Institution: 1 Gb/s, 10 Gb/s and 40 Gb/s, Amazon Web Services: 10 Gb/s
- Intersect uses the Science DMZ network model, a high performance, high bandwidth architecture optimising data transfers (10 Gb/s and up)
- Storage capacity: up to 50 Petabytes
- Active tape data rate: up to 1.28 Gigabits/s throughput

Note: All figures are rated maximums. Actual performance will vary depending on local technical constraints.

How do I get started with Deep**Space**?

- Contact your friendly local Intersect eResearch Analyst via Energy.intersect.org.au/era or email us at Space@intersect.org.au
- Pricing and subsidy information available at Space.intersect.org.au/rates
- Learn from the user guide and use cases at Space.intersect.org.au/deepspace
- Information about our other Space products is available at Space.intersect.org.au

Archiving published data sets for re-use: powered by Deep**Space**

Scenario

- Researcher A has completed his/her research project and needs to store their datasets in a secure environment that enables either access by nominated researchers or open access and download of the data for reuse.

Solution
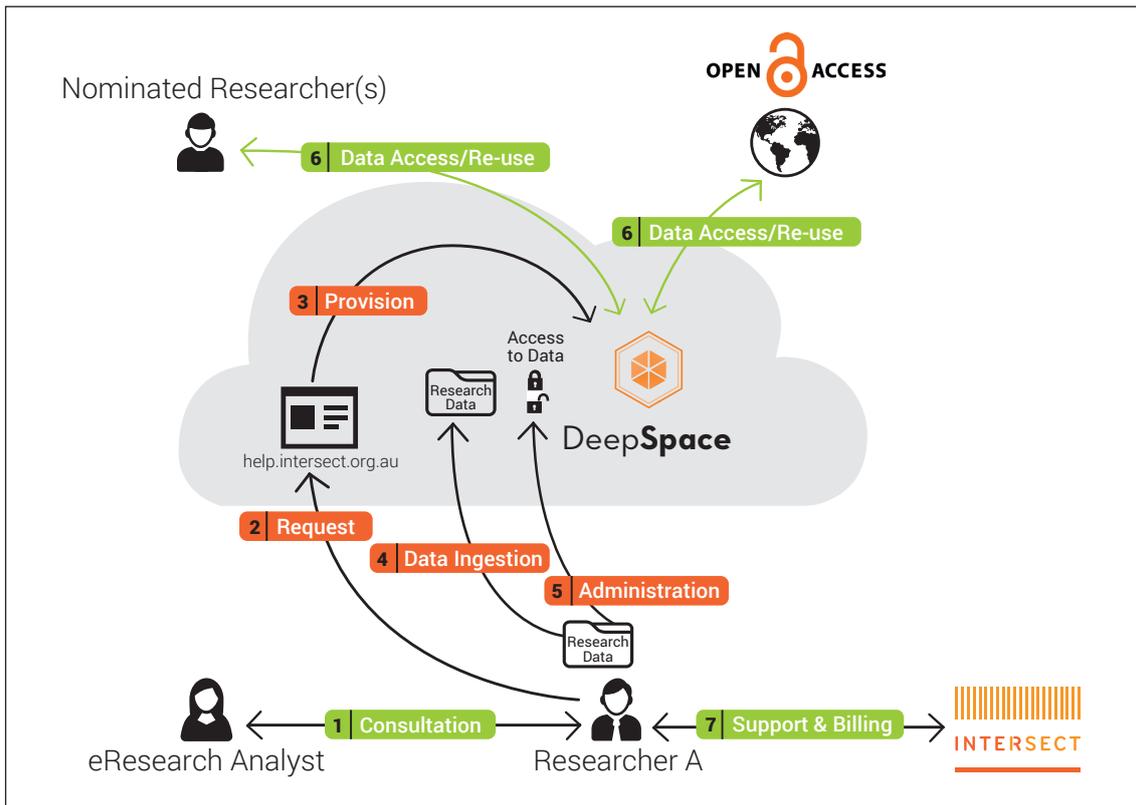
1 Consultation		Researcher A discusses his/her research data archiving and access requirements with an Intersect eResearch Analyst and they select Deep**Space**.
2 Request		Researcher A orders a Space Plan from help.intersect.org.au.
3 Provision		Intersect provisions Deep**Space** cloud storage.
4 Data Ingestion		Researcher A uploads data to Deep**Space**.
5 Administration		Researcher A assigns sharing permissions (security) to nominated researchers or enables open access.
6 Data Access/Re-use		Nominated researchers access/download the research data using their organisational credentials via the Australian Access Federation (AAF). If open access, any person may access/download the data.
7 Support & Billing		Researcher A obtains ongoing support from help.intersect.org.au and pays for monthly consumption of Deep**Space**, or arrange payment through their organisational Space Plan.

DeepSpace
Archive and preserve data assets

Case Study

hdl.handle.net/10453/28084

The PRS Mani collection - *New perspectives on the Indonesian and Indian struggles for Independence and Decolonisation in the Indian Ocean.* Arts and Social Sciences, University of Technology, Sydney

The PRS Mani collection documents the struggle for independence in South and South-East Asia. Mani was an Indian journalist in the British Army in Indonesia at the time during which India and Indonesia were seeking independence. The collection includes 1,000 items (army dispatches, diaries, correspondence, photographs, excerpts from newspapers and published works) which were bequested to, digitised by and arranged by Professor Heather Goodall at UTS.

Intersect's Deep**Space** provides a long-term home for the high-resolution digitised objects and a mechanism for the dispersal of these to researchers in India, Indonesia, Australia and around the world.

Space Travel

Which **Space** product do I need?

	SpaceShuttle	**Space**Lab	Deep**Space**
Media	Disk + tape	Disk + tape	Tape
Number of copies	2 copies	2 copies	3 synced copies on different media at different locations
Frequency use of data	Frequently written and read data within an active research project. BYO compute and application.	Frequently written and read data within an active research project that comes with cloud computing. BYO application.	Datasets requiring highest integrity retention, publication citation or digital object referencing, or massive scale for infrequent access/download.
Access mechanisms	Aspera Shares 1.9.2, Aspera Faspex, Aspera CLI, sFTP, GridFTP, WebDAVs.	VM NFS mount from: Time.intersect.org.au or other compute cloud.	Aspera Shares 1.9.2, Aspera Faspex, Aspera CLI, sFTP, GridFTP, WebDAVs.
Designed for active HPC or cloud application I/O	yes	yes	no

Help.intersect.org.au

To make your research life easier we offer a simple one-stop researcher experience called Help.intersect.org.au. By visiting or emailing our helpdesk, you can let us know about a problem, ask for help, order Space storage or Time compute, or find information. You can get started by signing in with your own credentials through the Australian Access Federation (for participating organisations).

Follow us on:
twitter.com/@IntersectAust for news and general updates
twitter.com/@IntersectOps for status and maintenance updates

INTERSECT