



Australian Research Data Commons

REQUEST FOR PROPOSAL

DRAFT Version 1

Delivery of eResearch Infrastructure:
ARDC's Nectar Research Cloud Capacity
Maintenance

PART A - BRIEF

Table of Contents

Introduction	5
Vision and Values	5
ARDC Funding and Context	5
This Request for Proposals (RFP)	5
The ARDC	6
Governance	6
Implementation	6
Expected Outcomes	6
RFP Terms & Conditions	6
Probity	7
Conflict of Interest	7
Information in this RFP Process	7
Influence	7
Addenda	8
Briefings	8
Proposal Preparation Queries	8
Response to RFP	8
Disclaimer	9
Project Management	10
Methodology	10
Project Governance Body	10
Project Manager Role	10
Governance in a Multi-party Project	10
Reporting	11
Change Management	11
Acceptance Criteria	11
Acceptance Tests	12
Financial	12
Funding Estimate Guidelines	12
Milestones	12
Milestone Approval	13
Co-Investment	13
Cost Recovery	13

Publicity & Mutual Support	14
Overview	14
Promotion	14
Communications Plan	14
Final Certification	14
Practical Completion	14
Acronym List & Glossary of Terms	16
Acronym List	16
Glossary of Terms	17

Project: ARDC's Nectar Research Cloud Capacity Maintenance

Abstract: The ARDC's Nectar Research Cloud is funded by the Australian Government's Department of Education and Training as a national research infrastructure initiative to implement collaboration infrastructure for the use of the Australian research community. A significant proportion of the ARDC's Nectar Research Cloud has reached the end of its useful life and is due for replacement. The ARDC as the Lead Agent is calling for Proposals from organisations to deliver eResearch infrastructure service capability that will maintain the current capacity of the Nectar Research Cloud to benefit the wider research community.

Contents:	<u>Part A</u>	<u>Brief (this document)</u>
	Part B	Program Documentation - Research Cloud
	Part C	Proposed Subcontractor Agreement (to be provided prior to submission date)
	Part D	Proposal Submission
	<i>Attachment 1</i>	<i>Research Cloud Specifications</i>

Groups interested in participating in the ARDC's Nectar Research Cloud RFP activity are strongly encouraged to [register their interest](#) online. Registration will ensure that you are included on any RFP communications and updates during the term of the RFP Process. Registration does not confer any obligation to submit a proposal.

Section 1 Introduction

1.1 Vision and Values

The ARDC Research Cloud aims to enhance research collaboration and research outcomes by providing Information and Communication Technology (ICT) infrastructure that:

- Creates new information-centric research capabilities;
- Significantly simplifies the combining of instruments, data, computing, and analysis applications; and
- Enables the development of research workflows based on access to multiple resources.
- Builds on and maintains the capacity and capability of the existing ARDC Research Cloud

The intention is to support the so-called "connected researcher" who at the desk-top or the bench-top has access to a full suite of digitally enabled data, analytic and modelling resources, specifically relevant to their research.

1.2 ARDC Funding and Context

In May 2018, the Australian Government announced funding of \$72M through the Research Infrastructure Investment Plan (RIIP) to fund Data Storage and Collaboration Infrastructure under the RDS and Nectar NCRIS projects. A proportion of this funding has been allocated to refreshing ageing Nectar Research Cloud infrastructure in order to maintain its ability to service the research community.

In response to further consultation with the projects and the research community, the Department of Education and Training determined to combine the Nectar, RDS, and ANDS NCRIS projects and to direct this funding through a single funding agreements to a new entity called the Australian Research Data Commons (ARDC).

The ARDC has taken on responsibility for the Nectar components of the NCRIS activities and is intending to maintain and develop the provision of national-scale interoperation and collaboration infrastructure for research. This sits alongside and leverages other significant national research infrastructure investments made through other NCRIS program projects.

1.3 This Request for Proposals (RFP)

The ARDC is requesting proposals from organisations able to provide resources into the ARDC's Nectar Research Cloud, and with established capability in hosting significant ICT infrastructure, for the supply of research cloud compute and storage infrastructure, as part of the ARDC's Storage and Compute program.

A significant proportion of the ARDC's Nectar Research Cloud has reached the end of its useful life and is due for replacement. The aim of the ARDC's Nectar Research Cloud Capacity Maintenance project is to refresh cloud compute and storage infrastructure in the Nectar Research Cloud, thereby maintaining the capacity required to meet the demand for cloud resources from nationally prioritised research activities.

Respondents should read these RFP documents in the context of the [ARDC Strategic Plan](#).

1.4 The ARDC

1.4.1 Governance

The ARDC is Lead Agent for the delivery activities funded by the Department of Education and Training and has overall responsibility for the management and implementation of the ARDC in accordance with reporting and accountability requirements as specified by the Department.

The ARDC Board has been established as an independent body to provide strategic guidance to the ARDC and the ARDC Chief Executive Officer with regards to the ARDC objectives, delivery and progress.

1.4.2 Implementation

The Research Cloud was originally built as a federated infrastructure, delivered by a collaboration of institutions and organisations drawn from across the Australian research community, selected from responses to an open RFP process.

The Nectar Research Cloud Capacity Maintenance project builds on these activities by ensuring the continued availability of high-quality, accessible, and flexible compute and storage resources to Australian researchers, while initiating the development of cloud support models which more accurately reflect contemporary resource availability.

The Nectar Research Cloud Capacity Maintenance project will be enacted through contracts signed between the ARDC (as Lead Agent) and the institutions or organisations that undertake to deploy and operate cloud infrastructure for the project.

1.4.3 Expected Outcomes

At the conclusion of the project, it will have delivered a refresh of the Nectar Research Cloud infrastructure, maintaining the capacity required to meet the needs of nationally prioritised research.

Section 2 RFP Terms & Conditions

Participation in the Proposal Selection Process is subject to compliance with the rules contained in this section and all Proposers are deemed to accept the rules contained herein.

All persons, whether or not they submit a Proposal, having obtained or received this RFP may only use it, and the information contained in it, in compliance with the rules set out in this section.

The rules contained in this section of the RFP apply to:

- The RFP and any other information given, received or made available in connection with the RFP including any additional materials and any revisions or addenda;
- The Proposal Selection Process; and
- Any communications, including any briefings, presentations, meetings or negotiations, relating to the RFP or the Proposal Selection Process.

This RFP is not an offer to create any form of contract.

If there is any inconsistency between any part of this RFP, a descending order of precedence will be accorded to the:

1. Schedules of the sub-contract agreement;
2. Addendum to the Request for Proposal Pack;
3. Proposed sub-contract agreement;
4. Request for Proposal Pack – Part A – RFP Process;
5. Other Parts of the Request for Proposal Pack and Attachments;

so that the provision in the higher ranked document, to the extent of the inconsistency, will prevail.

2.1 Probity

By submitting a proposal, the Proposer consents to the ARDC performing such probity and financial investigations and procedures as it may determine as necessary in relation to the Proposer or any of its associates.

2.2 Conflict of Interest

Any party with a real or perceived conflict of interest must declare that conflict to the ARDC as soon as the conflict is identified. Where a conflict of interest arises, it must be assessed and resolved in favour of the public interest by the relevant parties.

A declaration (in Part D) is required to be made by the Proposer and submitted with its proposal, as to any actual or potential conflict of interest in relation to its potential involvement in the ARDC identified at the date of submission of the proposal, and an undertaking given to inform the ARDC of any actual or potential conflicts that may arise after the date of submission of the proposal.

2.3 Information in this RFP Process

All documents submitted by the Proposer in connection with this RFP process become the property of the ARDC in submission.

2.4 Influence

Any Proposer who attempts to exert influence on the outcome of the RFP process by lobbying, directly or indirectly, any ARDC staff will be disqualified from the proposal process.

A Proposer who offers the ARDC staff anything that, in the opinion of the ARDC, could undermine the impartiality of the RFP process, and/or could create an actual or a perceived conflict of interest (including but not limited to offers of gifts, hospitality, and favours), will be disqualified from the proposal process.

2.5 Addenda

ARDC may at any time issue addenda to this RFP to modify or clarify the RFP in any manner whatsoever including as a response to any enquiries from a proposing organisation.

Any changes to the RFP requirements and responses to received questions will be in the form of sequentially numbered addenda.

Addenda will be published to the ARDC [website](#) and sent to the email address which was nominated for communications at the time of registration of interest.

2.6 Briefings

ARDC will undertake a series of briefing sessions to provide information about the RFP and the intention of each of the four programs. The timetable for the meetings will be published on the ARDC [website](#). ARDC will video-record at least one of the earliest meetings for online viewing from the website during the RFP process. Any discussions, questions and answers, at any meeting, that have a material impact to this RFP will be recorded and published online via the [FAQ register](#).

While there will be opportunities to ask questions at the meetings, Proposers are encouraged to provide questions three (3) business days before the consultation webinar, in order that the required information can be made available during the briefing.

Questions should be submitted via the online form on the [RFP webpage](#).

2.7 Proposal Preparation Queries

Proposing organisations are encouraged to ask questions if the content of the RFP Pack is unclear or they identify issues not covered by the provided documentation.

Questions should be submitted via the online form on the [RFP webpage](#), no later than five (5) business days before the Closing Time specified in the timeline (Section D).

The response to the query will be made publicly available online via the [RFP FAQ register](#). The name of the proposer that supplied the query will remain anonymous.

2.8 Response to RFP

Proposals will be provided in the format outlined in Part D of the RFP Pack and shall be valid for a minimum of one hundred and twenty (120) days from the Closing Time specified in the timeline in Part D.

ARDC reserves the right to discuss with any Proposer any matter contained in the Proposal and may contact the Proposer for clarification of any information provided or to request additional information. Should the Proposer fail to submit any of the information requested by the date and time stipulated, ARDC may choose not to consider the Proposal.

If the evaluation of the proposal requires clarification a request will be sent to the contact identified in the proposal and a response will be expected within three (3) business days of the request. If no response is received within the required timeframe the evaluation will continue based on the information provided.

If ARDC considers that there are unintentional errors of form in a proposal, they may request the Proposer to correct or clarify the error but will not permit any material alteration or addition to the proposal.

The Proposer must inform the ARDC promptly in writing of any material change to any of the information contained in the Proposer's submitted proposal, and of any material change in circumstance that may affect the truth, completeness or accuracy of any of the information provided in, or in connection with the Proposal.

2.9 Disclaimer

The ARDC will not in any way be bound by the timeline indicated in Part D of this RFP Pack. It will be under no obligation to respond to or accept any proposals in whole or in part including any pricing, costs or funding requirements specified in the proposals, from any Proposer.

All information included in this RFP is provided in good faith and believed to be reliable. Each Proposer must make its own enquiries about the information provided and shall be deemed to have satisfied itself as to the correctness and sufficiency of this RFP.

Nothing in this RFP requires ARDC to select a Proposal and ARDC reserves the right to discontinue the RFP process (including any subsequent RFP) at any time and for any reason.

By lodging a Proposal, Proposers acknowledge and agree that:

- they will not make any public statement, or provide any information for publication in relation to the acceptance or otherwise of any RFP submission, without the prior written approval of ARDC;
- to the maximum extent permitted by law, neither the ARDC nor its employees, advisers or agents will in any way be liable to any person or entity for any cost, expense, loss, claim or damage arising out of or in connection with this RFP;
- they have not relied on any express or implied warranty or representation made by or on behalf of the ARDC other than as expressly contained in this RFP or an addendum to this RFP;
- they have not received improper assistance from any staff member of the ARDC;
- ARDC may alter this RFP, including its specifications / requirements, structure and timing, at any time and for any reason;
- ARDC may invite additional Proposers to submit an RFP submission at any time;
- they have not colluded with other organisations to inflate funding estimates;
- they understand that proposals will be treated as confidential by ARDC and that ARDC will not disclose Proposal contents and Proposal information, except:
 - as required by law (including, for the avoidance of doubt, as required under the Freedom of Information Act 1982 (Vic) (FOI Act));
 - for the purpose of investigations by the Australian Competition and Consumer Commission or other government authorities having relevant jurisdiction;
 - to external consultants and advisers of ARDC engaged to assist with the Proposal Selection Process;
 - to the Department of Education and Training, at their request and if required, to enable transparency and accountability; and/or
 - general information from Proposers required to be disclosed by government policy and as part of the RFP approval process.

Section 3 Project Management

3.1 Methodology

The project management methodology chosen for the project should be tailored as appropriate for the complexity of the project and at a minimum should include:

- planning including breaking the project into deliverables and milestones;
- monitoring and control processes which enable early identification and rectification of potential problems. These processes will include noting any changes to schedule, budget, scope, quality, risk, issues, stakeholder communications and interdependencies; and
- an appropriate governance framework as agreed with ARDC.

3.2 Project Governance Body

Proposals must specify how they will establish a Project Governance Body, which may be represented by a Steering Committee, to oversee the project and be ultimately accountable for contractual obligations and the successful delivery of the project. The ARDC will provide a “funder’s representative” onto the Project Governance Body.

3.3 Project Manager Role

To aid in efficient and effective communication there is to be at least one skilled and experienced individual at any point in time who has the role of project manager for the project and reports to the Project Governance Body mentioned above. The project manager will be the key point of contact for managing and reporting between ARDC and the project and will have the following responsibilities:

- using an appropriate project management methodology to manage the project;
- escalating risks, issues and changes to the Project Governance Body and the ARDC in a timely way where required;
- reporting to and following direction from the Project Governance Body and ARDC, as appropriate;
- managing the project budget including accurate reporting on actual versus budgeted expenditure; and
- ensuring the accurate and timely completion and delivery to the Project Governance Body and the ARDC of project status reports.

3.4 Governance in a Multi-party Project

For each Proposal ARDC will only sub-contract with one lead party.

Where other organisations are contracted, as opposed to individuals, the governance and steering arrangements need to include all organisations.

3.5 Reporting

Each project manager will submit monthly project status reports to the Project Governance Body. Further, each Project Manager may be required to provide additional reporting as requested to support the ARDC's milestone reporting.

Reports to the ARDC shall follow the Project Status Report template provided by the ARDC. The Project Status Report will be used by ARDC for a number of purposes including: to aid in the management of dependencies between projects; for summarisation in status reporting to ARDC senior management and the Department of Education and Training; and to manage the consolidated ARDC schedule.

3.6 Change Management

ARDC anticipates that projects at times will seek to modify the scope or timing of the project. Any changes must be approved by ARDC where they impact on the project total time, scope, cost, quality or impact other projects or ARDC's strategic or tactical direction.

To achieve this, a Request for Change (RFC) is raised by either the Project Manager or ARDC on the ARDC RFC form, available from the ARDC website, and transmitted via email.

All RFCs will be recorded in the ARDC's nominated change register.

- In the case of an RFC initiated by ARDC, the Project Manager will quantify the impacts of the RFC and agree or negotiate appropriate conditions.
- In the case of an RFC initiated by the Project Manager, the ARDC will accept, reject, or propose a variation to the Change.

If the RFC is accepted by the ARDC and the Project Governance Body, authorised representatives of both parties must sign the RFC or exchange receipted approval emails, which will then act as a change to the latest agreed contract.

3.7 Acceptance Criteria

Acceptance Criteria are criteria for complying with the specifications of an Asset and must be specific, succinct, measurable, and achievable – with pass/fail levels unambiguously defined.

They are used to set design parameters and to develop detailed Acceptance Tests during design and development.

The Acceptance Tests, described below, may refine and elaborate Acceptance Criteria, and may lead to additional Acceptance Criteria. However any changes to the original Acceptance Criteria requires following the Change Management process.

Acceptance Criteria help the ARDC evaluation and selection process by demonstrating clarity of vision and objectives of the deliverables in the proposed project, as well as attention to detail and emphasis on quality.

3.8 Acceptance Tests

Acceptance Tests should comprehensively test each of the Acceptance Criteria on deliverables. Whilst Acceptance Criteria must form part of the proposal, Acceptance Tests can be provided once the proposal has been accepted.

Any failures are indicators of defects, which must be recorded by the project, corrected as soon as possible and re-tested. Any outstanding defects must be corrected before Commissioning and Final Certification will occur. In exceptional circumstances a project may submit a Request for Change to acknowledge a defect that cannot be corrected.

For all Acceptance Tests, Project Managers are required to retain records which must be made available for inspection on request by ARDC.

Section 4 Financial

4.1 Funding Estimate Guidelines

The following guidelines should be observed in preparing the funding estimates requested:

- All funding estimates included in the proposal should be presented in Australian dollars (AUD) exclusive of Goods and Services Tax (GST).
- Where a price is provided for a specific item that will need to be purchased, the proposer should provide an accurate price for that item, not an estimate.
- Where indicative pricing or cost information is provided, any assumptions made by the Proposer in estimating the price or cost should be clearly stated.
- All funding estimates should identify if the source of the funding is expected to be the ARDC funds or the co-investment funds. Estimates must be associated with milestones which clearly define deliverables and acceptance criteria. The estimate for each milestone must show the budget elements broken down by budget item. For example; labour, materials, etc.

The estimate in each Proposal is to be in the form of a Capped Level of Effort price.

This cap is to apply across the whole Proposal, not at individual milestones or deliverable components, where variability against budget estimates is greater than at an overall or consolidated level.

Where savings are made, they are to be reinvested in the project, which requires approval of the Project Governance Bodies and ARDC.

4.2 Milestones

The project must be broken down into milestones for the management of timely delivery and funding. All deliverables must be linked to scheduled milestones.

Each deliverable will be subject to Acceptance Tests against the Acceptance Criteria as outlined under Project Management.

The number of project milestones is not prescribed, and they should be scaled to the size and complexity of the project.

The following subset of the Milestones should be identified in the proposed project plan as Funding Milestones. Funding will be transferred upon successful completion and acceptance of these milestones and any associated deliverables.

1. Proposer approved by ARDC and contract signed: 20% of ARDC funding budget
2. Supplier quote approved by proposer and ARDC: 50% of ARDC funding budget
3. Materials (hardware, software, etc) delivered: 20% of ARDC funding budget
4. Service delivered, acceptance tests accepted by ARDC: 10% of ARDC funding budget

4.3 Milestone Approval

Where a Milestone specifies a deliverable, the deliverable must be completed and subjected to Acceptance Tests before a Milestone can be claimed. The Project Manager will advise ARDC of the date a Milestone was achieved, and report on any Acceptance Tests as appropriate.

ARDC reserves the right to verify the supporting information. When satisfied, ARDC will approve the Milestone and if it is a funding Milestone will transfer the agreed funds.

4.4 Co-Investment

ARDC funds are allocated in the expectation that Proposers will contribute co-investment during the lifetime of the infrastructure, which may include creation and development activities as well as funding the operational activities after the services are commissioned and supported.

ARDC requires at least an equivalent level of co-investment (1:1) to ARDC Funding.

Co-investment is measured over the period that the Proposer agrees to operate the equipment, which should be at least 3 years.

Co-investment can be in the form of cash contributions or in-kind contributions such as:

- engagement and outreach;
- user training increasing the effective use and capability of the infrastructure;
- operational staff and support services;
- ongoing training and other on-charges for staff operating the infrastructure; and
- infrastructure maintenance.

4.5 Cost Recovery

ARDC is partnering with institutions and other organisations to provide cloud resources of maximum use to researchers.

Parallel to this is an intent that the cloud resources are, where needed, underpinned by sustainable funding models which enable continuous improvement, maintenance, and upgrades of infrastructure.

While ARDC is not aiming to develop commercial facilities; it is recognised that there are several business models available which will enable sustainable resources to be provided to researchers. Examples include subscription services, fee for service, user-pays, and direct investment by partners into the sub-contractor.

If the sub-contractor proposes to charge fees for use of the resource the model and fees proposed must be outlined in the proposal. Absence of cost-recovery details will preclude the

sub-contractor from being able to subsequently charge fees for access to the resources without the express approval of the ARDC and an approved cost-recovery business model. Cost recovery of operating expenses will only be permitted for costs exceeding the defined co-investment allocation. Under no circumstances will cost recovery occur for co-investment.

Section 5 Publicity & Mutual Support

5.1 Overview

ARDC intends to publicise the positive aspects of the projects for the benefit of the Research Community, the Commonwealth, ARDC and the subcontractor.

ARDC has a Communications Manager who will be available to assist projects in the completion of their communications plans and activities.

ARDC funds cannot be used for communications activities. Projects should report any expenditure on communications as part of co-investment.

5.2 Promotion

Projects will be required to advise ARDC on upcoming scheduled communications activities.

These obligations extend to providing stories for ARDC's website and e-news and responding to ARDC's requests for information, impact stories, usage levels, etc as and when required.

ARDC logos are obtainable through ARDC. ARDC is able to provide direction to the specific Department of Education and Training authority for obtaining Department of Education Training and NCRIS logos and associated branding guidelines.

5.3 Communications Plan

It is expected that the subcontractor will cooperate at all times in a helpful manner with the ARDC Communications and Engagements team to identify any information or potential opportunities for publicity and promotion.

Section 6 Final Certification

6.1 Practical Completion

The use of RIIP funding by the ARDC may be externally audited. The ARDC would therefore be required to assure the auditors that the subcontractor has spent the funding provided through the ARDC according to ARDC rules in accordance with the Funding Agreement, and that the project has delivered the expected outcomes.

When the Contractor believes the project is completed, they must provide to ARDC:

- a statement that the contracted deliverables (including all necessary documentation) have been delivered to the final agreed specification, that they have passed Acceptance Tests, and that there are no outstanding defects, or any outstanding defects have an approved RFC;

- a statement, signed by the Chief Financial Officer, a Director or an equivalent Executive role in the subcontractor, signing off on the correct and full expenditure of the funds provided through ARDC;
- a completed Asset register entry with the final value of each delivered Asset, using a proforma provided by ARDC.

A Practical Completion Certificate for the project is issued by ARDC as soon as practicable after all these documents have been signed by ARDC.

Section 7 Acronym List & Glossary of Terms

This Section refers to the entire RFP Pack.

7.1 Acronym List

Term	Meaning
AaaS or SaaS	Application as a Service or Software as a Service Instead of buying the application or Software, individuals or groups pay for the use of the application functionality.
AAF	Australian Access Federation
ANDS	Australian National Data Service
ARDC	Australian Research Data Commons
FPP	Final Project Plan
HPC	High Performance Computing
HTC	High Throughput Computing
IaaS	Infrastructure as a Service
ICT	Information and Communication Technology
NCI	National Computational Infrastructure
Nectar	National eResearch Collaboration Tools and Resources
NCRIS	National Collaborative Research Infrastructure Strategy
NRN	National Research Network
PaaS	Platform as a Service
RDSI	Research Data Storage Infrastructure initiative
RIIP	Research Infrastructure Investment Plan
RFC	Request for Change
RFP	Request For Proposal
VL	Virtual Laboratory
VM	Virtual Machine



7.2 Glossary of Terms

Term	Meaning
Acceptance Criteria	The criteria that specify design parameters for each deliverable or service for complying with the Specifications of an Asset.
Acceptance Testing	Tests performed by the Sub-contractor as prescribed by ARDC in order for the Assets to be accepted.
Allocation Committee	An independent group drawn from the wider research community to review requests for use and allocate resources for use on either the Research Cloud or the National Server Program.
ARDC	Australian Research Data Commons
Asset	An Asset is any item of tangible property including but not limited to Deliverables and associated services purchased or created in whole or in part by the Sub-contractor as formally defined in Part C.
Australian Research Community	The Australian Research Community is the collection of all Research Communities in Australia.
CAR	Corrective Action Request issued by ARDC upon a failed Commissioning Test or any other test result.
Closing Time	The due time and date for submission of proposals, as outlined in Part D Section 1.1.
Co-investment	Funding to be provided by a proposing organisation to cover expenditure that is not eligible for ARDC funding. For example, operational and outreach expenditure.
Contractor	See "Sub-contractor."
Contract	See "Sub-contract."
FOR	Field of Research – A structured classification of research disciplines developed as part of the Australia-New Zealand Standard Research Classification (ANZSRC) scheme - http://www.arc.gov.au/applicants/codes.htm .
FPP	Final Project Plan Plan approved by the Department of Education and Training that outlines the execution of the ARDC and forms part of the Funding Agreement.
Funding Agreement	The Funding Agreement is the agreement between the Commonwealth and the ARDC for the execution of the ARDC.
Infrastructure	The term 'Infrastructure' includes hardware and software delivered by the ARDC and used to support the eResearch activity of the Australian research community. The main focus of the 'Infrastructure' will be to enhance the collaboration capabilities of Australian researchers.
NCRIS	National Collaborative Research Infrastructure Strategy
Node	A collection of hardware (CPU, Storage and network) and software (system and middle-ware) in a single location which is connected up as part of a larger federation of computing resources such as the Research Cloud. A node may comprise multiple nearby sites for redundancy.
Project	An independently operated project of the ARDC that is responsible for delivering eResearch infrastructure. Sometimes referred to as a "project" and not to be confused with the "ARDC."
Project Governance Body	A formally constituted group that takes ultimate responsibility for the oversight and delivery of the project outcomes, and directs the Project Manager accordingly.
Proposal	The document written by the Proposer in response to this RFP that describes the functionality and services that they will develop and commission in consideration for the ARDC funding provided by the ARDC in accordance with the terms and conditions defined and requested in this RFP.
Proposer	An organisation which submits a Proposal for consideration for funding under ARDC. The Proposer must be a significant educational institution or research organisation that is able to sign a sub-contracting agreement with the University of Melbourne. The ARDC will not sub-contract with joint ventures or consortiums; where the proposal is put forward by multiple parties, one of the parties will take the lead contractual role. Upon contract signing the Proposer becomes the Sub-contractor.
RC	Research Cloud

	A robust and open platform for deployment of eResearch infrastructure to connect distributed research resources, and a cost effective platform for the provision of computational resources to research communities.
RIIP	Research Infrastructure Investment Plan for capital investment in research infrastructure. The Commonwealth Government's response to the National Research Infrastructure Roadmap.
Research Community	Research Communities are composed of researchers from multiple institutions, including possibly international institutions, and one or more disciplines. Working on a common set of research problems, goals, tools and data.
Request for Proposal	The Request For Proposal is this document, with any current or subsequent attachments.
Service	A software system or infrastructure made available to the Research Community to support collaboration and eResearch.
Sub-contract	A legal agreement between the ARDC and a proposing organisation to deliver eResearch infrastructure as part of the ARDC. In the RFP documentation; the terms Contract, Sub-contract and Memorandum of Understanding will be read as the same; requiring the same operational responsibilities from the two parties to the agreement.
Sub-contractor	The Sub-contractor delivers services and other deliverables (Assets) as a Sub-project of the ARDC. Upon contract signing the Proposer becomes the Sub-Contractor.
Virtual Laboratory	A virtual laboratory connects a range of resources of relevance to a specific research community; these resources might include sensor, instrument, compute, data and visualisation resources.
VM	Virtual Machine An image of a software configuration on which applications can be run as though it were a real machine. With the appropriate middle-wear, multiple virtual machines can be run from a single real machine.



Australian Research Data Commons

REQUEST FOR PROPOSAL

DRAFT Version 1

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PART B – PROGRAM DOCUMENTATION

Table of Contents

Introduction	4
Vision	4
Implementation Strategy	4
Expected Participants	5
Selection Principles	5
Operational Requirements	6
Note regarding existing node Operational Support contracts	6
Solution Specification	6
Operations and Service Levels	7
Access and Pricing	7
Finance and Funding Requirements	8
Available Funding	8
Node benefit	8
Governance	8
Submitting a Proposal	9

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Groups interested in participating in the ARDC's Nectar Research Cloud RFP activity are strongly encouraged to register their [interest online](#). Registration will ensure that you are included on any RFP communications and updates during the term of the RFP Process. Registration does not confer any obligation to submit a proposal.

Section 1 Introduction

1.1 Vision

The ARDC's Nectar Research Cloud (RC) is a key underpinning infrastructure of the ARDC Project. The Nectar Research Cloud is a robust platform for deployment of research applications, including those arising from the ARDC Software and Platforms program.

The ARDC's Nectar Research Cloud also provides cloud-based computational offerings for researchers. As such, the ARDC Research Cloud provides a computational infrastructure which is complementary to existing and future investments in High Performance Computing (HPC) infrastructure. Cloud computing provides a model for the cost-effective delivery of computational resources for non-HPC research computation.

The ARDC's Nectar Research Cloud:

- empowers research communities by providing an open, robust and scalable platform for researchers to deploy, share and manage their research applications;
- provides a robust platform for deployment of ARDC-supported Software and Platforms;
- supports collaboration by providing a single national platform supporting cross-institutional and cross-disciplinary access to applications and facilities;
- supports high data-throughput research applications through co-location of ARDC Cloud Nodes with ARDC Data Sets and Collections Storage Nodes;
- addresses sustainability of eResearch infrastructure by providing a platform in which deployed applications can be seamlessly migrated between service providers, based on de-facto standard APIs;
- provides opportunities for increased federation:
 - Outward with international research cloud infrastructures; and
 - Inward with emerging institutional research cloud offerings.

The ARDC's Nectar Research Cloud is an open and robust platform for deployment and sharing of research applications on a national scale. As such, the RC reduces barriers to the rapid development and sharing of innovative research applications.

1.2 Implementation Strategy

ARDC engages with major international research cloud initiatives to adopt best practice in the deployment of cloud infrastructure to meet the specific needs of the research community. In addition, the Nectar Research Cloud maximises value to the research sector by leveraging emerging and maturing technologies and adopting strategies and practices from the commercial sector for the cost-effective, scalable and flexible delivery of computing infrastructure, including:

- leveraging commodity-class hardware deployments to maximise the achieved value of capital investments;
- achieving reliability and robustness of service through redundancy and planned recovery from failure;
- reducing operational costs through centralised monitoring, configuration and deployment; and
- implementing de-facto industry standards-based APIs for the deployment of services and applications on the Nectar Research Cloud.

1.3 Expected Participants

The ARDC is requesting proposals from organisations able to provide resources into the ARDC's Nectar Research Cloud, and with established capability in hosting significant ICT infrastructure, for the supply of research cloud compute and storage infrastructure, as part of the ARDC's Storage and Compute program. Organisations that are provided with funding under this program will be known as Research Cloud Nodes.

The ARDC Core Services team operates the Research Cloud infrastructure framework and central services, and monitors service delivery across all other nodes. ARDC has responsibility for centralised administrative and management activities with the aim of providing national standards and reducing operational overheads across the nodes of the Research Cloud.

Research Cloud Nodes are charged with the responsibility to work collaboratively with all participating Nodes of the Research Cloud to:

- continue to work with the ARDC in developing procedures and policies for the deployment and operation of the Research Cloud Infrastructure Framework;
- continue to work with the ARDC in developing architectural requirements for the underlying hardware deployments at the Nodes;
- procure, deploy, maintain and operate the underlying compute and storage infrastructure according to the architectural requirements published by the ARDC;
- deploy and operate the designated Research Cloud infrastructure at the Node in accordance with the procedures and policies published by the ARDC;
- monitor and report on service delivery at the Node to ensure the infrastructure operates within the appropriate service levels;
- respond to user support requests generated from the Research Cloud helpdesk service; and
- receive advice and strategic direction from the ARDC Board through its relevant subcommittees, including the Research Cloud committees outlined in Section 4, and act in accordance.

The responsibilities specified above may be refined as part of setting policies and procedures through collaboration between the hosting Nodes and the ARDC.

1.4 Selection Principles

The NCRIS funding rules establish a set of principles in ARDC for the investment of funds, and together with the ARDC Strategic Plan lead to specific selection criteria as set out in Part D of this RFP. In summary the criteria seek to measure:

- a demonstrated track record of the proposal partners in the development and operation of eResearch infrastructure;
- the capability of the contractor to adhere to the common framework for interoperability as established by the Research Cloud Governance structures in Section 4;
- the opportunities arising from co-location of proposed infrastructure with high performance computing and/or data storage capability;
- the extent to which the proposed development benefits the national research community; and
- the extent to which the proposed development leverages or builds upon existing national investments and other significant research support capabilities.

The following general principles for ARDC investment should also be considered:

- ARDC funding can only be used for nationally available infrastructure (i.e. ARDC funding cannot be used to support local and only privately provisioned institutional infrastructure)
- In the context of providing nationally accessible compute infrastructure, ARDC aims to develop models that enable researchers to benefit from a broad range of providers.
- 1:1 co-investment is a requirement for ARDC funding.
- A governance model will be developed which ensures ARDC support for cloud is aligned with the needs of stakeholders including researchers, institutions, the Commonwealth of Australia, industry, and funding groups

Section 2 Operational Requirements

2.1 Note regarding existing node Operational Support contracts

It is anticipated that some of the institutions/organisations responding to this RFP will be existing nodes, with existing contracts relating to the operations of existing research cloud infrastructure. In order for these nodes to continue to receive the contracted ARDC cloud operations funding for 2019/20, the contracted level of cloud resources for national allocation must continue to be provided until 30 June 2020, independent of any new infrastructure to be provided through this RFP.

If this is not feasible for a node (for example due to space restrictions requiring older infrastructure to be decommissioned before new infrastructure can be installed) this should be discussed with the ARDC before submission of the Proposal.

2.2 Solution Specification

Proposals must provide in their response to Part D a sufficiently detailed specification of the components making up the new infrastructure for the node to allow evaluators to assess the technical merit of the Proposal. They must specify an expected schedule for when the new infrastructure will be in service and, in the case of existing nodes, what infrastructure it will

replace or refresh and when the old infrastructure is expected to be decommissioned or no longer used for national allocations.

It is expected that the specifications for the new infrastructure will mainly entail a straightforward capacity refresh, to continue to support the existing RC architecture, operations and standards. The equipment should be predominantly to host the standard instance flavours supported by the Nectar Research Cloud, as well as the required cloud volume and object storage. Proposals may also request infrastructure to support virtual machine instances and configurations that are currently not standardised across the Research Cloud, such as very large memory instances and GPUs, however these must be justified in terms of requirements for national project allocations. If there is significant interest and demand for this non-standard infrastructure, ARDC will work with applicants to attempt to specify standard approaches across nodes to the new infrastructure and flavours, in order to present a standard offering to national research communities.

In the case of existing nodes, any proposed significant variation to the existing cloud architecture at a node should be discussed with the ARDC prior to submission of the Proposal.

2.3 Operations and Service Levels

Projects are required to undertake an acceptance testing process for new infrastructure as described in Part A of the RFP.

Nodes must provide operational support and service levels in accordance with the ARDC's Research Cloud Operational Level Agreement (OLA).

Nodes must agree to operate the entire infrastructure as part of the Nectar Research Cloud, for use by national merit allocations, for a period of at least 3 years after the date of commissioning, i.e. when the infrastructure has been deployed and passed acceptance tests. Operational co-investment can be counted over the extent of this operational period.

2.4 Access and Pricing

ARDC is partnering with institutions and other organisations to provide cloud resources of maximum use to researchers.

Parallel to this is an intent that the cloud resources are, where needed, underpinned by sustainable funding models which enable continuous improvement, maintenance, and upgrades of infrastructure.

While ARDC is not aiming to develop commercial facilities, it is recognised that there are several business models available which will enable sustainable resources to be provided to researchers. Examples include subscription services, fee for service, user-pays, and direct investment by partners into the sub-contractor.

Proposals are expected to comply with the following principles for the access and pricing of infrastructure:

- The infrastructure must be accessible to publicly and privately funded researchers;
- infrastructure should enable and support collaboration (for example between institutions or research groups or domains);

- pricing policies must be clear and transparent and maximise public benefit; and
- Decisions on access to the ARDC’s Nectar Research Cloud infrastructure will be via the ARDC Research Cloud Allocations Committee.

If the sub-contractor proposes to charge fees for use of the resource the model and fees proposed must be outlined in the proposal. Absence of cost-recovery details will preclude the sub-contractor from being able to subsequently charge fees for access to the resources without the express approval of the ARDC and an approved cost-recovery business model.

Section 3 Finance and Funding Requirements

3.1 Available Funding

A total of \$4.5m is available for the ARDC’s Nectar Research Cloud Capacity Maintenance project.

Proposals may request any quantum of available ARDC funds to support the creation and development of Research Cloud Node infrastructure. It is expected that the ARDC will fund capital procurements, and that operational costs such as maintenance, support, marketing and communications, leasing costs and traffic charges would be met through identified co-investment.

Proposals should provide a justification for the level of cloud compute and storage resources requested, based on the requirement for the infrastructure to be entirely dedicated to supporting national merit allocations, as defined in the [Research Cloud National Allocation Scheme \(RC-NAS\) policy](#).

In the event a Proposer wishes to provide some or all of the capital investment and requests ARDC support for operational costs, the Proposer should discuss this proposal with ARDC prior to submitting an application.

A total of 1:1 co-investment is required.

3.2 Node benefit

Compute resources funded under the capital program are to be available, for a period of at least three years from the initial date of operation, solely for national merit allocations.

Matching a capital request (and concomitant operational commitment) to the local resource requirements of national merit allocation will, therefore, provide the Node operator with an effective 50% discount on the total cost of providing that resource.

Section 4 Governance

The governance of the ARDC’s Nectar Research Cloud will be through three groups formed with national representation:

- The ARDC Research Cloud Steering Committee will provide oversight and strategic guidance to the participants in the Research Cloud program enabling them to achieve the

ARDC Project objectives. The Steering Committee will include representation from the successful Research Cloud Node providers.

- The ARDC Research Cloud Technical Advisory Committee will provide expert technical advice to the ARDC Platforms Steering Committee, the ARDC and the Program Nodes on matters of infrastructure architecture, implementation and operation.
- The ARDC Research Cloud Allocations Committee will review and approve requests for resources on the Research Cloud.

Successful Proposers will be working in a collaborative environment and are required to work cooperatively with ARDC and other node service providers in the operation of the national Research Cloud service. Node providers will be expected to commit to the use of common operational processes across all nodes, and actively participate in the RC Operations group that coordinates operations across the cloud federation.

Section 5 Submitting a Proposal

Proposals under this program must ensure that they have read and understood all of Part A and this document, and that all sections in Part D are completed.

Proposals will be selected by a selection committee to be appointed by the ARDC, using the Response Template set out in Part D.4, and scored as per the Selection Criteria in Part D.5.



Australian Research Data Commons

REQUEST FOR PROPOSAL

DRAFT Version 1

Delivery of eResearch Infrastructure:
ARDC's Nectar Research Cloud Capacity
Maintenance

PART D – PROPOSAL

Table of Contents

RFP	4
RFP Contact Details	4
RFP Timeline	4
RFP Checklist	4
Submission Instructions	4
Late Submission	5
Contact Details of the Proposer	6
Proposer Contacts	6
Proposer	6
Participating Organisations	6
Compliance Statement	6
Proposed Sub-Contract Compliance	6
RFP Compliance	7
Conflict of Interest	8
Statement of Departures	8
Conflict of Interest	8
Response Template	9
Selection Criteria	12
Criteria for Research Cloud Program Proposals	12
Milestone and Funding Milestone Template	13
Milestone Template	13

Project: ARDC's Nectar Research Cloud Capacity Maintenance

Abstract: The ARDC's Nectar Research Cloud is funded by the Australian Government's Department of Education and Training as a national research infrastructure initiative to implement collaboration infrastructure for the use of the Australian research community. A significant proportion of the ARDC's Nectar Research Cloud has reached the end of its useful life and is due for replacement. The ARDC as the Lead Agent is calling for Proposals from organisations to deliver eResearch infrastructure service capability that will maintain the current capacity of the Nectar Research Cloud to benefit the wider research community.

Contents: Part A Brief

Part B Program Documentation - Research Cloud

Part C Proposed Sub-Contractor Agreement (to be provided prior to submission date)

Part D Proposal Submission (this document)

Attachment 1 Research Cloud Specifications

Section 1 RFP

1.1 RFP Contact Details

Questions relating to the RFP should ONLY be delivered via the online questions form.	https://ardc.edu.au/collaborations/strategic-activities/storage-and-compute/research-cloud-request-for-proposals#question
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1.2 RFP Timeline

The full timeline is published and maintained on the [ARDC website](https://ardc.edu.au/collaborations/strategic-activities/storage-and-compute/research-cloud-request-for-proposals/) at <https://ardc.edu.au/collaborations/strategic-activities/storage-and-compute/research-cloud-request-for-proposals/>

Request For Proposal issued	24 October 2019
Close for queries regarding proposal preparation	5 business days before the Closing Time
Proposals to be received by (Closing Time)	8 November 2019 8pm AEST

1.3 RFP Checklist

1. Have you registered your interest online at https://ardc.edu.au/collaborations/strategic-activities/storage-and-compute/research-cloud-request-for-proposals#intent	
2. Have you read and understood Part A?	
3. Have you read and understood Part B?	
4. Have you read and understood Part C? (To be made available prior to the submission due date)	
5. Have you completed all sections of Part D?	
• Section 2 Contact Information	
• Section 3 Compliance Statement and Departures	
• Section 4 Fields of Research (as appropriate)	
• Section 5 Response, noting the selection criteria in Section 6	
• Section 7 Milestones and Deliverables	
6. Have you asked any questions you needed to, and received sufficient answers?	
7. Have you returned the pack, Part D, via the online submission portal? (to be opened in October)	

1.4 Submission Instructions

Proposals shall be submitted:

- electronically (as per Section 1.1);
- in English;

- in a legible font and size (suggested minimum 10pt);
- in text-searchable PDF; and
- a 10 Megabyte (including attachments) limit.

On Closing Time, the ARDC commence review of submissions.

Proposals must be received no later than Closing Time specified in the Timeline or they will be treated as a Late Submission as described below.

ARDC reserves the right to change the Closing Time for any reason, in which event written notice of the change will be provided.

1.5 Late Submission

Proposals lodged after the Closing Time or lodged at a location or in a manner that is contrary to that specified in this RFP will be disqualified from the selection process and will be ineligible for consideration, except where the Proposer can clearly demonstrate, to the reasonable satisfaction of ARDC, that late lodgement of the Proposal:

- a) resulted from the mishandling of the Proposal by ARDC; or
- b) was hindered by a major incident and the integrity of the selection process will not be compromised by accepting a Proposal after the Closing Time.

The determination of ARDC as to the actual time that a Proposal is lodged is final. Subject to paragraphs (a) and (b) above, all Proposals lodged after the Closing Time will be recorded by ARDC, and will only be opened for the purpose of identifying a business name and address of the Proposer. ARDC will inform a Proposer whose Proposal was lodged after the Closing Time of its ineligibility for consideration. All such Proposals will be returned at the conclusion of the Selection Process.

Section 2 Contact Details of the Proposer

2.1 Proposer Contacts

The Contact Details of the Proposer are to be detailed in section 2.1.1 below.

Please add the details of any anticipated participating organisations in section 2.1.2. Add extra lines as required.

2.1.1 Proposer

Organisation Name	[[INSERT DETAILS]]
Contact Name	[[INSERT DETAILS]]
Position	[[INSERT DETAILS]]
Business Address	[[INSERT DETAILS]]
Postal Address	[[INSERT DETAILS]]
Telephone	[[INSERT DETAILS]]
Facsimile	[[INSERT DETAILS]]
Mobile Phone	[[INSERT DETAILS]]
E-mail	[[INSERT DETAILS]]

2.1.2 Participating Organisations

Organisation / Group Name	Location	Role

Section 3 Compliance Statement

3.1 Proposed Sub-Contract Compliance

Are there any Departures from the Contract (Part C) Terms and Conditions?

- No** There are no departures from the terms and conditions (i.e. Full Compliance)
- Yes** There are departures from the terms and conditions

Detail the departures in Section 3.4 of this document.

The proposing organisation warrants that except for the departures listed in Section 3.4, the response is in full compliance with the Contract terms and conditions and no further contractual issues will be entered in to.

Signature of authorised person making the statement Name and role (printed)

Date / /

3.2 RFP Compliance

Are there any Departures from the RFP Terms and Conditions (Part A)?

- No** There are no departures from the terms and conditions (i.e. Full Compliance)
- Yes** There are departures from the terms and conditions (i.e. Does not Fully Comply)

Detail the departures in Section 3.4 of this document.

The proposing organisation warrants that except for the departures listed in Section 3.4, the response is in full compliance with the RFP terms and conditions.

Signature of authorised person making the statement Name and role (printed)

Date / /

3.3 Conflict of Interest

Are there any known or potential conflicts of interest in responding to the RFP and its Terms and Conditions or in delivering the proposed works?

- No** There are no conflicts of interest
- Yes** Describe the conflicts in Section 3.5 of this document.

Do you commit to inform the University of Melbourne of any future conflicts or potential conflicts as they arise?

- Yes**

Signature of authorised person making the statement Name and role (printed)

Date / /

3.4 Statement of Departures

	Clause or Reference	Nature of Compliance	Proposed wording of amendment
Proposed Sub-Contract			
RFP Terms and Conditions			

3.5 Conflict of Interest

The Nature of the Conflict	Implications of the Conflict	How the Conflict is to be managed?

Section 4 Response Template

Complete the following table, ensuring a response to all headings and statements are provided. Attach this as a separate document to your proposal.

Any additional material or brochures can be added as attachments to the Proposal. The page counts are an indicative guideline for responses.

No	Title	Items to Address	Suggested Page Count
SUMMARY			
1	Program and Proposal Title	<i>Provide a short title for the proposal to use as a reference in communications.</i>	0.1
2	Executive Summary	<i>Summarise the context that leads to this project and briefly outline the vision for the outcomes.</i>	1
3	Other Participants	<i>Name any other institutions or groups that will need to be involved in the project planning and execution and their roles.</i>	0.5
4	Key Personnel	<i>State any key individuals that are required for specific project activities and their availability. Provide names, organisational locations, and their expected roles. For example; Project Managers, designers, technical experts.</i>	0.5
5	Infrastructure	<i>Describe the proposed infrastructure to be deployed. Provide supporting documentation, specifications, quotes, etc as required.</i>	2
RESEARCH SECTOR NEEDS & BENEFITS			
6	Target Research Community	<i>Identify institutions and domains and the expected number of users to be supported by the infrastructure.</i>	0.5
7	Needs and Impact	<i>Outline the needs of the target researchers, research institutions, and communities, and estimate the scale of resources needed to support these requirements. Provide a justification for how this estimate was obtained. Describe potential impacts on current research activities on your existing infrastructure (if any) and any opportunities the new infrastructure will provide. Outline how the impacts and benefits will be tracked and reported to ARDC.</i>	1
9	Alignment with existing research infrastructure	<i>Describe alignments with other national research infrastructures, supporting technologies and organisations, and eResearch infrastructure priorities including, where</i>	1

		possible, other NCRIS capabilities. See http://www.innovation.gov.au/Science/ResearchInfrastructure/Pages/default.aspx .	
PROJECT MANAGEMENT			
10	Governance	<p>State who is accountable for assessing project performance, what process will they apply.</p> <p>Describe the authority structure for operation of the infrastructure.</p> <p>List all members of the Project Governance Body.</p> <p>Describe the organisation's Project Management methodology, scaled as appropriate for the proposed sub-project.</p>	1
11	Project Scale	Identify the overall scale expected in the project, total effort, amount of funding required, amount of co-investment proposed.	0.5
12	Project Approach	Detail how the required infrastructure will be delivered. Outline the different stages of activity.	1
13	Key Deliverables and Acceptance Criteria	Define the key project deliverables. Show the Acceptance Criteria for successful commissioning of the infrastructure.	0.5
14	Quality Control	Identify the personnel, processes and any special resources that will be required for Quality Control and Acceptance Testing activities on the proposed project.	0.5
15	Risk and Issue Management	<p>Define the key risks to the successful delivery of the proposed project.</p> <p>Define any open issues that need resolving before the proposed project can start delivery.</p> <p>Detail any key questions that will affect the operation of the proposed project pending a decision.</p> <p>Define how the major risks and issues to the proposed project will be managed.</p>	0.5
FINANCIAL			
16	Budget Breakdown	<p>Provide a proposal breakdown of the project budget. Include proposed staffing levels; where actual individuals have not been allocated to the sub-project, use a role name and Full Time Equivalents (FTE) to show the number and value of budgeted staff that will be working on the sub-project at that milestone. Each individual or FTE role is to be included as a separate line item.</p> <p>Break down the budget into ARDC (RIIP) funding or co-investment funding.</p>	1
SERVICES AND SUPPORT			
17	Operations and User Support	Detail the proposed operator of the infrastructure, what support will be provided to users and by whom.	0.5
18	Operations	Indicate how long you agree to operate the infrastructure as part of the ARDC's Nectar Research Cloud (Note the	0.5

		<i>minimum initial 3 years will be 100% national merit allocation).</i>	
18	Communications and Engagement	<i>Describe the means by which customer satisfaction with the proposed project's planning, requirements gathering, scoping decisions, progress, quality and outputs will be measured.</i>	0.5
19	Constraints and Dependencies	<i>Define and explicitly quantify any schedule, expenditure, resource, scalability, performance, and quality constraints or limitations on the project and its deliverables. State the dependencies with external parties that have been identified in planning the proposed project.</i>	0.5
20	Network	<i>Provide information about the network facilities available to the infrastructure. Define the typical network capacity available to servers in your datacenter. State any known bottlenecks (eg in the network core). State your connection to AARNET. Define any other wide area network links that you have that could be useful to this project. State if you configure critical network equipment in a redundant manner. State if you have stated service levels for your network. If you have not done so already, indicate when you expect to conform to the RC Advanced Networking requirements.</i>	0.5
21	Operations	<i>Provide information about your ICT operations practices that would apply to this project. State if you have maintenance windows, or procedures for handling infrastructure downtimes. State what monitoring facilities are used. State your typical hours of operation.</i>	1
22	Governance and Participation	<i>Indicate your commitment to participating in the RC Governance framework as outlined in the Part B, working cooperatively with the ARDC governance groups to achieve a nationally coherent infrastructure</i>	0.5

Section 5 Selection Criteria

The following table outlines the criteria that will be used to assess proposals, based on the responses to Section 5 above. They are provided here only for the information of respondents and to ensure that responses consider the key elements being sought.

5.1 Criteria for Research Cloud Program Proposals

Category	Weight (%)	Criteria
Researchers, Research Institutions, Communities and Impact	30%	
		Research stakeholders to benefit are well-defined (by domain, location, institution, size, etc), are nationally significant, and the proposal is well supported by the research community
		The requirements of the research stakeholders to be addressed by the proposal are well defined and significant
		The proposal is aligned to national research priorities and activities that meet the eligibility criteria for national merit allocations for the Research Cloud
		The proposal is aligned with, and contributes to the implementation of, national research infrastructure and eResearch priorities
		The process for tracking and measuring the benefits and impact of the infrastructure, and reporting these to ARDC, is defined and achievable
Implementation	30%	
		An appropriate Governance structure has been defined for the Project <ul style="list-style-type: none"> Proposers commit to operate under the Governance arrangements for the RC as described in Part B of this RFP Research Cloud node proposers commit to operate the infrastructure in accordance with the ARDC and NCRIS principles described in Part B of this RFP A project governance structure for delivery of the project has been defined as specified in Part A of this RFP Key personnel and their roles have been clearly defined
		The infrastructure to be created by the proposal is well-described, achievable and will be delivered in a timely manner. <ul style="list-style-type: none"> Project Management is well-described and appropriate to the proposal scale Key risks have been identified and are manageable Issues that require solving have been identified Dependencies with third parties have been listed
		The proposal leverages or builds upon existing eResearch infrastructure and capabilities.

Financial and Co-investment	40%	
The project budget is well-described, provides good value for money, and is justified based on expected requirements for national project allocations supported by the Node		
The identified co-investment achieves the target level, is appropriate to the needs of the project, and adequately covers the operational requirements of the proposal		
The Node agrees to operate the infrastructure as part of the ARDC's Nectar Research Cloud for a period of at least 3 years after commissioning		
Proposed expenditure of ARDC funds is adequately described and conforms to the ARDC funding guidelines (Mandatory)		
The proposal conforms to the principles on Access and Pricing as described in Part B of the ARDC RFP (Mandatory)		

Section 6 Milestone and Funding Milestone Template

6.1 Milestone Template

Complete the table overleaf with proposed milestones and the associated budgets and proposed funding amounts to be drawn down from ARDC. The submitted table must form an attachment to the Proposal and will be used to prepare the contract Schedules. The milestones shown are required, others may be added to suit the needs of the project.

Note – Items in “Deliverables/Completed Activity” are mandatory.

No.	Funding Milestone Yes / blank	Milestone Title	Deliverables/Completed Activity	Target Milestone Date	ARDC funds requested (\$K)
1	Yes	Sub-contract signed		[INSERT DETAILS]	20%
2	Yes	Approved quote	<i>Proposed infrastructure and supplier quote approved by Node and ARDC</i>	[INSERT DETAILS]	50%
3	Yes	Equipment delivered	<i>Equipment delivered to Node</i>	[INSERT DETAILS]	20%
4	Yes	Service commissioned	<i>Service in production, acceptance tests completed and accepted by ARDC</i>	[INSERT DETAILS]	10%
5					
6					



Australian Research Data Commons

REQUEST FOR PROPOSAL

DRAFT Version 1

Delivery of eResearch Infrastructure:
ARDC's Nectar Research Cloud Capacity
Maintenance

ATTACHMENT 1 - RESEARCH CLOUD
SPECIFICATIONS

Table of Contents

Research Cloud Technical Design Requirements and Guidelines	4
Detailed Design of Proposed Infrastructure	4
Software Architecture	4
Accessibility	5
Compute service and Virtual Machine Specifications (Flavors)	5
Networking	5
Storage Considerations	5

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Abstract: The ARDC's Nectar Research Cloud is funded by the Australian Government's Department of Education and Training as a national research infrastructure initiative to implement collaboration infrastructure for the use of the Australian research community. A significant proportion of the ARDC's Nectar Research Cloud has reached the end of its useful life and is due for replacement. The ARDC as the Lead Agent is calling for Proposals from organisations to deliver eResearch infrastructure service capability that will maintain the current capacity of the Nectar Research Cloud to benefit the wider research community

Contents: Part A Brief
Part B Program Documentation - Research Cloud
Part C Proposed Sub-Contractor Agreement (to be provided prior to submission date)
Part D Proposal Submission

Attachment 1 Research Cloud Specifications (this document)

1. Research Cloud Technical Design Requirements and Guidelines

1.1 Detailed Design of Proposed Infrastructure

Proposers are required to supply a detailed vendor quote and specification of the proposed Research Cloud infrastructure along with the proposal submission (Part D of this RFP).

ARDC must approve the final quote for the equipment to be purchased before the Proposer can procure and build the proposed infrastructure.

Progress reports on the procurement and build of the infrastructure must form part of the monthly reporting to ARDC as described in Part A of this RFP.

1.2 Software Architecture

The ARDC's Nectar Research Cloud is a standard Openstack cloud, based on open infrastructure principles and open source software. It is operated as a national federation of distributed Nodes that host and operate the cloud compute and storage infrastructure.

Nodes of the Research Cloud need to provide the following standard Openstack infrastructure and services:

- Nova compute service
- Cinder block storage
- Glance image service
- Swift object storage (optional)
- Neutron networking

Federation-wide services including authentication, a dashboard for users to access the cloud, and a national cloud resource allocation system, are provided and supported by the ARDC Core Services team.

Infrastructure funded through this RFP must be deployed and operated in a way that conforms to the agreed standards and operational policies and processes of the ARDC's Nectar Research Cloud.

Detailed information on the architecture and technical specifications of the Nectar Research Cloud, and a specification for the technical requirements for the infrastructure and operation of a Node of the Research Cloud, will be provided on the ARDC web site prior to the final release of this RFP. The new infrastructure to be deployed using funding from this RFP should conform to these specifications.

ARDC acknowledges that a Proposer may wish to provide a service to an identified research community whose software architecture requirements are different to the standard Nectar Research Cloud architecture. In this case the proposal should provide a clear justification for the variation from the proposed architecture.

1.3 Accessibility

Proposals should provide the capability to connect with other international, national, commercial, and other sector cloud offerings. Proposers are to explain in their proposal, any barriers to cross institutional access.

All ARDC-funded infrastructure at the Nodes should appear as a single national Research Cloud, rather than separate Node offerings, with a single point of access and authentication to Research Cloud users, making access to the facilities provided by the individual Nodes as uniform and seamless as possible.

1.4 Compute service and Virtual Machine Specifications (Flavors)

The base service offering of the Research Cloud is the ability of researchers to run virtual machines supported by the Research Cloud architecture. These virtual machines are packaged into standard configurations or “flavors”. Their specifications are reviewed at least annually. The current specification of the standard Research Cloud flavors are available at this link:

- <https://support.ehelp.edu.au/support/solutions/articles/6000205341-nectar-flavors>

It is expected that most of the new infrastructure provided through this RFP will be to support the standard Research Cloud flavors (the latest m3 flavors) in a cost-effective way. There is no requirement for Nodes to purchase a particular type of server or storage hardware for their compute servers, but the proposed hardware must be approved by ARDC.

Proposers may request some infrastructure to support non-standard flavors, for example GPUs or very large memory, but proposals must include a clear justification as to why these are required and what research communities and use cases will be supported by these non-standard flavors.

1.5 Networking

Nodes must connect to AARNet with as high performing a network connection as practical, with an expected minimum of 10 Gbps connection with at least 1 Gbps available capacity on the link. The architecture of the cloud node must also ensure adequate bandwidth to each virtual machine and virtual CPU.

Each virtual machine must have a publically routable IP address (IPv4 or IPv6). Each site should have adequate IP addresses available to support the expected number of VM instances.

Nodes must support the Openstack Networking service (Neutron) for software-defined networking and are required to support Nectar’s federation-wide Advanced Networking service.

1.6 Storage Considerations

Where possible, proposals should leverage local data storage offerings and links to co-located storage facilities such as those supported through the ARDC Data Collections storage program.

Openstack’s Cinder Block Storage solution requires compatible storage that Cinder supports. Ceph is the recommended storage solution, and this is currently used by the majority of Nodes.

OpenStack's Swift Object Storage solution has specific requirements which affect hardware decisions and network architecture. Nodes are expected to make best practice decisions based on guidelines provided by ARDC Core Services.

Federated Swift nodes are required to be hosted by at least 3 Nodes. It is expected (but not required) that Nodes that currently or previously hosted Swift will include a refresh of their Swift node infrastructure as part of their Proposal.