# Engineering and Physical Sciences Research Council

# Process for applying for a TOPUP HPC allocation on an existing EPSRC Grant

## Summary

This document describes the process by which investigators on existing EPSRC grants can apply for a top-up High-Performance Computing (HPC) allocation on the original grant.

## Key dates

| **Activity** | **Date** |
| --- | --- |
| Technical Assessment deadline | 11 September 2020 at 16:00 |
| Closing date for application submissions | 25 September 2020 at 16:00 |
| Panel Assessment | Week of 2 November 2020 |

## Background

When applying for an EPSRC grant, investigators can request an allocation on the Tier-1 ARCHER2 service or some of EPSRC’s Tier-2 HPC services (specified in the [Resources Available](#_Resources_Available) section) in order to support their research. This allocation can be for the length of the grant, on the understanding that it may need to be accommodated elsewhere should host service be closed. However, EPSRC recognises that the computational allocation required for a project can be intimately related to the scientific problem being researched. Thus, a researcher may not be fully aware of the compute they need until they make significant progress on the research project. Sometimes they will need additional HPC resource over and above the initial request to achieve the objectives of the grant.

On ARCHER2’s predecessor, ARCHER, grant applications could only include up to three years of ARCHER time. It was expected than grants with a lifetime of more than three years would then apply for additional time through the TOPUP process if needed. For the ARCHER2 service EPSRC have now removed this requirement and investigators can apply for an allocation for the lifetime of the grant. However, holders of grants awarded on ARCHER will still need to apply through this process to receive an allocation beyond what they were originally awarded.

This document describes EPSRC’s HPC TOPUP process, through which investigators on an existing EPSRC grant can apply for additional compute in order to achieve the grant objectives.

## Eligibility

Only named investigators on an existing EPSRC grant are eligible to apply through this process. Moreover, following an application against a grant (where parent and child grants are considered as one grant) another application cannot be submitted against the same grant for one year following the decision date without the express written permission of EPSRC’s e-Infrastructure Team.

## Resources Available

Applicants to this process can request additional computational resources to support them in achieving the objectives of an EPSRC grant on which they are an investigator. Compute will only be awarded up until the current end date of the specified grant. As with compute requests on the original grant application, there is no formal limit on the size of the request. However, this will be reviewed as part of the assessment process. Thus, the size of the request should be fully justified in terms of the scientific aims of the project. Additionally, it must be reasonably likely that the requested compute can be used effectively and efficiently before the current grant end date. Applicants should be aware that EPSRC may award an allocation less than that requested, or on a different service. This could be due to the availability of compute on the requested service or on the advice of expert reviewers of the proposal.

Below we list the HPC services from which EPSRC grant holders can request additional compute:

* ARCHER2
* Cirrus
* CSD3
* HPC Midlands Plus
* Isambard GW4 Tier-2
* JADE
* NI-HPC
* NICE

Further details on these services can be found in Appendix 1.

**It should be noted that any TOPUP for Tier-1 resource will be on ARCHER2, not ARCHER. Thus the point at which it will be available will depend on the commencement date of the ARCHER2 service. See Appendix 1 for details on how to determine your requested ARCHER2 compute from either node hours or through conversion from ARCHER allocation units.**

## How to apply and submitting an application

Please be aware that by applying to this process each applicant is consenting to their original proposal documentation to be shared with the relevant reviewers, to ensure the top-up request can be properly assessed.

A two-stage application process will be used.

**Stage 1**- Applicants must submit a Technical Assessment to the service help desk. This will be assessed by the service and returned to the applicant.

**Stage 2**- Applicants must then submit the following documents via the SmartSurvey form at <https://www.smartsurvey.co.uk/s/HBVZR5/>:

* Completed and approved Technical Assessment
* Application Form
* A one-page diagrammatic workplan
* Cover Letter (optional)

### Technical Assessment

Applicants must first complete Section 1 of the Technical Assessment form for the service (this can be found on the webpage for this process) and obtain approval from the relevant service.

To obtain approval from the service, the applicant should send their Technical Assessment with section 1 complete to the relevant service. A list of contact details for each service can be found in [Appendix 1](#_Appendix_1:_Service). **Please ensure the subject header of your submission email states that this is an “EPSRC grant top-up allocation submission”.** Applicants will receive comments made by technical reviewers on the Technical Assessment form and can respond to these by amending the technical aspects of their forms.The completed Technical Assessment will normally be returned to the applicant promptly, although if the reviewer has concerns about the project, it may take extra time for these to be addressed.

EPSRC and the service provider cannot be held responsible for applications that miss the final deadline if the applicant has not met the deadline specified above for submission of the technical assessment.

### Full Application

Provided they obtain an approved Technical Assessment, applicants should then complete the provided application form. They should consider the [assessment criteria](#_Assessment_criteria) and the broad expertise of the panel (see [assessment process](#_Assessment_process)). Completed application forms should be sent together with the completed Technical Assessment and a one-page diagrammatic workplan as attachments to the SmartSurvey at <https://www.smartsurvey.co.uk/s/HBVZR5/> before the deadline.

## Guidance on writing an application

### Progress report (max 2 pages)

In this section the applicant should provide:

* Evidence of the progress of the project to this point.
* Details on the usage of the allocation for the project so far. Where possible, this should include a graph of the compute usage for this project to date (this can generated using SAFE if applicable to the service).
* A list the original objectives of the EPSRC grant to which this application relates and a clear description of the progress against them.
* A summary of any other major outputs arising from the project to date which the candidate wishes to highlight.

### Proposal for continued support (max 2 pages)

In section applicants should:

* Detail therequested computational resources as approved by the technical assessment. The requested resource must be profiled into 6-monthly allocations.
* Explain how they plan to use and manage the allocated resources before the current grant end date.
* Describe how the additional resource underpins the research objectives in the original proposal.
* Explain why the requested service is the most appropriate for completing this work.

### Workplan (max 1 page)

The applicant must provide a diagrammatic work plan for the proposed computational work to justify that the allocation can be effectively utilised in the given timelines.

### Cover Letter (optional, no page limit)

Applicants can use the Proposal Cover Letter to express any other information they feel is relevant to their application. This letter will only be seen by EPSRC and will not be sent to Peer Review. For sensitive information the applicant should state clearly whether the information is confidential. The Proposal Cover Letter should also be used to highlight anything that has been discussed and agreed with EPSRC staff beforehand. For example:

* Applicant is on maternity leave until a certain date;
* [Declaration of Interest;](https://www.ukri.org/files/legacy/documents/declarationofinterests-applicants-pdf/)
* Additional information about eligibility to apply that would not be appropriately shared in the track record;
* [Conflict of Interest](https://epsrc.ukri.org/funding/assessmentprocess/coi/) for EPSRC to consider in reviewer selection
* The application is an invited resubmission.

## Assessment process

### Stage 1: Technical Assessment

Technical Assessment forms will be reviewed by technical reviewers at the relevant HPC service. The Technical Assessment stage is carried out to ensure that the level of resources requested have been appropriately scoped and that all technical requirements have been considered prior to submission of an application to EPSRC. Applicants will receive comments made by technical reviewers on the Technical Assessment form and can respond to these by amending the technical aspects of their forms before the Technical Assessment is approved.

At the Technical Assessment stage if your application is judged to be more appropriate for access at another service, then you will be notified and encouraged to submit an application to said service. The aim of this step is to coordinate resource allocation across EPSRC HPC services and allow the transfer of applications to the most appropriate system. Proposals which the technical reviewer deems more suited to a different service may be awarded time on an alternative system.

### Stage 2: Peer Review

Applications to this process will be reviewed by a service panel for the Access to HPC call. Reviewers shall be asked to indicate whether they are supportive of the top-up being awarded based upon the assessment criteria, and the panel will together provide EPSRC with a formal recommendation (fund/not to fund) for each application. In circumstances where the levels of computational resource are constrained, EPSRC reserves the right to require the panel to prioritise the applications for funding and to tension these against proposals submitted to the Access to HPC call.

Reviewers for proposals shall be selected with the aim of covering the expertise for the research areas of the submitted application. However, a direct match to the research area cannot be guaranteed for all reviewers, therefore it is important that the case for support can be understood by a general, scientifically and computationally literate audience.

## Assessment criteria

The assessment criteria used to judge whether a top-up is appropriate are:

* **Progress and Outlook (Primary)**:   
    
  Whether sufficient progress has been made against the original project objectives and a clear and reasonable explanation is given for why additional resource is needed to enable the investigator(s) to achieve the original objectives of the EPSRC grant.
* **Resources and Management (Secondary):**   
    
  Whether the requested computational resource and the proposed profiling into 6-months periods is appropriate to achieve the stated aims. Whether the work plan and staff time committed to the work is sufficient to ensure that the allocation can be used effectively prior to the grant end date. Whether there are suitable risk management strategies in place. Whether the requested computational resource and service is the most appropriate available for the proposed computational work.

## Feedback

In general, feedback will not be provided. However, EPSRC will consider providing feedback to unsuccessful applicants on the request of the reviewers.

## Moving forward

Submissions to this process will not count towards the Repeatedly Unsuccessful Applicants Policy. Further information about the policy can be found at: <https://www.epsrc.ac.uk/funding/howtoapply/basics/resubpol/rua/>

## Contacts

For technical queries, a full list of contact details for each Tier-2 service along with the ARCHER2 Helpdesk is available in [Appendix 1](#_Appendix_1_:).

For any other queries please contact [researchinfrastructure@epsrc.ukri.org](mailto:researchinfrastructure@epsrc.ukri.org).

## Full Application Check List

When submitting your application (see [How to apply and submitting an application](#_How_to_apply)) via the SmartSurvey at <https://www.smartsurvey.co.uk/s/HBVZR5/>, please ensure the following are attached in the specified sections of the survey.

|  |  |
| --- | --- |
| **Text/Document** | **Maximum Page length** |
| **Document 1 - Completed Application Form including:** |  |
| Progress report | 2 |
| Proposal for continued support | 2 |
| **Document 2: Diagrammatic Work Plan** | 1 |
| **Document 3: Completed Technical Assessment** | N/A |

Details on the expected content for each of these sections can be found in the ‘Guidance on writing an application’ section.

In addition to the above, applicants also have the opportunity to add an optional cover letter as a separate attachment to the smart survey. This will only be seen by EPSRC. See ‘[Guidance on writing an application](#_Guidance_on_writing)’ for details.

# Appendix 1: Service Specific Information

## ARCHER2

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| --- | --- |
| Service details | |
| **Service Contact Details** | [support@archer2.ac.uk](mailto:support@archer2.ac.uk) |
| **Service Webpage** | <https://www.archer2.ac.uk/> |
| **Service Reference** | ARCHER2 PR17125 |
| Hardware and Technical specifications | |
| **System name** | ARCHER2 |
| **Compute nodes & Processors** | 5,848 compute nodes, each with dual AMD Rome 64 core CPUs at 2.2GHz, for 748,544 cores in total and 1.57 PBytes of total system memory |
| **Interconnect** | Cray Slingshot |
| **Storage** | 14.5 PBytes of Lustre work storage in 4 file systems |
| **Software available** | <https://www.archer2.ac.uk/about/hardware.html> |
| **Additional information on the hardware available** | <https://www.archer2.ac.uk/about/hardware.html> |
| Resources available | |
| **Unit of Allocation** | ARCHER2 allocates its compute resource in ARCHER2 Compute Units (CU). Please note:   * 1 node hour on ARCHER2 costs 1 CU, unless jobs are submitted in low priority queues where a discount applies. * 1 CU on ARCHER2 should (at a minimum) provide at least as much scientific throughput as 1.5156 kAU on ARCHER for most codes. This is based on conservative estimates of the performance of ARCHER2 relative to ARCHER, and thus is subject to variability based on the code used. |
| **% compute allocated to EPSRC mechanisms**  (including but not limit to this call) | ~77-83%, this is the total % of ARCHER2 EPSRC can utilise each year i.e. EPSRC’s ARCHER2 compute. |
| **Storage available** | N/A |

## Cirrus

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| Service details | |
| **Service Contact Details** | [support@cirrus.ac.uk](mailto:support@cirrus.ac.uk) |
| **Service Webpage** | <http://www.cirrus.ac.uk/> |
| **Service Grant Reference** | EP/P020267/1 (Phase I)  EP/T02206X/1 (Phase II) |
| Hardware and Technical specifications | |
| **System name** | Cirrus HPE/SGI ICE XA Cluster |
| **Compute nodes:**  280 dual CPU compute nodes and 2 quad GPU nodes (Phase I)  144 NVIDIA V100 GPUs and an accompanying fast storage layer (Phase II) | |
| **Processor:**  Cirrus standard compute nodes each contain two 2.1 GHz, 18-core Intel Xeon E5-2695 (Broadwell) series processors. Each of the cores in these processors support 2 hardware threads (Hyperthreads), which are enabled by default. The standard compute nodes on Cirrus have 256 GB of memory shared between the two processors. The Cirrus GPU compute nodes each contain two 2.4 GHz, 20-core Intel Xeon Gold 6148 (Skylake) series processers. Each of the cores in these processors support 2 hardware threads (Hyperthreads), which are enabled by default. The nodes also each contain four NVIDIA Tesla V100-PCIE-16GB (Volta) GPU accelerators connected to the host processors and each other via PCIe.  Cirrus Phase II adds a GPU node upgrade with a further 36 ‘Plainfield’ blades (single GPU node with two Intel processors and four GPU’s) into the empty 4th rack of the system along with the necessary power supplies, EDR IB switches and cables. These blades are similar to the two in the existing system, except that they will have Intel ‘CascadeLake’ processors (6248), 2933 MHz memory and will use EDR IB mezzanine cards and EDR IB switches. Each GPU node will have four NVIDIA V100’s (16GB) for a total of 144 GPU’s. | |
| **Storage:**  A single filesystem Lustre file system has a total of 406 TiB available.  Cirrus Phase II will include fast storage to the new GPU nodes using HPE XFS/RPOOL with NVMe devices. | |
| |  |  | | --- | --- | | **Interconnect** | FDR Infiniband Hypercube | | |
| **Software available** | See Service Catalogue: <http://www.cirrus.ac.uk/about/Cirrus_Service_Component_Catalogue.pdf> |
| **Additional information on hardware** | See: <http://www.cirrus.ac.uk/about/hardware.html> |
| Resources available through this call | |
| **% compute allocated to EPSRC mechanisms**  (including but not limit to this call) | Cirrus Phase I 70%  Cirrus Phase II 70% |
| **Storage available** | Default 250GiB per project, can allocate more space if justified |

## CSD3

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| Service details | |
| **Service Contact Details** | [resources@hpc.cam.ac.uk](mailto:resources@hpc.cam.ac.uk) |
| **Service Webpage** | [www.hpc.cam.ac.uk](http://www.hpc.cam.ac.uk) |
| **Service Grant Reference** | EP/P020259/1 |
| Hardware and Technical specifications | |
| **System name** | peta4-skylake |
| **Total compute nodes** | 1152x Dell PowerEdge C6420 |
| **EPSRC funded nodes** | 427 nodes: 65% via RAP, 15% Cambridge EPSRC users internal call, 20% industrial usage |
| **Processor** | Intel Xeon Gold 6142 CPU @ 2.60GHz (2 sockets, 32 cores) |
| **Memory** | 192GB and 384GB |
| **Interconnect** | Intel Omni-Path |
|  |  |
| **System name** | peta4-cascadelake |
| **Total compute nodes** | 672 x Dell PowerEdge C6420 |
| **EPSRC funded nodes** | 276 nodes: 65% via RAP, 15% Cambridge EPSRC users internal call, 20% industrial usage |
| **Processor** | Intel Xeon Platinum 8276 @2.2GHz (2 sockets, 56 cores) |
| **Memory** | 192GB and 384GB |
| **Interconnect** | Mellanox HDR Infiniband |
|  |  |
| **System name** | peta4-knl |
| **Total compute nodes** | 342x Dell PowerEdge C6320p |
| **EPSRC funded nodes** | 190 nodes: 65% via RAP, 15% Cambridge EPSRC users internal call, 20% industrial usage |
| **Processor** | Intel Xeon Phi CPU 7210 @ 1.30GHz (single socket, 64 cores) |
| **Memory** | 96GB |
| **Interconnect** | Intel Omni-Path |
|  |  |
| **System name** | wilkes2-gpu |
| **Total compute nodes** | 90x Dell PowerEdge C4130 |
| **EPSRC funded nodes** | 200 GPUs: 65% via RAP, 15% Cambridge EPSRC users internal call, 20% industrial usage |
| **Processor** | Intel Xeon CPU E5-2650 v4 @ 2.20GHz (single socket, 12 cores) |
| **GPUs** | 4x NVIDIA Tesla P100-PCIE-16GB per node |
| **Memory** | 96GB |
| **Interconnect** | Mellanox EDR Infiniband |
|  |  |
| **Storage** | 3120 TB lustre storage available to Tier2  Dell ME4 Series |
| **Software available** | A large range of software packages are preinstalled. Licenced packages (e.g. VASP) are available - please contact [support@hpc.cam.ac.uk](mailto:support@hpc.cam.ac.uk) to determine access. |
| **Additional information on the hardware available** | [https://www.hpc.cam.ac.uk/](https://www.hpc.cam.ac.uk/systems/peta-4) |
| Resources available through this call | |
| **Indicative sizes of previously successful applications**  (not a restriction) | 1M-10M Skylake CPU core hours  50,000-200,000 KNL node hours  50,000-200,000 GPU hours |
| **% compute allocated to EPSRC mechanisms**  (including but not limited to this call) | 80% Skylake  80% Cascadelake  80% KNL  80% P100 GPU |
| **Storage available** | 3120 TB lustre storage (available to all of Tier2) |

## HPC Midlands Plus (Athena)

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| Service details | |
| **Service Contact Details** | [research-computing@lboro.ac.uk](mailto:research-computing@lboro.ac.uk) | |
| **Service Webpage** | <http://www.hpc-midlands-plus.ac.uk/> | |
| **Service Grant Reference** | EP/P020232/1 | |
| Hardware and Technical specifications | |
| **System name** | Athena | |
| **Compute nodes** | 28 core, 128 GB RAM | |
| **Processor** | Intel Xeon E5-2980v4 | |
| **Interconnect** | EDR infiniband (100 Gb/s) | |
| **Storage** | 1PB GPFS | |
| **Software available** | Please see <http://www.hpc-midlands-plus.ac.uk/> | |
| **Additional information on the hardware available** |  | |
| Resources available through this call | |
| **% compute allocated to EPSRC mechanisms**  (including but not limit to this call) | 15 | |
| **Storage available** | 5 TB per project | |
| Requirements on applications for the service | |
| **Project length restrictions over and above those in the call** | Service ends on 30th April 2021, so all proposals must finish by this date. | |

## Isambard GW4 Tier-2

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| Service details | |
| **Service Contact Details** | Prof Simon McIntosh-Smith  [S.McIntosh-Smith@bristol.ac.uk](mailto:S.McIntosh-Smith@bristol.ac.uk)  +44 117 3315324 |
| **Service Webpage** | <https://gw4.ac.uk/isambard/> |
| **Service Grant Reference** | EP/T022078/1 |
| Hardware and Technical specifications | |
| **System name** | Isambard 2 phase 1, a Cray XC50 Arm-based system |
| **Compute nodes** | 332, each dual socket, 21,248 cores in total |
| **Processor** | Arm-based Marvell ThunderX2 32 core 2.1 GHz (2.5GHz turbo) |
| **Interconnect** | Cray Aries (same as ARCHER) |
| **Storage** | 1 PByte |
| **Software available** | Full Cray software stack (Cray compiler, MPI, debugger, profiler, performance tools, math library)  Full GNU software stack (compilers et at).  Full Arm software stack (Clang/LLVM based compiler, math library, Allinea tools etc).  Many widely used applications pre-installed on the system ready to use. |
| **Additional information on the hardware available** | Most codes should just compile and run on the Arm-based system just like they do on any other supercomputer. Most users won’t even be able to tell they are on an Arm system. |
| Resources available through this call | |
| **% compute allocated to EPSRC mechanisms**  (including but not limit to this call) | A total of 40% of the system is available to RAP during the 6 month period. |
| **Storage available** | Up to tens of TeraBytes per RAP project. |

## JADE

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| Service details | |
| **Service Contact Details** | [wes.armour@oerc.ox.ac.uk](mailto:wes.armour@oerc.ox.ac.uk)  [dai.jenkins@it.ox.ac.uk](mailto:dai.jenkins@it.ox.ac.uk) |
| **Service Webpage** | <https://www.jade.ac.uk/> |
| **Service Grant Reference** | EP/P020275/1 |
| Hardware and Technical specifications | |
| **System name** | JADE |
| **Compute nodes** | 22x NVIDIA DGX-1V |
| **Processor** | Per node:  8x V100 16GB  2x 20 core Xeon E5-2698 |
| **Interconnect** | InfiniBand ERD to filestore (so not really designed for heavy node-to-node communication).  Ideal problems are those that fit within a node (so across 8x GPUs), codes that use NVLink (nccl) will also benefit. |
| **Storage** | 512 GB DDR4 per node, 4x 2TB SSD (RAID0) per node. 1TB spinning disk filestore. |
| **Software available** | Anything in Nvidia NGC:  <https://ngc.nvidia.com/catalog/all?orderBy=modifiedDESC&pageNumber=1&query=&quickFilter=&filters=> |
| **Additional information on the hardware available** | Designed for AI/Machine Learning.  We also support some Molecular Dynamics (MD) work and have the standard set of MD codes available. |
| Resources available through this call | |
| **Indicative sizes of previously successful applications**  (not a restriction) | Varies significantly, we consider any application. |
| **Indicative level of computational resource available through this call**  (subject to fluctuations in overall demand) | Due to JADE’s model of open access for AI/Machine Learning research, applicants who wish to conduct AI/Machine Learning projects on JADE should contact the service directly (at the above addresses) to discuss suitable levels of resource. Applicants in other research areas should refer to the eligibility section below. |
| **% compute allocated to EPSRC mechanisms**  (including but not limit to this call) | 80% of JADE’s total capacity, split between AI and Molecular Dynamics research. |
| **Storage available** | Without asking users to remove data we have around ~200TB free at the moment. |
| Requirements on applications for the service | |
| **Eligible EPSRC research areas** | AI & Machine Learning projects can get access through this call. Projects in the area of Molecular Dynamics should apply through HEC BioSim at <http://www.hecbiosim.ac.uk/jade/application-form>. Projects in other research areas are not eligible for access to JADE. |

## MMM Hub

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| Service details | |
| **Service Contact Details** | [rc-support@ucl.ac.uk](mailto:rc-support@ucl.ac.uk) |
| **Service Webpage** | <https://mmmhub.ac.uk> |
| **Service Grant Reference** | EP/T022213/1 |
| Hardware and Technical specifications | |
| **System name** | Thomas 2 (provisionally) |
| **Compute nodes** | 576 HPE 40 core compute nodes with 192 GB of RAM, 3 with 3TB of RAM and 3 with 6TB of RAM |
| **Processor** | 2x 20 core Intel Xeon Cascade Lake |
| **Interconnect** | Omnipath in 36 node 1:1 blocks |
| **Storage** | 1PB Lustre |
| **Software available** | Standard UCL application stack: 700+ software modules supporting development tools (compilers from Intel, Python etc) and user applications (e.g. VASP, GROMACS, CP2K...) |
| Resources available | |
| The MMM Hub operates a different allocation mechanism to the other Tier 2 Centres. Access is only available via membership of two HEC consortia and not via this process. For more information see: <https://mmmhub.ac.uk/thomas> | |
| **% compute allocated to EPSRC mechanisms**  (including but not limit to this call) | 30% of the Thomas 2 facility |

## NI-HPC (Kelvin-2)

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| Service details | |
| **Service Contact Details** | [v.purnell@qub.ac.uk](mailto:v.purnell@qub.ac.uk) |
| **Service Webpage** | [www.ni-hpc.ac.uk](http://www.ni-hpc.ac.uk) |
| **Service Grant Reference** | EP/T022175 |
| Hardware and Technical specifications | |
| **System name** | Kelvin-2 |
| **Compute nodes** | Standard: 60x Dell PowerEdge R6525 with 768GB RAM  Hi-memory: 4x Dell PowerEdge R6525 with 2TB RAM  GPU: 8 x Dell DSS8440 (each with 2x Intel Xeon Platinum 8168 24 Core CPU). Provides 32x NVIDIA Tesla v100 32GB |
| **Processor** | AMD Rome 2x64core 7702 |
| **Interconnect** | Mellanox EDR infiniband |
| **Storage** | 2PB usable lustre for scratch storage  Metadata Servers: Dell R640  Metadata Targets: Dell Powervault ME2024 with 1TB SSD  Object Storage servers: Dell Powervault ME4084 |
| **Software available** | Centos 7.7  Lustre file system  Alces flight cluster manager  Applications – see attachment. |
| Resources available through this call | |
| **% compute allocated to EPSRC mechanisms**  (including but not limit to this call) | 35 |
| **Storage available** | 2PB shared scratch (no project quota planned in 2020-21) |
| Requirements on applications for the service | |
| **Eligible EPSRC research areas** | Priority areas: computational neuroscience, advanced chemistry, innovative drug delivery, precision medicine, food fingerprinting and hydrogen deflagration  Then: any EPSRC related area |

## Northern Intensive Computing Environment (NICE)

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| Service details | |
| **Service Contact Details** | [rebecca.appleby@durham.ac.uk](mailto:rebecca.appleby@durham.ac.uk)  +44 (0) 191 33 42520 |
| **Service Webpage** | <https://n8cir.org.uk/supporting-research/facilities/nice> |
| **Service Grant Reference** | EP/T022167/1 |
| Hardware and Technical specifications | |
| **System name** | bede.dur.ac.uk |
| **Compute nodes** | 32x IBM AC922 with 0.5TB and 4x32GB V100 GPU,  4x IBM IC922 with 256GB and 4xT4 GPU,  2x IBM IC922 with 256GB memory and FPGA |
| **Processor** | AC922: 2x16core 2.7Ghz Power 9.  IC922: 2x20core 2.9Ghz Power 9. |
| **Interconnect** | Mellanox EDR |
| **Storage** | 2Pb, 10GB/s Lustre filesystem for running jobs. |
| **Software available** | <https://n8cir.org.uk/supporting-research/facilities/nice/software> |
| **Additional information on the hardware available** | <https://n8cir.org.uk/supporting-research/facilities/nice/hardware> |
| Resources available through this call | |
| **% compute allocated to EPSRC mechanisms**  (including but not limit to this call) | 38% |