# Request for Grex Resources

**Overview**

Grex was put into production on May 2nd, 2011. Its current compute capacity consists of three parts: the legacy compute nodes, the new nodes purchased in 2020 and 2021, and user-contributed nodes. These parts are as follows:

* Legacy compute from 2011
  + 316 original compute nodes, each 12 cores 2.67GHz processors (Intel Wesmere architecture) with 48 or 94 GB of memory, non-blocking 40GB/s QDR Infiniband Interconnect
* 418TB of Parallel, scalable Lustre storage
* New compute nodes added in 2020 and 2021
  + two GP GPU nodes (Intel 5218 Cascade Lake, 4x NVIDIA V100)
  + 12 of 40 core Intel CascadeLake 6248 2.5GHz compute nodes, 384GB RAM
  + 42 of 52 core Intel CascadeLake 6230R 2.1GHz compute nodes, 96GB RAM
  + the new compute nodes have 4:1 blocking EDR (100GB/s) interconnect
* Contributed GPU nodes
  + 3 of 4x V100 nodes
  + 1 of 16x V100 HGX-2 node

In this round of resource allocations, we will allocate newly added compute nodes only (**total of 2664 CPU cores**, **54** **CascadeLake nodes**).

* General GP GPUs nodes available on a first come, first served basis. Please indicate if you might need GPUs in your proposal.
* We plan to decommission the legacy 316 compute nodes at the end of October 2021. Until that date, they are available on a first come, first served basis. Please indicate if you need these nodes in your proposal.
* Contributed GPU nodes are not allocatable, they are available for opportunistic, preemptible use when not used by the contributors.

Proposals for the use of Grex resources will be reviewed by the Advanced Research Computing (ARC) Committee. They will also be reviewed by Grex technical staff to ensure that Grex resources will be used appropriately and efficiently.

**Categories of Resource Requests**

The request for ARC resources must come from a PI. There are two (2) categories of resource requests:

1. Rapid Access Service (RAS)

Is limited to less than: 30 core-years, 4 GB memory, and 4TB of storage per research group. For information and access please email [arc@umanitoba.ca](mailto:arc@umanitoba.ca)

1. Resource Allocation Competition (RAC)

This includes resources in excess of those allocated for RAS and requires completion of a proposal in the format outlined below.

**Proposal Format**

Please use the section headings below, leaving 2.5 cm (1.0 in) in all the margins and using Times New Roman font (12 pt) with single spacing between lines. You may remove all explanations (text in italics) if desired. Please ensure that all pages of your proposal are numbered. **The proposal document must be submitted in pdf format only.**

This template below is intended as a guide. Please remove any section or sub-section that does not apply to your application. For example, if you are not requesting a storage allocation, there is no need to include section 3.2. Maximum lengths for each section are included in the template, but your proposal may use (much) less space depending on the size and complexity of the request.

The proposals should be sent by email, to [ARC@umanitoba.ca](mailto:ARC@umanitoba.ca) , by the closing date of

**May 1, 2021**

# Request for Grex Resources

**0. The Applicant**

Name of PI *[last, first]*:

Department:

Faculty:

Email:

Telephone:

**1. Introduction to the Research Problem and Research Justification**

*Outline the research problem for each project, its importance/relevance, as well as your general objectives. [¼-½ page]*

**2. Training and Support of HQP**

*Describe how this allocation will support the training of Highly Qualified Personnel (HQP) that are reported on the online form. [¼ page]*

**3. Technical Justification**

*This section addresses the technical details of your computational and/or storage needs for each project to ensure that resources are used as efficiently as possible, that requests are reasonable, and appropriate for the system being used.* *[½ page]*

**Code Details, Performance & Utilization**

*List any software requirements associated with your application. Is anything specific to be considered regarding code performance when allocating resources for your project, (e.g., if there are particular operating system or processor architectures for which the code is best suited, or if it is known to scale efficiently to a certain number of cores) please provide additional information here - otherwise leave blank.*

**Allocatable Compute Requirements (if applicable)**

*Specify your compute requirements, in CPU cores per year (Core Years). In this document, please justify the stated computing needs and describe your level of confidence and experience with HPC computing use. Explain how you estimated the total amount of compute time required for this project.*

**Memory Requirements**

*Specify memory requirements for the Allocatable compute above, either per-core or per-node. If there is any additional information you would like to provide regarding memory requirements, please provide additional information here - otherwise leave blank.*

**Additional Compute Requirements (Legacy and GPUs) (if applicable)**

*Please highlight your interest in GPU compute nodes and needs, if any, of the Legacy compute nodes (for example, running massive parallel codes across hundreds of nodes). GPUs and Legacy nodes are not RAC allocatable, so these do not count towards your total Core-Years request above!*

**Storage Requests (complete only if required)**

*Specify your storage requirements. Please justify your stated storage needs and explain how you estimated the total amount of storage required for this project. If your storage needs do not exceed the RAS limit of 4TB/group, leave blank.*

**4. Progress Since Last local RAC Round**

*Please identify which of your publications were enabled by your use of Grex local compute resources.* *Please highlight any notable Grex local RAC-enabled research that you have performed. This may refer to publications record, or it may be a work in progress.*