Requesting Research Computing Resource Allocations

Foundations of High Performance Computing Micro-Credential

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Requesting an Ascent Allocation

Let’s get Ascent Allocations!

Forms

Ascent Form for RMACC

https://bit.ly/rmaccascent

Ascent Form for CU Boulder

https://bit.ly/boulderascent

Overview

1. FairShare & Priority
2. Service Units (SUs) & Allocations
3. Alpine Allocation Tiers

FairShare Scheduling

Jobs submitted by people who have **underutilized** their allocated resources get **higher** priority, while jobs submitted by people who have **overutilized** their allocated resources get **lower** priority.

Level FairShare

Level Fairshare (**LevelFS**) is a value calculated by Slurm's Fairshare Algorithm.

A user's assigned shares (determined by their allocation) and usage (based on their job history) contribute to their LevelFS value.

If there are no other pending jobs and enough resources are available then your job will run regardless of your previous usage.

Priority Score

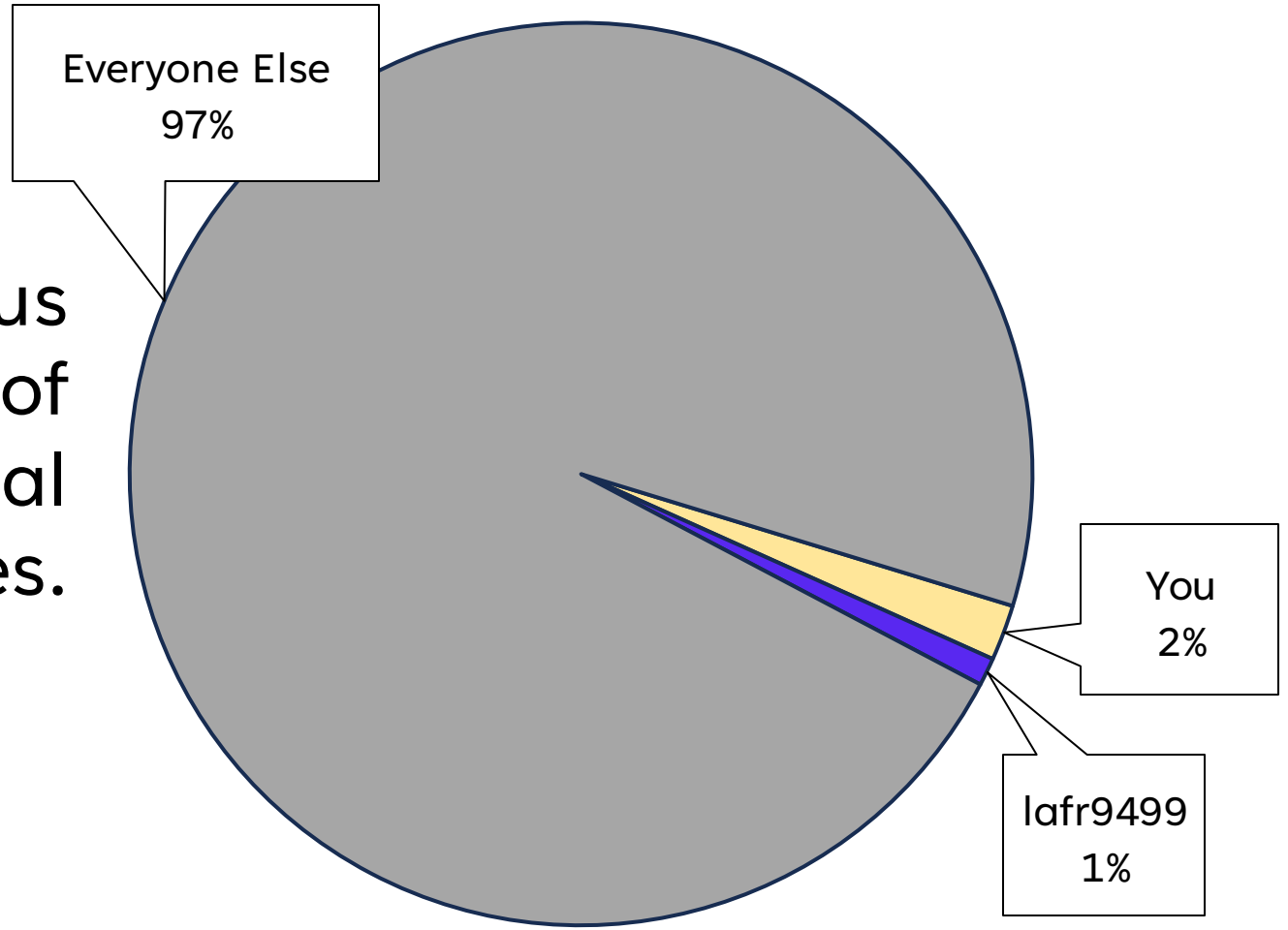
When you request resources on Alpine, your job's priority determines its position in the queue relative to other jobs.

A job's priority is based on multiple factors, including (but not limited to)

- FairShare score
- job age
- resources requested
- job size
- QOS

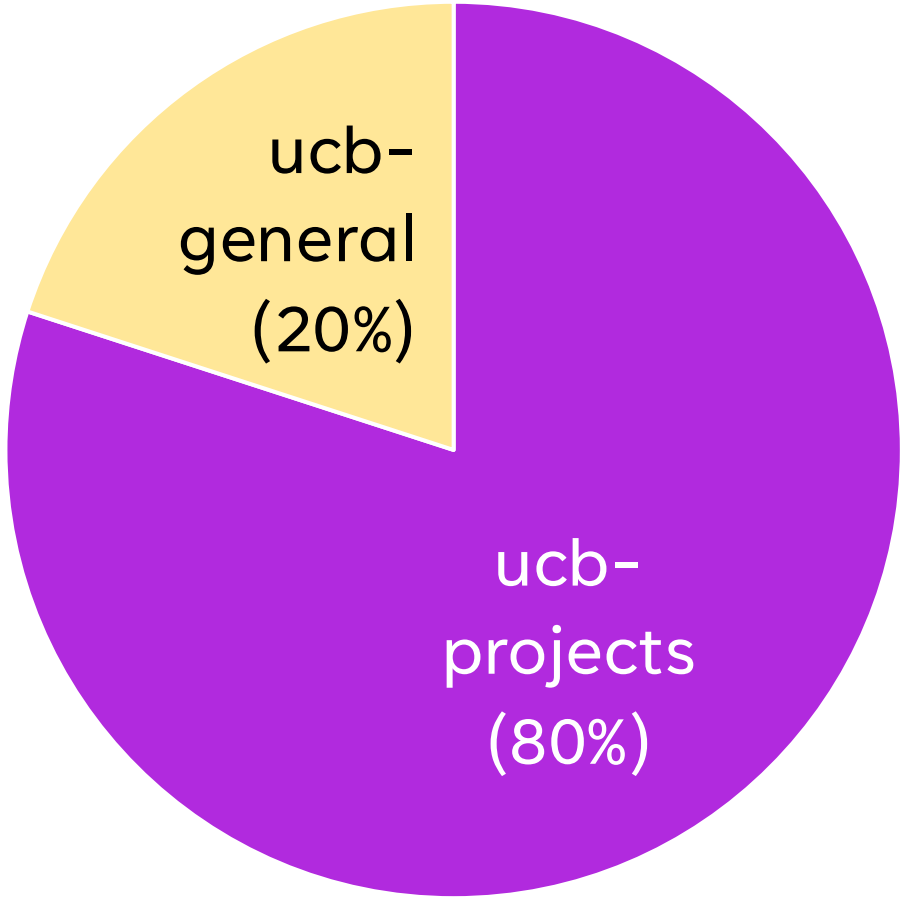
Allocations

An allocation is a way for us to specify your cut of Alpine's computational resources.



general vs projects

The ‘general’ and ‘project’ accounts are structured such that your jobs are likely to have a **higher** priority if they are running in the ‘**project**’ account.



Service Units (SUs)

Service units (SUs), sometimes called “core hours”, reflect the processing that a core performs in one hour.

- Virtual currency
- Usually modified by a scaling factor that varies by partition or hardware type

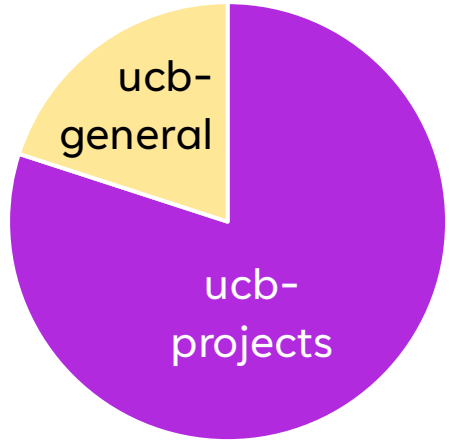
If you reserve one whole amilan compute node (which means you're effectively reserving all 64 cores of that node), and your job runs for one hour, that job will use 64 SUs

e.g., 64 cores x 1 hour x scaling factor of 1 = 64 SUs

Alpine Allocation Tiers (CU Boulder)

Trailhead

- Automatic with a CURC account.
- ~couple thousand SUs in **ucb-general**
- Does not expire



Ascent

Peak

https://curc.readthedocs.io/en/latest/clusters/alpine/allocations.html

Ascent vs Peak Allocations (CU Boulder)

Ascent

- Size Limits- 350,000 SUs over 12 months per user, 1,400,000 SUs per research group
- Required Info- Title and project description, FOS, PI and role, collaborator usernames, partitions, acknowledgment of CURC User Policies; provide via Ascent Allocation Form
- Approval Process- quick, no review by CURC Allocations Committee
- Expiration & Renewal- auto expires after 1y, complete Ascent Renewal Form

Peak

- Size Limits- 6,000,000 SUs over 12 months per research group
- Required Info- all info required by Ascent, plus example jobs and software info, via Peak Allocation application form
- Approval Process- reviewed by CURC Allocations Committee, may need to improve job efficiency
- Expiration & Renewal- auto expires after 1y, complete Peak Renewal form, justify size

Peak Allocation Supp Info Form

Provide workflow details, list software requirements, calculate SU request with example jobs:

https://bit.ly/boulderpeaksuppform

Ascent vs Peak Allocations (RMACC)

Ascent

- Size Limits- 100,000 SUs over 12 months per user, 400,000 SUs per research group
- Required Info- Title and project description, FOS, PI and role, collaborator usernames, partitions, acknowledgment of CURC User Policies; provide via Ascent Allocation Form
- Approval Process- quick, no review by CURC Allocations Committee
- Expiration & Renewal- auto expires after 1y, complete RMACC Ascent Renewal Form

Using Your Allocation

Allocations are referred to as accounts in Slurm's documentation and are indicated by the --account directive:

#SBATCH --account=<your allocation name>

or

sbatch --account <your allocation name> yourjob.sh