Monitoring Resource Use

Foundations of High Performance Computing Micro-Credential

August 15, 2024

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Learning Objectives

Learn how to access information on

- your high-performance computing resource consumption on Alpine and Blanca
- average wait times in the CURC queues and your relative "priority"
- the efficiency of your research workflows

Overview

- Part 1: Command line tools (the slurmtools module)
- Part 2: Web-based tools (CURC XDMoD)

Part 1: Command Line Tools

Allow us to answer questions such as

- What jobs have I run over the past N days?
- How many Service Units (SUs) have I used?
- Who is using all the SUs on my group's account?
- How efficient are my jobs?
- How efficiency are my array jobs?
- What is my priority?

The slurmtools Module

A module that loads a collection of functions to assess recent usage statistics

```
$ module load slurm/alpine
$ module load slurmtools
```

jobstats

- What jobs have I run over the past N days?

```
$ jobstats
```

```
Purpose: This function shows statistics for each job
run by a specified user over N days.

Usage: jobstats [userid] [days, default 5]
Hint: jobstats ralphie 15
```

Service Units

- Service units (SUs), sometimes called “core hours”, reflect the processing that a core performs in one hour modified by some scaling factor
  - Virtual currency

suuser

- How many Service Units (SUs) have I used?

```
$ suuser
```

```
Purpose: This function computes the number of Service
Units (SUs) consumed by a specified user over N days.

Usage: suuser [userid] [days, default 30]
Hint: suuser ralphie 15
```

suacct

- Who is using all the SUs on my group's account?

```
$ suacct
```

```
Purpose: This function computes the number of Service
Units (SUs) consumed by each user of a specified
account over N days.

Usage: suacct [account_name] [days, default 30]
Hint: suacct ucb-general 15
```

seff

- How efficient are my jobs?

```
$ seff
```

```
Usage: seff [Options] <Jobid>

Options:
      -h Help menu
      -v Version
      -d Debug mode: display raw Slurm data
```

seff-array

- How efficient are my array jobs?

```
$ levelfs
```

```
usage: seff-array.py [-h] [-c CLUSTER] [--version] jobid
positional arguments: jobid
options:
     -h, --help show this help message and exit
     -c CLUSTER, --cluster CLUSTER
     --version show program's version number and exit
```

Priority

- 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, and QOS.

levelfs

- What is my priority?

```
$ levelfs
```

```
Purpose: This function shows the current fair share priority of a specified user.
A value of 1 indicates average priority compared to other users in an account.
A value of < 1 indicates lower than average priority
       (longer than average queue waits)
A value of > 1 indicates higher than average priority
       (shorter than average queue waits)

Usage: levelfs [userid]
Hint: levelfs ralphie
```

Part 2: Web-Based Tool

XDMoD is a web portal for viewing metrics at the system, partition, and user levels.

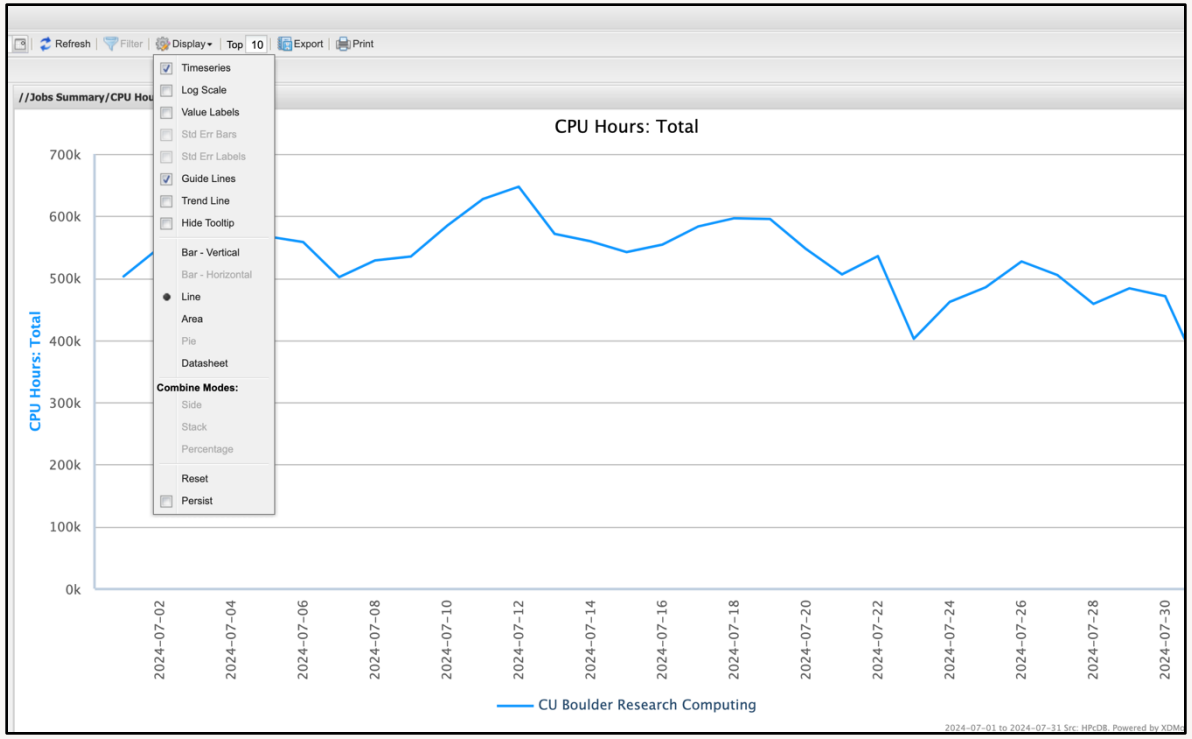
XDMoD can query a seemingly endless number of metrics!

XDMoD

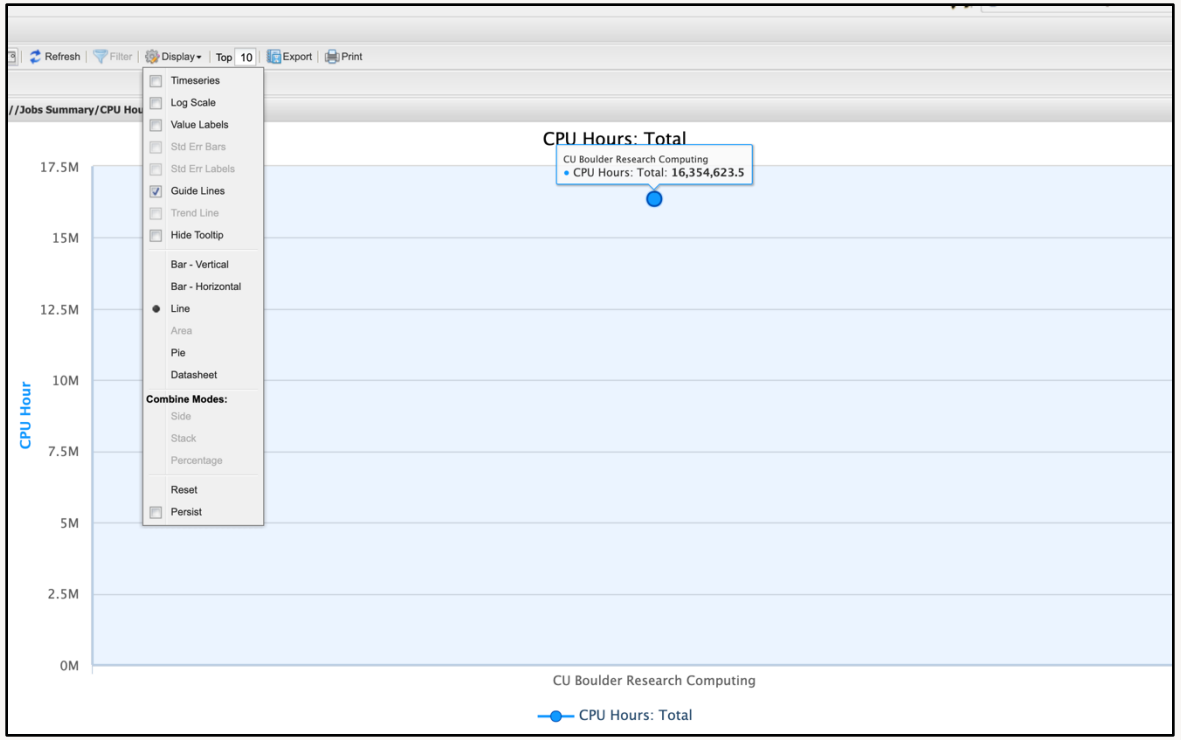
Visit https://xdmod.rc.colorado.edu/

Demo

XDMoD Display Menu Defaults

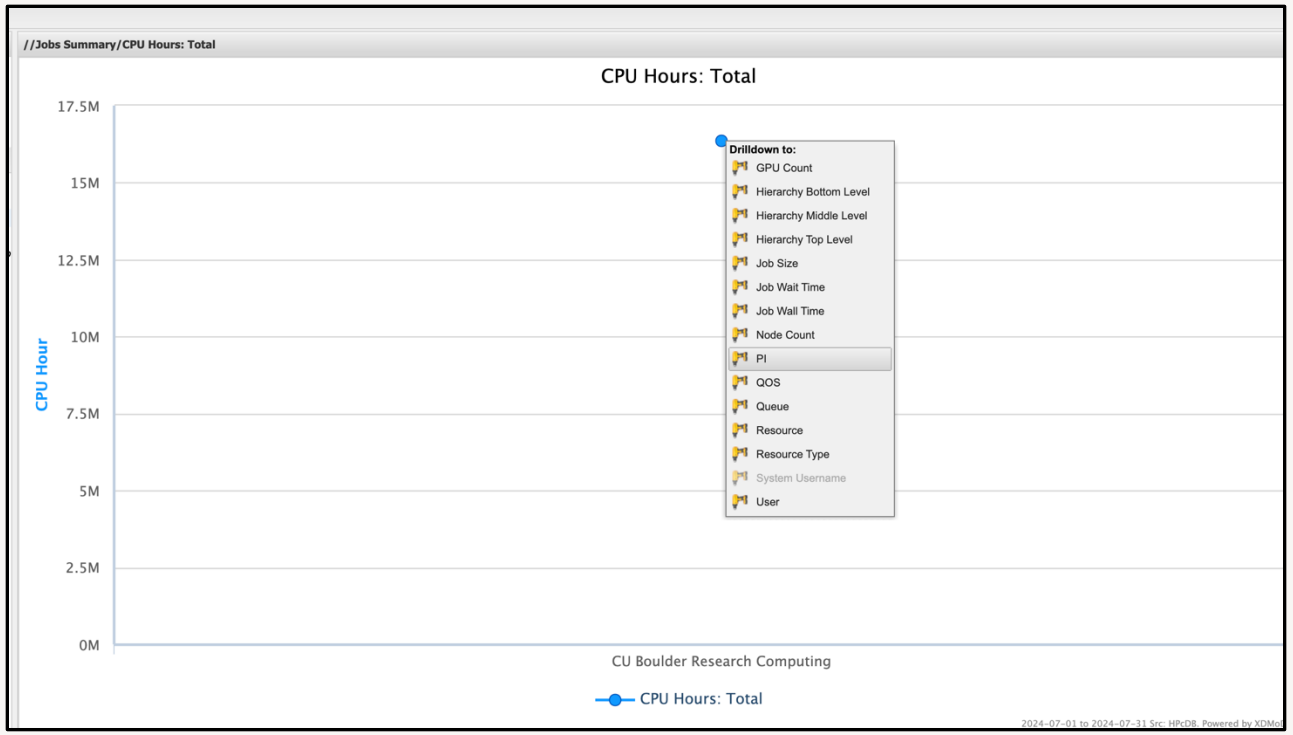


Display Menu: timeseries checked (default)

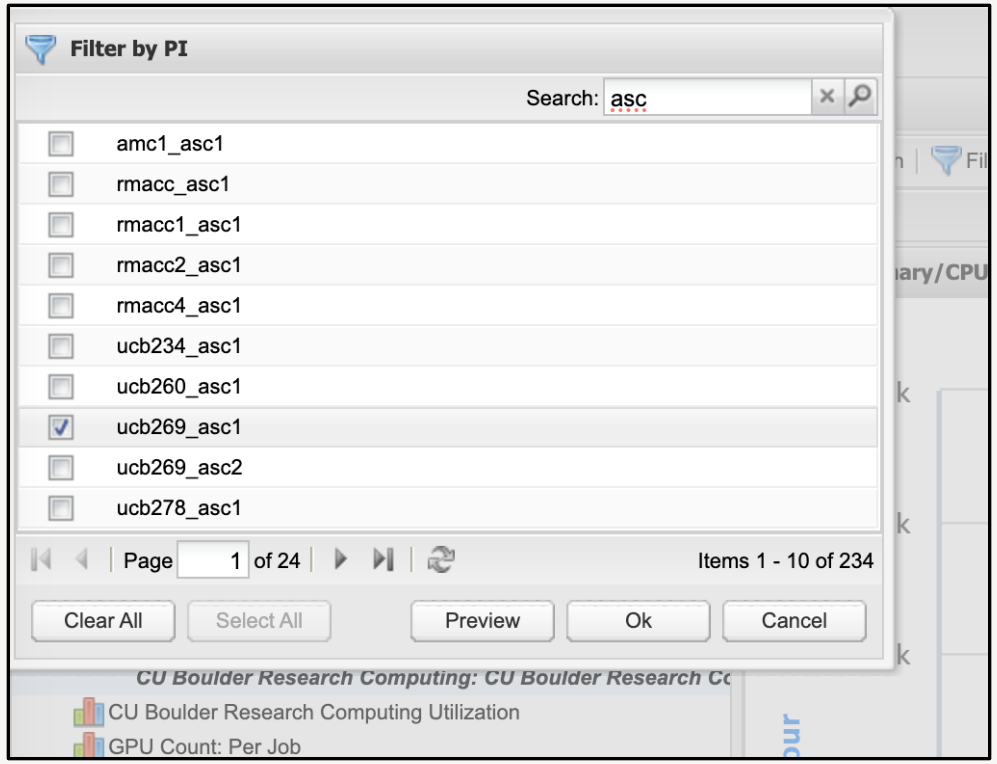


Display Menu: timeseries unchecked

XDMoD Drilldown and Filter



Click on a data point to see Drilldown menu
(PI = Slurm allocation)



Filter and search