

## Introduction

The focus of this research was to develop a user interface to the accounting data in the Simple Linux Utility for Resource Management (SLURM) batch system. NERSC users submit numerous jobs into the high performance computing systems, so they need a quick and easy way to recall their job information. The accounting tool is qqacct, which allow users to query the accounting database.

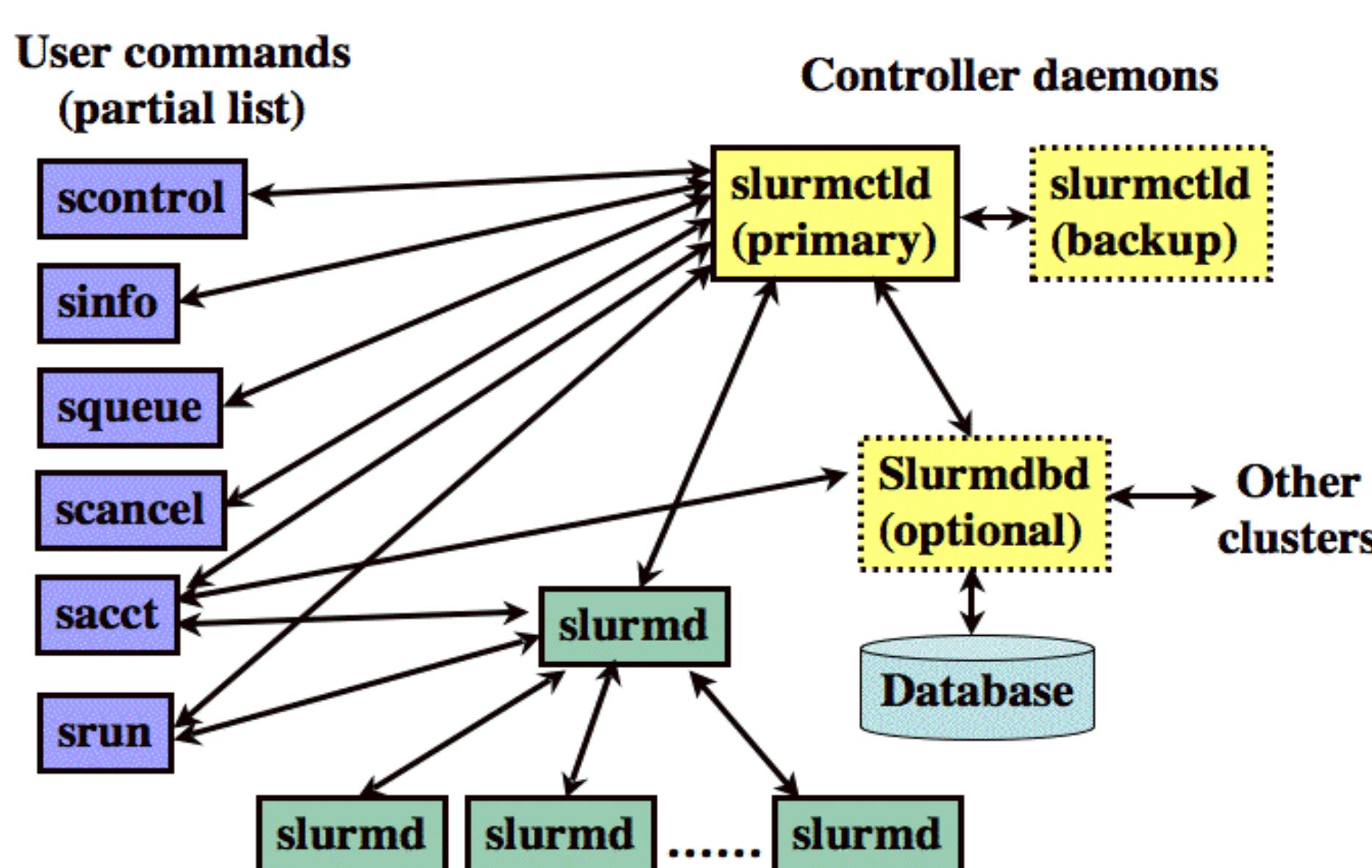
## Background

High Performance Computing plays a significant role in scientific research. The National Energy Research Scientific Computing Center (NERSC) is the world leader in accelerating scientific discovery through computation. This project is involved with Carver, a NERSC's supercomputer.

Carver has 1200 compute nodes, 9000 process cores and its peak performance is 106.5 teraflops. On carver, SLURM is installed in the testbed subsystem.



## Simple Linux Utility for Resource Management (SLURM)



## Motivation

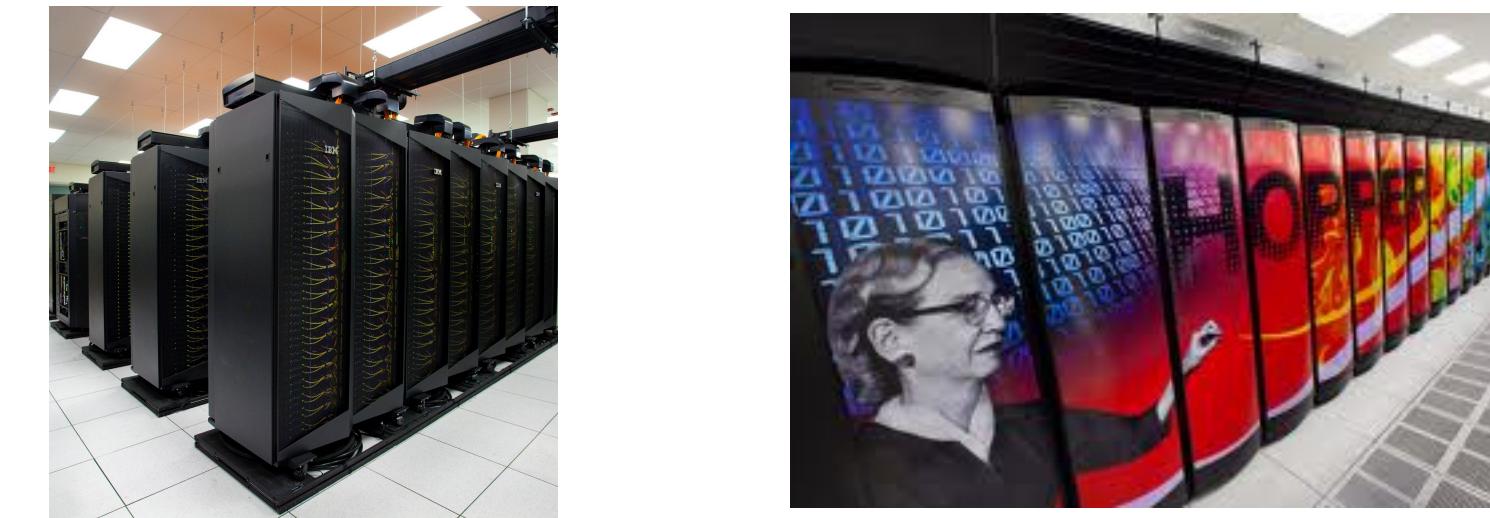


Genepool/  
Univa  
GridEngine

Qqacct: a consistent user interface to access batch job history over different systems.



Carver/  
SLURM



Hopper/  
Torque and Moab

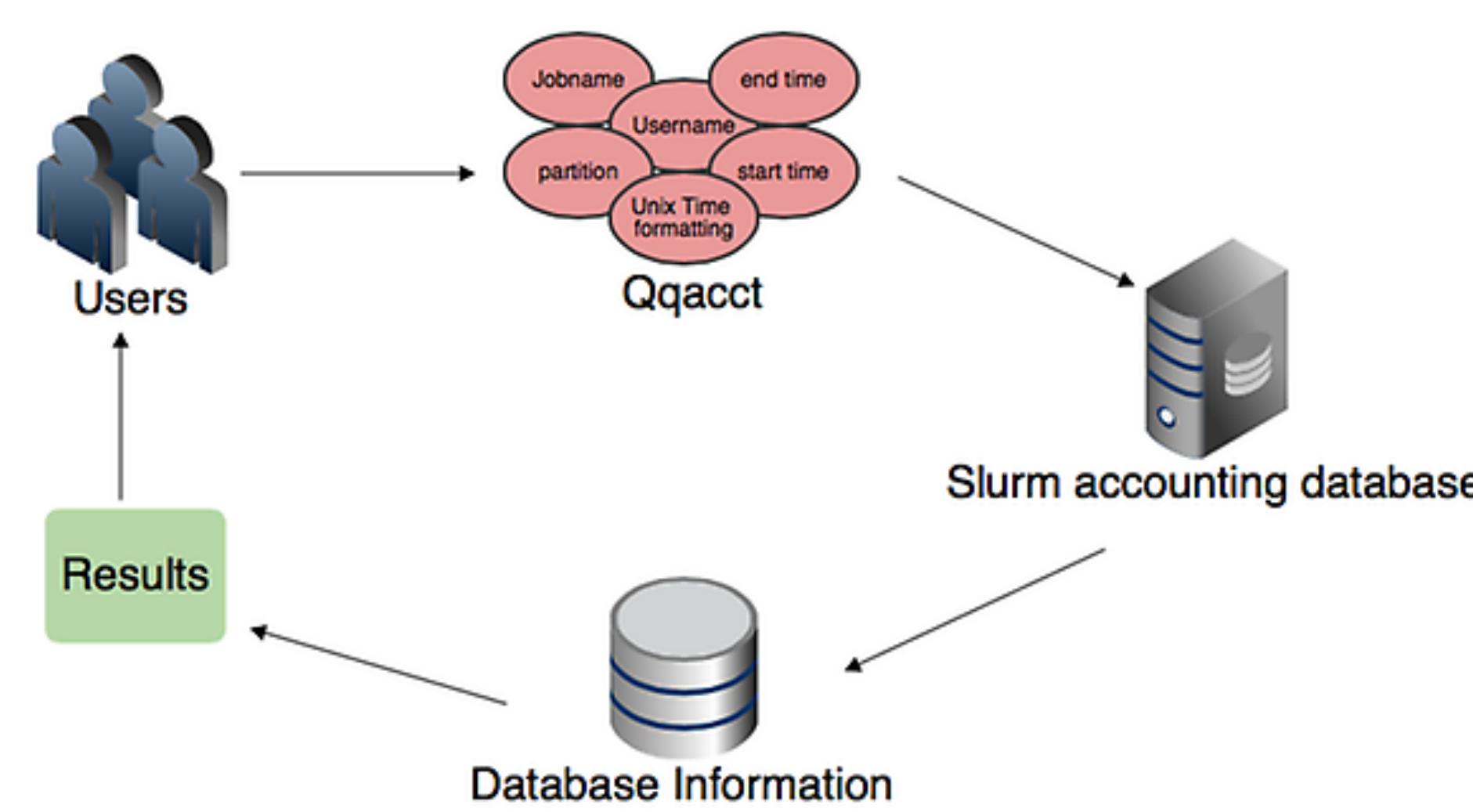


Edison/  
Torque and Moab

## Contribution

The code is written in Python using the MySQLdb module to make queries to the accounting database. The accounting tool is created by the following steps:

1. Connect to the slurm accounting database through a UNIX socket
2. Using the user arguments to qqacct, create an appropriate SQL query
3. Get information from the database
4. Take arguments by using argparse in python to create each argument, such as username, jobname, partition, end time and more
5. Change time format  
Change Unix time to local time



## Results

```
-bash-3.2$ python qqacct.py -u 57399 -j xhpl.sh -e 2014-07-20
Jobs associated with this user 57399
Jobs associated with this user with jobname xhpl.sh
1273 | xhpl.sh | reg_big | 02-18-2014 14:29:44
1313 | xhpl.sh | reg_big | 02-21-2014 15:45:59
1314 | xhpl.sh | reg_big | 02-21-2014 15:53:42
1315 | xhpl.sh | reg_big | 02-21-2014 16:05:36
3 | xhpl.sh | reg_big | 03-21-2014 13:58:24
5 | xhpl.sh | reg_big | 03-21-2014 14:03:36
6 | xhpl.sh | reg_small | 03-21-2014 14:14:05
7 | xhpl.sh | reg_med | 03-21-2014 14:14:34
8 | xhpl.sh | reg_med | 03-21-2014 14:15:05
11 | xhpl.sh | reg_med | 03-21-2014 17:42:20
118 | xhpl.sh | reg_small | 03-25-2014 14:34:04
21044 | xhpl.sh | reg_med | 05-06-2014 09:36:48
21045 | xhpl.sh | cdebug | 05-28-2014 14:58:22
21082 | xhpl.sh | cdebug | 07-01-2014 15:43:06
21083 | xhpl.sh | cdebug | 07-01-2014 15:48:21
21084 | xhpl.sh | cdebug | 07-01-2014 16:34:28
21085 | xhpl.sh | regular | 07-01-2014 16:38:52
21086 | xhpl.sh | regular | 07-01-2014 16:49:01
21087 | xhpl.sh | reg_big | 07-01-2014 16:59:29
```

## Future Work

- Organize the print output
- Error checking
- Accept more arguments and switches
- Create a web interface with equivalent functionality
- Adapt qqacct into other batch systems

## Acknowledgements

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