Cluster Computing

Dan Barker danbarke@umich.edu
Cluster System Administrator

Batch Computing Clusters

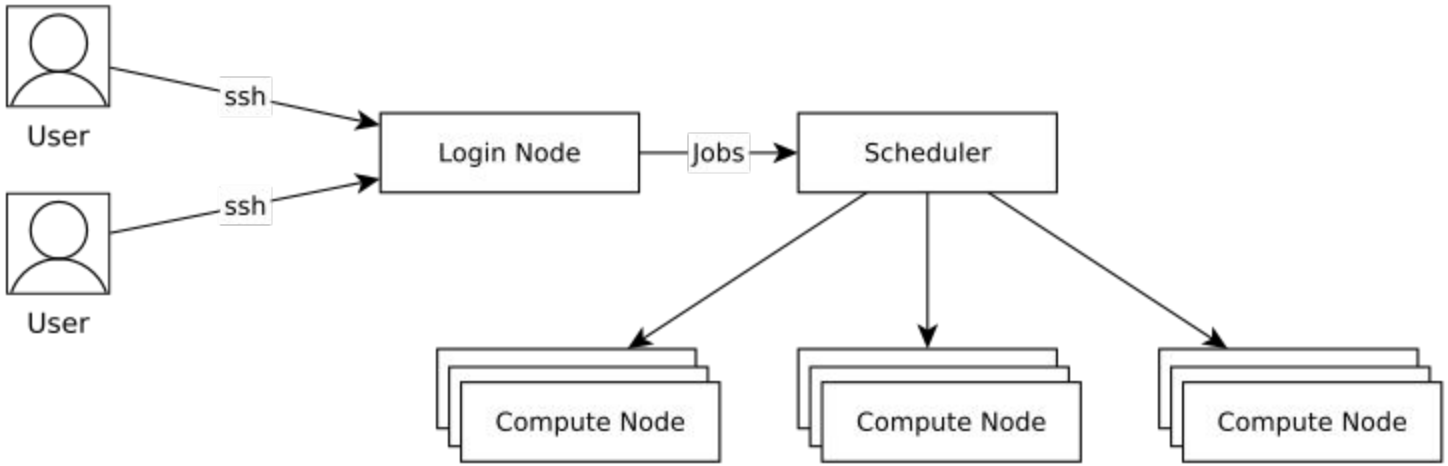


image credit: https://docs.hpc.qmul.ac.uk/intro/

Biostatistics Computing Cluster

55 Compute Nodes

2 Login Nodes

948 Processors

~5.5TB RAM

Red Hat Enterprise Linux

Statistical Software R, SAS, Matlab

Login with SSH

login host: biostat-login.sph.umich.edu

Enter kerberos password (same as email)

Authenticate with Duo

MacOS: Terminal

Windows: PuTTY

All OSes: Biostatistics Web Portal

Anatomy of a Batch Job

```
#!/bin/bash
#SBATCH --job-name=hello_world
#SBATCH --time=10:00
#SBATCH --mail-user=danbarke@umich.edu
#SBATCH --mail-type=BEGIN,END,FAIL
#SBATCH --mem=4000mb
#SBATCH --cpus-per-task=1

R CMD BATCH script.R
```

Slurm Commands

sbatch <batch_script_file> - submits a job

squeue -u <uniqname> - show all jobs for user on cluster

scancel <jobid> - cancel a job

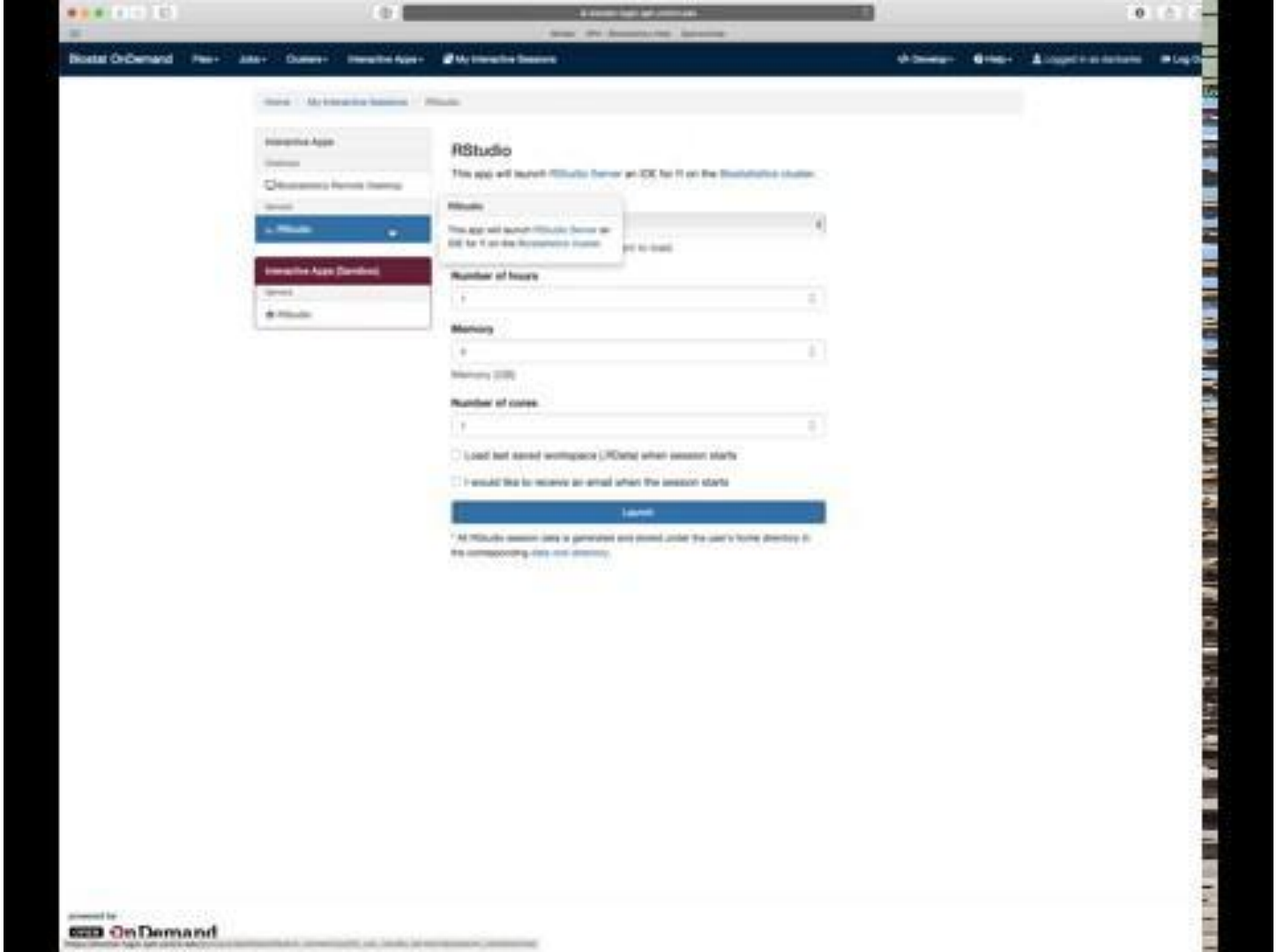
sacct - show data about recently completed or running jobs

All slurm commands have additional options available in their manual pages

Type "man <command>" to bring up the man page

Type "q" to exit the man page

Biostat OnDemand
BIOSTATISTICS
OnDemand provides an integrated, single access point for all of your HPC resources.
OnDemand


Biostat OnDemand
Plan
Jobs
Clusters
Interactive Apps
My Interactive Sessions
Develop
Help
Home
My Interactive Sessions
RStudio
Interactive Apps
RStudio
Interactive Apps (Sandbox)
RStudio
RStudio
This app will launch RStudio Server an IDE for R on the Biostatistics cluster.
Number of hours
Memory
Number of cores
Load last saved workspace (.RData) when session starts
I would like to receive an email when the session starts
Launch
powered by
OnDemand

Basic Linux Commands

ls - list files or directories

cd - change directory

pwd - print working directory

cat - concatenate

cp - copy

mv - move

rm - remove

mkdir - make a directory

Submit Jobs

Should always submit a job to use the cluster. Do not do too much computation on the login nodes. Your session will be killed off.

If you need to do interactive work, submit an interactive job

srun --pty /bin/bash