UCF ARCC Stokes Reference Card

March 19, 2017

Created and maintained by Armando Fandango, available from GitHub. Feel free to contact him for contributions.

Getting help

ARCC helpdesk: request-stokes@ist.ucf.edu

Stokes - Logging In

```
ssh -Y -i path_to_your_ssh_key your_usernamestokes.ist.ucf.edu
```
For Mac/Unix/Windows based system with ssh client
`nano ~/.ssh/config` For setting up personal SSH configuration
```
Host stokes
Hostname stokes.ist.ucf.edu
user your_username
IdentityFile absolute_path_to_ssh_key
```

Stokes - Job Queues

queue	Max Cores	Max Nodes	Max Time
batch64	512	64	240:00:00
batch98	784	98	48:00:00
batch224	2688	224	36:00:00

SLURM - Job Submission

`sbatch` Submit script for later execution
  `--array=<indexes>` Job Array Specification

`srun` Create a job allocation and launch a job step

  `--label` Prepend task ID to output

`salloc` Create job allocation and start a shell

Options common across sbatch, srun and salloc:

  `--account=<name>` Account to be charged for resources used
  `--begin=<time>` Initiate job after specified time
  `--constraint=<features>` Required node features
  `--cpu_per_task=<count>` Number of CPU's required per task
  `--dependency=<state:jobid>` defer until jobid reaching specified state
  `--error=<filename>` File to store job errors
  `--exclude=<hostnames>` Hosts to be excluded from job allocation
  `--export=<name[=value]>` Export specified environment variable name
  `--gres=<name[:count]>` Generic resources required for the job
  `--input=<name>` File for input job data
  `--job-name=<name>` A name for the job

SLURM - Job Management

`sattach` Connect stdin/out/err for an existing job or step
`scancel` Cancel jobs or steps

  `--account=<name>` Operate only on jobs for the specified account
  `--name=<name>` Operate only on the specified job(s)
  `--partition=<name(s)>` Operate only on the jobs in specified partition(s)
  `--qos=<name>` Operate only on the jobs using specified QoS
  `--reservation=<name>` Operate only on specified reservation
  `--state=<name(s)>` Operate only on job in specified state
  `--user=<name>` Operate only on jobs for the specified user
  `--nodelist=<name(s)>` Operate only on jobs using the specified node(s)

`sbcast` Transfer file to compute node(s) allocated to a job
`srun_cr` Wrapper for srun to support Berkeley checkpoint/restart
`strigger` Event trigger management create, destroy or list event triggers

SLURM - Get Information

`sinfo` System status - nodes, queues
`squeue` Job and Step status
  `--account=<name>` Operate only on jobs for the specified account
  `--jobs=<job id list>` Operate only on the specified job(s)
  `--name=<job name(s)>` Operate only on the specified job(s)
  `--partition=<name(s)>` Operate only on the jobs in specified partition
  `--priority` Sort jobs by priority
  `--qos=<name>` Operate only on the jobs using specified QoS
  `--reservation=<name>` Operate only on specified reservation
  `--state=<name(s)>` Operate only on job in specified state(s)
  `--users=<name(s)>` Operate only on jobs for the specified user(s)
  `--nodelist=<name(s)>` Operate only on jobs using the specified node(s)

`smap` Status with curses-based GUI
`sview` Status with GTK-based GUI
`sacct` Accounting info by job and step
`sstat` Accounting info about currently running jobs and steps
`sreport` Resource usage by cluster, partition, user, account etc.

SLURM - Environment Variables

SLURM_ARRAY_JOB_ID	Job Id in Array
SLURM_ARRAY_TASK_ID	Task Id in Array
SLURM_CPUS_PER_TASK	No. of CPUs per task
SLURM_JOB_ACCOUNT	Account Name
SLURM_JOB_ID	Job Id
SLURM_JOB_NAME	Job Name
SLURM_JOB_NODELIST	Names of nodes allocated
SLURM_JOB_NUM_NODES	No. of nodes allocated
SLURM_JOB_PARTITION	Partition running the job
SLURM_JOB_UID	User Id of job owner
SLURM_JOB_USER	User name of job owner
SLURM_NPROCS	Number of cores allocated
SLURM_PROCID	Task Id (MPI Rank)
SLURM_STEP_ID	Step Id in a Job
SLURM_STEP_NUM_TASKS	No. of tasks (MPI Ranks)

SLURM - Administration

`scontrol` Admin tool to view/update system, job, step, partition, reservation status
`sacctmgr` DB Admin tool to add/delete clusters, accounts, users and get/set resource limits, fair-share allocations etc.
`sprio` View factors comprising job's priority
`sshare` View current hierarchical fair-share information
`sdiag` View statistics about scheduling module

Torque/MOAB - User Commands

myquota	Check your disk usage
myusage	Check your hours usage
qsub	submit job
qstat	showq	status of queue
pbsnodes	checknode	status of node
checkjob	status of node
mdiag	

StarCCM

Make sure the following lines are added to your /.ssh/config file:
```
Host *
StrictHostKeyChecking no
UserKnownHostsFile=/dev/null
```

Matlab

Compile: Get an interactive node, load Matlab module and then compile the Matlab code.
Run: Submit the compiled code as a SLURM job.
`mcc -m hello.m` Compile matlab code as standalone C application
`mcc -p hello.m` Compile matlab code as standalone C++ application