Agenda

- Workflow
- Available Resources
- Identify the most appropriate resource
- Helpdesk
- Common Issues

Workflow

- Understand you problem
  - Identify the issue.
    - access issue, permissions issue, code issue, scheduler, etc
  - What is the specific error message
    - Ex. If the running jobs is returning an error
      - » Is it code dependent
      - » Is it system dependent
  - Identify the correct support

Available Resources

- What are the available resources
  - Yourself
  - Colleagues
  - Web (community forums, user guides, git repositories)
  - Helpdesk

Identify the most appropriate resource

- Internal:
  - Yourself, Colleagues
    - Sanity check, Legacy Lab Code
  - The Web
    - Generic errors
- External
  - The Software Provider
    - Software specific error or bug
      – Github documentation
  - The Resource Provider
    - Resource specific question (file systems, nodes)
    - Performance
    - At the end of your rope ☺

Help Desk

- Help Desk
  - While help desk staff are exceptional, they should be considered general practitioners
  - Provide adequate information for helpdesk to start investigating
    - Username, System, Jobid, specific error message if available, etc.
    - The user with the problem should submit the help ticket
  - Always be nice to the support desk! ☺

Help Desk: Useful Information

- Resource, Username

- JobId: List of nodes that job ran on

  - Working directory, location of .err and .out files

  - Project

  - Start time

  - End time

  - Resources requested

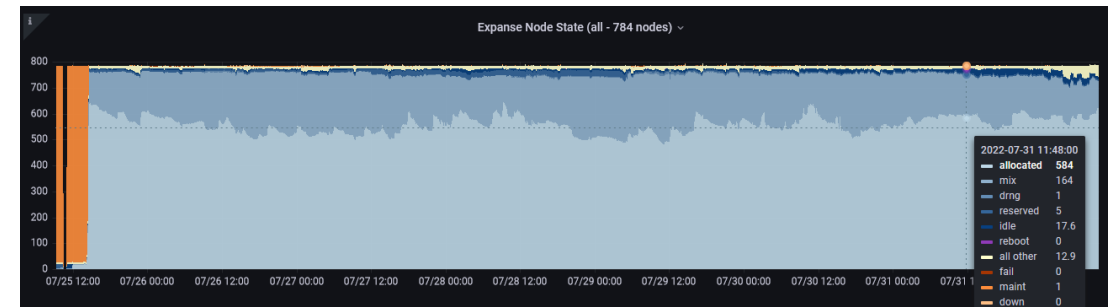- Location of Submit Script

- Location of .err & .out files


```
[nickel@login01 ~]$ scontrol show job 14819918
JobId=14819918 JobName=NGBW-JOB-BEAST_TG-F2426A07EA5E4D3AB9FD968DE322DE67
   UserId=                ) GroupId=              MCS_label=N/A
   Priority=2711 Nice=0 Account=       QOS=shared-cipres
   JobState=RUNNING Reason=None Dependency=(null)
   Requeue=1 Restarts=0 BatchFlag=1 Reboot=0 ExitCode=0:0
   RunTime=00:38:07 TimeLimit=1-00:00:00 TimeMin=N/A
   SubmitTime=2022-07-31T20:28:48 EligibleTime=2022-07-31T20:28:48
   AccrueTime=2022-07-31T20:28:48
   StartTime=2022-07-31T20:36:55 EndTime=2022-08-01T20:36:55 Deadline=N/A
   SuspendTime=None SecsPreSuspend=0 LastSchedEval=2022-07-31T20:36:55 Scheduler=Backfill
   Partition=shared AllocNode:Sid=login01:445491
   ReqNodeList=(null) ExcNodeList=(null)
   NodeList=exp-3-43
   BatchHost=exp-3-43
   NumNodes=1 NumCPUs=3 NumTasks=3 CPUs/Task=1 ReqB:S:C:T=0:0:*:*
   TRES=cpu=3,mem=5G,node=1,billing=10800
   Socks/Node=* NtasksPerN:B:S:C=3:0:*:* CoreSpec=*
   MinCPUsNode=3 MinMemoryNode=5G MinTmpDiskNode=0
   Features=(null) DelayBoot=00:00:00
   OverSubscribe=OK Contiguous=0 Licenses=cipres:1 Network=(null)
   Command=./_batch_command.run
   WorkDir=/expanse/projects/
   StdErr=/expanse/projects/                                                  _stderr.txt
   StdIn=/dev/null
   StdOut=                                                                     _scheduler_stdout.txt
   Power=
   MailUser=mmiller@sdsc.edu MailType=INVALID_DEPEND,BEGIN,END,FAIL,REQUEUE,STAGE_OUT
```

Common Issues

- Access
  - Password and username issues (XSEDE, UCSD)
    - Indicator message: Enter verification code
  - ssh keys
    - Indicator message: Enter password
- Unable to access system
  - Check specific error message
  - User News
    - Subscribe to be notified
    - Check on User Portal -- https://portal.xsede.org/user-news

Common Issues

- Job Scripts
  - Error message
    - sbatch: error: Project balance is not enough to run the job.
    - sbatch: error: Batch job submission failed: Job violates accounting/QOS policy (job submit limit, user's size and/or time limits)
  - Memory requirements (MaxMemPerLimit)
    - Max. mem per Node = 243G
  - Queues/Partitions
    - charging
  - Time Limits
  - Expanse-client tool

Common Issues

- Expanse-client tool

```
[nickel@login01 ~]$ expanse-client user nickel -r expanse_gpu -p

Resource   expanse_gpu

NAME      STATE   PROJECT    TG PROJECT      USED   AVAILABLE   USED BY PROJECT
--------------------------------------------------------------------------------
nickel    allow   ddp324                       0        5000                  21
nickel    allow   ddp386                       0        2500                  74
nickel    allow   sds154     TG-ASC150024      0         100                 517
                             STA160003         0        2500                   3
                                               9      269000               63638
```

```
[nickel@login01 ~]$ expanse-client
Allows querying the user statistics.

Usage:
  expanse-client [command]

Available Commands:
  completion   Generate the autocompletion script for the specified shell
  help         Help about any command
  project      Get project information
  resource     Get resources
  user         Get user information

Flags:
  -a, --auth      authenticate the request
  -h, --help      help for expanse-client
  -p, --plain     plain no graphics output
  -v, --verbose   verbose output

Use "expanse-client [command] --help" for more information about a command.
```

```
client user nickel -p

PROJECT       USED   AVAILABLE   USED BY PROJECT
------------------------------------------------
                 2      110000              9163
ASC150024        0        1000             16572
STA160003        0      100000             56528
              5856     5050000           3457273
```

```
[nickel@login01 ~]$ expanse-client resource
Available resources:
expanse
expanse_gpu
expanse_industry
expanse_industry_gpu
```

Common Issues: Queue and time limits

Partition Name	Max Walltime	Max Nodes/Job	Max Running Jobs	Max Running + Queued Jobs	Charge Factor	Notes
compute	48 hrs	32	32	64	1	Exclusive access to regular compute nodes; *limit applies per group*
ind-compute	48 hrs	32	32	64	1	Exclusive access to Industry compute nodes; *limit applies per group*
shared	48 hrs	1	4096	4096	1	Single-node jobs using fewer than 128 cores
ind-shared	48 hrs	1	32	64	1	Single-node Industry jobs using fewer than 128 cores
gpu	48 hrs	4	4	8 (32 Tres GPU)	1	Used for exclusive access to the GPU nodes
ind-gpu	48 hrs	4	4	8 (32 Tres GPU)	1	Exclusive access to the Industry GPU nodes
gpu-shared	48 hrs	1	24	24 (24 Tres GPU)	1	Single-node job using fewer than 4 GPUs
ind-gpu-shared	48 hrs	1	24	24 (24 Tres GPU)	1	Single-node job using fewer than 4 Industry GPUs
large-shared	48 hrs	1	1	4	1	Single-node jobs using large memory up to 2 TB (minimum memory required 256G)
debug	30 min	2	1	2	1	Priority access to shared nodes set aside for testing of jobs with short walltime and limited resources
gpu-debug	30 min	2	1	2	1	Priority access to gpu-shared nodes set aside for testing of jobs with short walltime and limited resources; *max two gpus per job*
preempt	7 days	32		128	.8	Non-refundable discounted jobs to run on free nodes that can be pre-empted by jobs submitted to any other queue
gpu-preempt	7 days	1		24 (24 Tres GPU)	.8	Non-refundable discounted jobs to run on unallocated nodes that can be pre-empted by higher priority queues

Common Issues: job status

- Squeue -- reports status and reason codes

  - Queued Jobs

```
[nickel@login01 ~]$ squeue | more
         JOBID PARTITION     NAME     USER ST       TIME  NODES NODELIST(REASON)
      13574113   compute 80dgree_   yweng3 PD       0:00      2 (MaxMemPerLimit)
      12668967   compute 0-xtensi  kavousi PD       0:00      1 (MaxMemPerLimit)
      14756880   compute job001_p   amytsai PD      0:00     10 (Reservation)
      14800161   compute namd-com sasadian PD       0:00      6 (QOSMaxCpuPerUserLimit)
      14800218   compute namd-com sasadian PD       0:00      6 (QOSMaxCpuPerUserLimit)
      14789098   compute bl_8JHNp    uscms PD        0:00      1 (MaxJobsPerAccount)
```

  - Running jobs

```
14813206    compute post0110 lpegolot  R   16:30:28  1 exp-9-35
14800090    compute namd-com sasadian  R   16:13:01  6 exp-2-29,exp-3-23,exp-4-33,exp-7-20,exp-9-[03,26]
14764467    compute V1WTReRU  aminkvh  R   16:08:56  1 exp-2-54
14773832    compute V4R1639Q  aminkvh  R   15:55:58  1 exp-8-14
14800092    compute namd-com sasadian  R   15:29:28  6 exp-4-29,exp-7-[07,39-40],exp-9-[28,41]
14812166    compute  scratch mlaskow2  R   15:53:59  1 exp-10-20
14812167    compute  scratch mlaskow2  R   15:39:34  1 exp-8-48
14800158    compute namd-com sasadian  R   15:17:18  6 exp-2-[26,50],exp-4-[52-53],exp-7-[42-43]
14812168    compute  scratch mlaskow2  R   15:20:01  1 exp-10-37
```

Common Issues

- squeue – Common "reasons" for pending jobs
  - MaxMemPerLimit
  - QOSMaxNodePerUserLimit
  - Priority
  - ReqNodeNotAvail, Unavailable nodes: exp-x-xx
- File system not available
  - We have added a slurm directive #SBATCH –constraint = "lustre" to indicate if your job is using the lustre file system. If this is provided, the scheduler will not launch the job on a node that is missing lustre.

Common Issues

- Software
  - Availability
    - XSEDE Portal
    - Module spider
      - Module spider <<software_package>>
  - Software installs
    - Help desk
  - Software specific error messages
    - Github repo issues file

Review

- Understand your problem
- Engage with appropriate support tools
- Provide relevant information to reduce iterations

- Always be nice to the support desk! ☺

Questions?