Getting Help: Getting the Most out of User Support

Tuesday, August 2, 2022

SDSC SAN DIEGO SUPERCOMPUTER CENTER

UC San Diego

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

Common Issues: Resource Access

- 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 Submissions

- Job Scripts
  - Error message
    - sbatch: error: Project balance is not enough to run the job
    - sbatch: error: QOSMaxNodePerJobLimit
      - sbatch: error: Batch job submission failed: Job violates accounting/QOS policy (job submit limit, user's size and/or time limits)
  - Queues/Partitions
  - Time Limits
  - Expanse-client tool

Common Issues

- Expanse-client tool

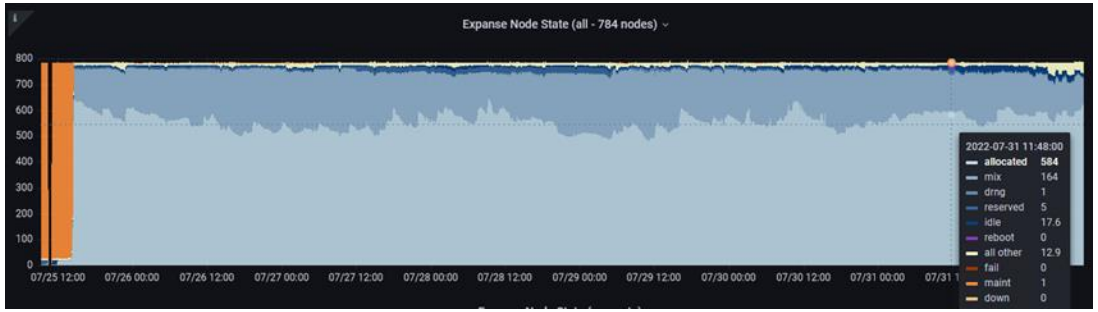
```
[nickel@login01 ~]$ expanse-client
Allows querying the user statistics.

Usage:
  expanse-client [command]

Available Commands:
  completion  Generate the autocompletion script fo
  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.
```

```
[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
 nickel  allow  sds166   TG-STA160003     0       2500                3
 nickel  allow  use300                    9     269000            63638
[nickel@login01 ~]$ ^C
[nickel@login01 ~]$ expanse-client user nickel -p

 Resource  expanse

 NAME    STATE  PROJECT  TG PROJECT     USED  AVAILABLE  USED BY PROJECT
-------------------------------------------------------------------------
 nickel  allow  ddp386                    2     110000             9163
 nickel  allow  sds154   TG-ASC150024     0       1000            16572
 nickel  allow  sds166   TG-STA160003     0     100000            56528
 nickel  allow  use300                 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: Charging

- Charging is based on what is requested, not how resources are used
- Charging is based on the Maximum of memory and CPU core fraction

- Example for CPU
  - Max [3600 * #CPU cores, 1800 * #Mem in GB] / 3600 * (wallclock time in secs/3600)
- Minimum charge for any job is 1SU

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: Reasons

- squeue – Common “reasons” for pending jobs
  - MaxMemPerLimit
    - Max. mem per Node = 243G
  - 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?