



Slurm_QOS_MaxJob_Implementation / README.md



Surajkumar4-source Update README.md

e957642 · 14 hours ago



422 lines (197 loc) · 4.79 KB

1. Create a New User

- To add a new user examuser:

```
adduser examuser
```



2. Editing the Configuration File (slurm.conf)

- To configure Slurm, you attempted to edit the slurm.conf file:

```
nano slurm.conf
```



```
# Make changes as necessary in this file for your Slurm setup.
```

3. Navigating and Working with Scripts

- Navigated to the build directory:

```
cd build/
```



```
# Then, edited the newscript.sh file:
```

```
nano newscript.sh
```

4. Copy Configuration to System Directories

- After configuring `slurm.conf`, it was copied to `/etc/slurm` and `/etc/slurm-llnl/` and other Compute Nodes.

```
cp slurm.conf /etc/slurm
cp slurm.conf /etc/slurm-llnl/
```



5. Restarting Slurm Services

- After editing the configuration, the Slurm services were restarted:

```
systemctl restart slurmd
systemctl restart slurmdbd
systemctl restart slurmctld
```



6. Check Job Queues and Partitions

- To check the job queue and partitions:

```
squeue
```



7. Create Account and User in sacctmgr

- Create an account for examuser:

```
sacctmgr add account examuser --immediate
```



Create the user:

```
sacctmgr create user examuser defaultaccount=examuser --immediate
```



8. Create QoS for the User

- Create QoS (Quality of Service) for examuser:

```
sacctmgr create qos examuser
```



Set priority for examuser:

```
sacctmgr modify qos examuser set priority=12
```



9 . Modify User Settings (MaxJobs)

- To modify the MaxJobs limit for the user examuser:

```
sudo sacctmgr modify user examuser set MaxJobs=2
```



10. Check QoS Settings

- To verify the QoS settings:

```
sacctmgr show qos format=name,priority,MaxJobs
```



11. Submitting Jobs as examuser

Log in as examuser:

```
su - examuser
```



Then submit jobs using:

```
sbatch newscript.sh
```



Check job status:

```
squeue
```



12. MaxJobs Exceeded (QoS Limit)

- If the user exceeds the MaxJobs limit, the job will be queued with the following message:

queue



----- Implementation Screnchots-----

1. Create a New User

```
root@controller:/home/dhpcsa/slurm-21.08.8/etc# adduser examuser
Adding user `examuser' ...
Adding new group `examuser' (1010) ...
Adding new user `examuser' (1010) with group `examuser' ...
Creating home directory `/home/examuser' ...
Copying files from `/etc/skel' ...
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for examuser
Enter the new value, or press ENTER for the default
    Full Name []:
    Room Number []:
    Work Phone []:
    Home Phone []:
    Other []:
Is the information correct? [Y/n] y
```

2. Editing the Configuration File (slurm.conf)



```
GNU nano 4.8 slurm.conf
#DefMemPerCPU=0
#MaxMemPerCPU=0
#SchedulerTimeSlice=30
SchedulerType=sched/backfill
SelectType=select/cons_tres
SelectTypeParameters=CR_Core
PriorityType=priority/multifactor
#
#
# JOB PRIORITY
#PriorityFlags=
PreemptType=preempt/qos
PreemptMode=suspend,gang
#PriorityType=priority/basic
#PriorityDecayHalfLife=
#PriorityCalcPeriod=
#PriorityFavorSmall=
#PriorityMaxAge=
#PriorityUsageResetPeriod=
#PriorityWeightAge=
#PriorityWeightFairshare=
#PriorityWeightJobSize=
#PriorityWeightPartition=
#PriorityWeightQOS=
#
#
# LOGGING AND ACCOUNTING
AccountingStorageEnforce=limits,qos
#AccountingStorageHost=
#AccountingStoragePass=
#AccountingStoragePort=
AccountingStorageType=accounting_storage/slurmdbd

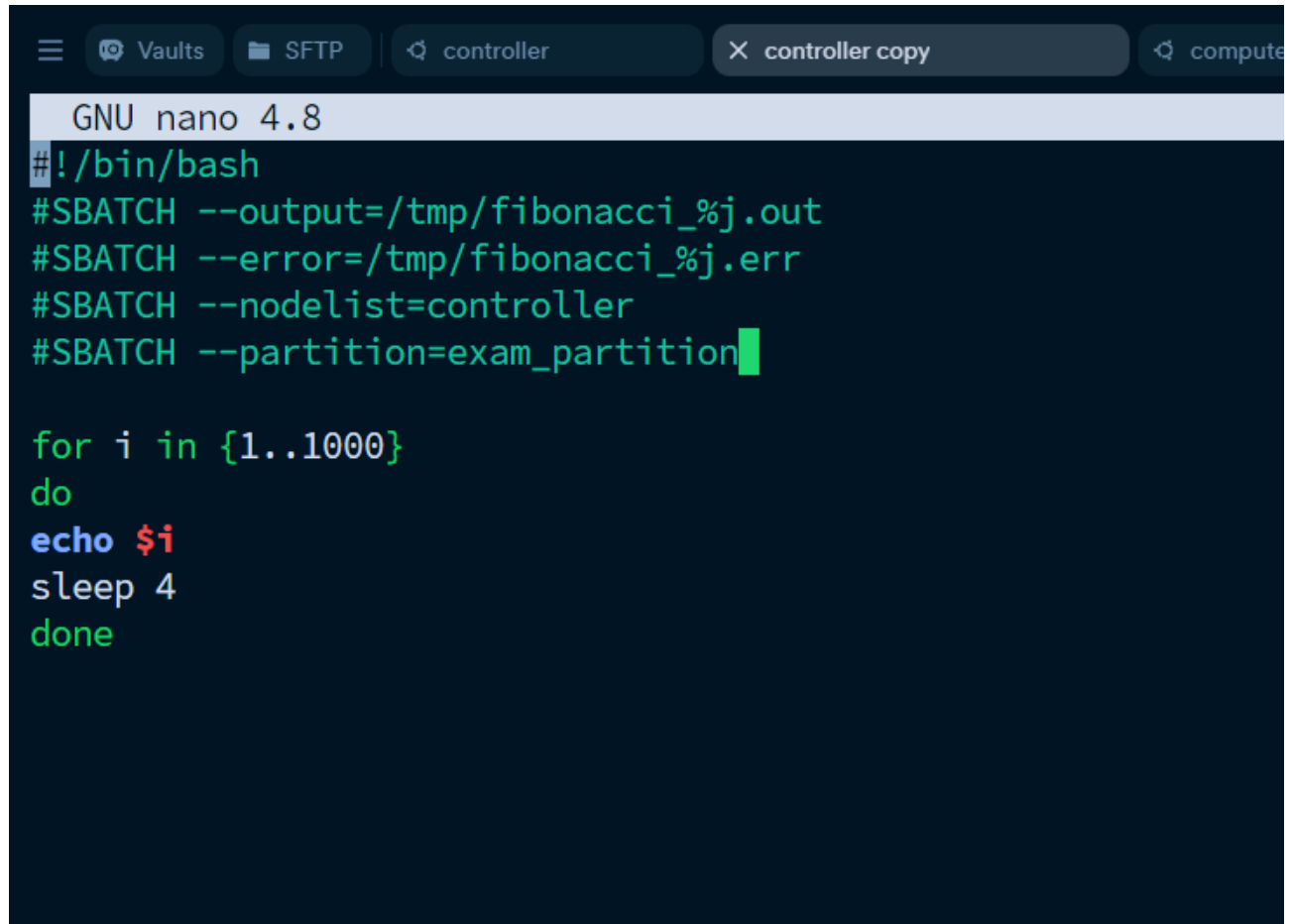
^G Get Help      ^O Write Out    ^W Where Is     ^K Cut Text     ^J Justify      ^C Cur Pos      M-U Undo        M-A Mark Text   M-T To Bracket
^X Exit          ^R Read File    ^L Replace      ^U Paste Text   ^I To Spell     ^_ Go To Line    M-B Redo       M-G Copy Text   ^Q Where Was

Type here to search
```

```
#
#
# COMPUTE NODES
NodeName=controller CPUs=4 State=UNKNOWN
NodeName=compute[1-2] CPUs=4 State=UNKNOWN
#PartitionName=newpartition Nodes=controller Default=YES MaxTime=INFINITE State=UP
#PartitionName=Test Nodes=compute[1-2] MaxTime=01:00:00 State=UP AllowAccounts=dhpcsa,rma QOS=rmaqos
#PartitionName=exam_partition Nodes=compute1 MaxTime=7-00:00:00 State=UP AllowAccounts=examuser QOS=
#PartitionName=fairpart Nodes=controller Default=yes MaxTime=INFINITE State=UP AllowAccounts=root,dhpcsa,dhpcsa1,dhpcsa2
#PartitionName=test Nodes=compute[1-2] MaxTime=01:00:00 State=UP AllowAccounts=root,pravin QOS=rmaqos

PartitionName=exam_partition Nodes=controller Default=YES MaxTime=7-00:00:00 State=UP AllowAccounts=examuser QOS=examuser
Mailprog=/usr/bin/mail
```

3. Navigating and Working with Scripts



The screenshot shows a terminal window with a dark background. At the top, there is a navigation bar with tabs: 'Vaults', 'SFTP', 'controller', 'controller copy', and 'compute'. Below the navigation bar, the text 'GNU nano 4.8' is displayed. The main content of the terminal is a Slurm batch script written in a light green monospace font. The script starts with a shebang line, followed by four SBATCH directives for output, error, node list, and partition. It then contains a loop that iterates from 1 to 1000, printing the current value of 'i' and sleeping for 4 seconds.

```
#!/bin/bash
#SBATCH --output=/tmp/fibonacci_%j.out
#SBATCH --error=/tmp/fibonacci_%j.err
#SBATCH --odelist=controller
#SBATCH --partition=exam_partition

for i in {1..1000}
do
echo $i
sleep 4
done
```

4. Copy Configuration to System Directories

```

root@controller:/home/dhpcsa/slurm-21.08.8/etc# cp slurm.conf /etc/s
sane.d/          sensors.d/      shadow-        slurm-llnl/     ssl/           subuid-         sysctl.d/
security/        services       shells         snmp/           subgid         sudoers.d/     systemd/
selinux/         sgml/          skel/          speech-dispatcher/ subgid-        sudoers.d/     sysctl.conf
sensors3.conf    shadow         slurm/         ssh/            subuid         sysctl.conf

root@controller:/home/dhpcsa/slurm-21.08.8/etc# cp slurm.conf /etc/slurm
root@controller:/home/dhpcsa/slurm-21.08.8/etc# cp slurm.conf /etc/slurm-llnl/
root@controller:/home/dhpcsa/slurm-21.08.8/etc# systemctl restart slurmd

Command 'systemctl' not found, did you mean:

  command 'systemctl' from deb systemd (245.4-4ubuntu3.24)
  command 'systemctl' from deb systemctl (1.4.3424-2)

Try: apt install <deb name>

root@controller:/home/dhpcsa/slurm-21.08.8/etc# systemctl restart slurmd
root@controller:/home/dhpcsa/slurm-21.08.8/etc# systemctl restart slurmdbd
root@controller:/home/dhpcsa/slurm-21.08.8/etc# systemctl restart slurmctld
root@controller:/home/dhpcsa/slurm-21.08.8/etc# sinfo
PARTITION      AVAIL  TIMELIMIT  NODES  STATE MODELIST
exam_partition* up 7-00:00:00    1   unk  controller
root@controller:/home/dhpcsa/slurm-21.08.8/etc# scontrol update NodeName=controller state=idle
root@controller:/home/dhpcsa/slurm-21.08.8/etc# sinfo
PARTITION      AVAIL  TIMELIMIT  NODES  STATE MODELIST
exam_partition* up 7-00:00:00    1   idle  controller

```

5. Restarting Slurm Services

- After editing the configuration, the Slurm services were restarted:
 - systemctl restart slurmd
 - systemctl restart slurmdbd
 - systemctl restart slurmctld

6. Create Account and User in sacctmgr

```
root@controller:/home/dhpcsa/slurm-21.08.8/etc# sacctmgr add account examuser --immediate
Adding Account(s)
  examuser
Settings
  Description      = Account Name
  Organization     = Parent/Account Name
Associations
  A = examuser    C = cluster
  A = examuser    C = newcluster
root@controller:/home/dhpcsa/slurm-21.08.8/etc# sacctmgr create user examuser defaultaccount=examuser adminlevel=[none] --immediate
Adding User(s)
  examuser
Settings =
  Default Account = examuser
Associations =
  U = examuser  A = examuser  C = cluster
  U = examuser  A = examuser  C = newcluster
```

7. Create QoS for the User

```
root@controller:/home/dhpcsa/slurm-21.08.8/etc# sacctmgr create qos examuser
Adding QOS(s)
  examuser
Settings
  Description      = examuser
Would you like to commit changes? (You have 30 seconds to decide)
(N/y): y
root@controller:/home/dhpcsa/slurm-21.08.8/etc# sacctmgr show qos

```

Name	Priority	GraceTime	Preempt	PreemptExemptTime	PreemptMode	Flags	UsageThres	UsageFactor	GrpTRES	Gr		
pTRESMins	GrpTRESRunMin	GrpJobs	GrpSubmit	GrpWall	MaxTRES	MaxTRESPerNode	MaxTRESMins	MaxWall	MaxTRESPU	MaxJobsPU	MaxSubmitPU	MaxTRESPA
normal	0	00:00:00			cluster			1.000000				
ganesh	0	00:00:00			cluster			1.000000	2			
rmaaqs	0	00:00:00			cluster			1.000000	2			
examuser	0	00:00:00			cluster			1.000000				

```

root@controller:/home/dhpcsa/slurm-21.08.8/etc# sacctmgr modify qos examuser set priority=12
Modified qos...
  examuser
Would you like to commit changes? (You have 30 seconds to decide)
(N/y): y
root@controller:/home/dhpcsa/slurm-21.08.8/etc# sacctmgr show qos format=name,priority

```

Name	Priority
normal	0
ganesh	0
rmaaqs	0
examuser	12

Slurm_QOS_MaxJob_Implementation / README.md

[↑ Top](#)

Preview

Code

Blame

Raw



```

root@controller:/home/dhpcsa/slurm-21.08.8/etc# sacctmgr modify qos examuser set MaxJobs=2
Modified qos...
examuser
Would you like to commit changes? (You have 30 seconds to decide)
(N/y): y
root@controller:/home/dhpcsa/slurm-21.08.8/etc# sacctmgr show qos format=name,priority,MaxJobs
-----
Name      Priority MaxJobs
-----
normal    0
ganesh    0      2
rmaaqs    0      2
examuser  12      2

```

9. Submitting Jobs as examuser

```

root@controller:/home/dhpcsa/slurm-21.08.8/etc# su - examuser
examuser@controller:~$ snfo

Command 'snfo' not found, did you mean:

  command 'info' from deb info (6.7.0.dfsg.2-5)
  command 'sinfo' from deb slurm-client (19.05.5-1)
  command 'anfo' from deb anfo (0.98-7build2)

Try: apt install <deb name>

examuser@controller:~$ export PATH="/home/dhpcsa/slurm-21.08.8/bin:${PATH}"
examuser@controller:~$ export PATH="/home/dhpcsa/slurm-21.08.8/sbin:${PATH}"
examuser@controller:~$ export LD_LIBRARY_PATH="/home/dhpcsa/slurm-21.08.8/lib:${LD_LIBRARY_PATH}"
examuser@controller:~$ sinfo
PARTITION    AVAIL  TIMELIMIT  NODES  STATE MODELIST
exam_partition up 7-00:00:00    1   idle controller
examuser@controller:~$ squeue
JOBID PARTITION   NAME       USER  ST        TIME  NODES MODELIST(REASON)
examuser@controller:~$ sacct
JobID      JobName Partition Account AllocCPUS      State ExitCode
-----
examuser@controller:~$ ls
newscript.sh
examuser@controller:~$ sbatch newscript.sh
Submitted batch job 149
examuser@controller:~$ squeue
JOBID PARTITION   NAME       USER  ST        TIME  NODES MODELIST(REASON)
149 exam_part newscrip examuser  R      0:10      1 controller
examuser@controller:~$ sbatch newscript.sh
Submitted batch job 150
examuser@controller:~$ squeue
JOBID PARTITION   NAME       USER  ST        TIME  NODES MODELIST(REASON)
150 exam_part newscrip examuser  R      0:01      1 controller
149 exam_part newscrip examuser  R      0:14      1 controller
examuser@controller:~$ sbatch newscript.sh
Submitted batch job 151
examuser@controller:~$ squeue
JOBID PARTITION   NAME       USER  ST        TIME  NODES MODELIST(REASON)
151 exam_part newscrip examuser  PD     0:00      1 (QOSMaxJobsPerUserLimit)
150 exam_part newscrip examuser  R      0:06      1 controller
149 exam_part newscrip examuser  R      0:19      1 controller

```

10. MaxJobs Exceeded (QoS Limit)

If the user exceeds the MaxJobs limit, the job will be queued with the following message:
squeue

```
examuser@controller:~$ ls
newscript.sh
examuser@controller:~$ sbatch newscript.sh
Submitted batch job 149
examuser@controller:~$ squeue
      JOBID PARTITION     NAME     USER ST       TIME  NODES NODELIST(REASON)
      149 exam_part  newscrip examuser  R       0:10      1 controller
examuser@controller:~$ sbatch newscript.sh
Submitted batch job 150
examuser@controller:~$ squeue
      JOBID PARTITION     NAME     USER ST       TIME  NODES NODELIST(REASON)
      150 exam_part  newscrip examuser  R       0:01      1 controller
      149 exam_part  newscrip examuser  R       0:14      1 controller
examuser@controller:~$ sbatch newscript.sh
Submitted batch job 151
examuser@controller:~$ squeue
      JOBID PARTITION     NAME     USER ST       TIME  NODES NODELIST(REASON)
      151 exam_part  newscrip examuser  PD       0:00      1 (QOSMaxJobsPerUserLimit)
      150 exam_part  newscrip examuser  R       0:06      1 controller
      149 exam_part  newscrip examuser  R       0:19      1 controller
examuser@controller:~$
```

Start

Key Points:

- User Management: You created a new user, assigned an account, and set job limits.
- Configuration Changes: The configuration file (slurm.conf) was edited and copied to the appropriate system directories.
- Slurm Services: Restarted necessary Slurm services (slurmd, slurmdbd, slurmctld) after configuration changes.
- Job Limits: Managed user job limits through sacctmgr (e.g., MaxJobs=2).

- QoS: Created and modified QoS for the user.
- Job Submission: Submitted jobs using sbatch and monitored them with squeue.