

单节点的 slurm 安装

安装环境: Ubuntu20.04

1、安装 munge

```
apt install munge
```

启动 munge 服务

```
systemctl enable munge
```

```
systemctl start munge
```

2、下载 slurm

```
apt install mysql-server slurm-wlm slurmdbd -y
```

3、配置数据库

mysql 启动数据库

```
mysql
```

```
create user 'amax'@'localhost' identified by 'amax@1234';
```

(amax 为用户名, amax@1234 为密码)

```
create database slurm_acct_db;
```

```
grant all PRIVILEGES on slurm_acct_db.* TO 'amax'@'localhost' with grant option;
```

```
quit;
```

```
systemctl start mysql.service
```

```
systemctl enable mysql.service
```

```
root@amax:/home/amax/Desktop# mysql
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 8
Server version: 8.0.31-0ubuntu0.20.04.1 (Ubuntu)

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> create user 'amax'@'localhost' identified by 'amax@1234';
Query OK, 0 rows affected (0.51 sec)

mysql> create database slurm_acct_db;
Query OK, 1 row affected (0.02 sec)

mysql> grant all PRIVILEGES on slurm_acct_db.* TO 'amax'@'localhost' with grant
option;
Query OK, 0 rows affected (0.03 sec)

mysql> quit;
Bye
```

4、配置 slurmdbd

```
vim /etc/slurm-llnl/slurmdbd.conf
```

ArchiveEvents=yes
ArchiveJobs=yes
ArchiveResvs=yes
ArchiveSuspend=no
ArchiveTXN=no
ArchiveUsage=no
#ArchiveDir="/tmp"
ArchiveSteps=yes
#ArchiveScript=
#JobPurge=12
#StepPurge=1

Authentication info
AuthType=auth/munge
AuthInfo=/var/run/munge/munge.socket.2

slurmDBD info
DbdAddr=localhost
DbdHost=localhost
DbdPort=6819
SlurmUser=amax
#MessageTimeout=300
DebugLevel=4
#DefaultQOS=normal,standby
LogFile=/var/log/slurm-llnl/slurmdbd.log
PidFile=/var/run/slurmdbd.pid
#PluginDir=/usr/lib/slurm
#PrivateData=accounts,users,usage,jobs
#TrackWCKey=yes

Database info
StorageType=accounting_storage/mysql
StorageHost=localhost
StoragePort=3306
StoragePass=amax@1234
StorageUser=amax
StorageLoc=slurm_acct_db

PurgeEventAfter=12month
PurgeJobAfter=12month
PurgeResvAfter=2month
PurgeStepAfter=2month
PurgeSuspendAfter=1month
PurgeTXNAfter=12month

```
PurgeUsageAfter=12month  
MaxQueryTimeRange=60-0
```

启动 slurmdbd 服务:

```
systemctl start slurmdbd  
systemctl enable slurmdbd
```

5、配置 slurm

```
mkdir /var/spool/slurmd  
mkdir /var/spool/slurmctld  
chmod -R 777 slurmd/  
chmod -R 777 slurmctld/
```

```
vim /etc/slurm-llnl/slurm.conf  
# slurm.conf file generated by configurator.html.  
# Put this file on all nodes of your cluster.  
# See the slurm.conf man page for more information.  
#  
ClusterName=cluster  
SlurmctldHost=localhost  
#SlurmctldHost=  
#  
#DisableRootJobs=NO  
#EnforcePartLimits=NO  
#Epilog=  
#EpilogSlurmctld=  
#FirstJobId=1  
#MaxJobId=67043328  
#GresTypes=  
#GroupUpdateForce=0  
#GroupUpdateTime=600  
#JobFileAppend=0  
#JobRequeue=1  
#JobSubmitPlugins=lua  
#KillOnBadExit=0  
#LaunchType=launch/slurm  
#Licenses=foo*4,bar  
#MailProg=/bin/mail
```

```
#MaxJobCount=10000
#MaxStepCount=40000
#MaxTasksPerNode=512
MpiDefault=none
#MpiParams=ports=#-#
#PluginDir=
#PlugStackConfig=
#PrivateData=jobs
ProctrackType=proctrack/cgroup
#Prolog=
#PrologFlags=
#PrologSlurmctld=
#PropagatePrioProcess=0
#PropagateResourceLimits=
#PropagateResourceLimitsExcept=
#RebootProgram=
ReturnToService=1
SlurmctldPidFile=/var/run/slurmctld.pid
SlurmctldPort=6817
SlurmdPidFile=/var/run/slurmd.pid
SlurmdPort=6818
SlurmdSpoolDir=/var/spool/slurmd
SlurmUser=root
#SlurmdUser=root
#SrunEpilog=
#SrunProlog=
StateSaveLocation=/var/spool/slurmctld
SwitchType=switch/none
#TaskEpilog=
#TaskPlugin=task/affinity
#TaskProlog=
#TopologyPlugin=topology/tree
#TmpFS=/tmp
#TrackWCKey=no
#TreeWidth=
#UnkillableStepProgram=
#UsePAM=0
#
#
# TIMERS
#BatchStartTimeout=10
#CompleteWait=0
#EpilogMsgTime=2000
#GetEnvTimeout=2
```

```
#HealthCheckInterval=0
#HealthCheckProgram=
InactiveLimit=0
KillWait=30
#MessageTimeout=10
#ResvOverRun=0
MinJobAge=300
#OverTimeLimit=0
SlurmctldTimeout=120
SlurmdTimeout=300
#UnkillableStepTimeout=60
#VSizeFactor=0
Waittime=0
#
#
# SCHEDULING
#DefMemPerCPU=0
#MaxMemPerCPU=0
#SchedulerTimeSlice=30
TaskPlugin=task/cgroup
SchedulerType=sched/backfill
SelectType=select/cons_res
SelectTypeParameters=CR_CPU
#
#
# JOB PRIORITY
#PriorityFlags=
#PriorityType=priority/basic
#PriorityDecayHalfLife=
#PriorityCalcPeriod=
#PriorityFavorSmall=
#PriorityMaxAge=
#PriorityUsageResetPeriod=
#PriorityWeightAge=
#PriorityWeightFairshare=
#PriorityWeightJobSize=
#PriorityWeightPartition=
#PriorityWeightQOS=
#
#
# LOGGING AND ACCOUNTING
#AccountingStorageEnforce=0
#AccountingStorageHost=
AccountingStoragePass=/var/run/munge/munge.socket.2
```

```
#AccountingStoragePort=
AccountingStorageType=accounting_storage/slurmdbd
#AccountingStorageUser=
#AccountingStoreFlags=
JobCompHost=localhost
JobCompLoc=slurm_acct_db
JobCompPass=amax@1234
#JobCompPort=
JobCompType=jobcomp/mysql
JobCompUser=amax
#JobContainerType=job_container/none
JobAcctGatherFrequency=30
JobAcctGatherType=jobacct_gather/none
SlurmctldDebug=info
SlurmctldLogFile=/var/log/slurm-llnl/slurmctld.log
SlurmdDebug=info
SlurmdLogFile=/var/log/slurm-llnl/slurmd.log
#SlurmSchedLogFile=
#SlurmSchedLogLevel=
#DebugFlags=
#
#
# POWER SAVE SUPPORT FOR IDLE NODES (optional)
#SuspendProgram=
#ResumeProgram=
#SuspendTimeout=
#ResumeTimeout=
#ResumeRate=
#SuspendExcNodes=
#SuspendExcParts=
#SuspendRate=
#SuspendTime=
#
#
# COMPUTE NODES
NodeName=amax CPUs=2 RealMemory=1941
PartitionName=debug Nodes=ALL Default=YES MaxTime=INFINITE State=UP
(节点配置查看用 lscpu/slurmd -C)
```

6、配置 gres

vim /etc/slurm-llnl/gres.conf

```
# This section of this file was automatically generated by cmd. Do not edit manually!  
# BEGIN AUTOGENERATED SECTION -- DO NOT REMOVE  
# No gres config specified  
# END AUTOGENERATED SECTION -- DO NOT REMOVE
```

```
NodeName=amax Name=gpu File=/dev/nvidia[0-3]
```

7、配置 cgroup

```
vim /etc/slurm-llnl/cgroup.conf
```

```
# This section of this file was automatically generated by cmd. Do not edit manually!  
# BEGIN AUTOGENERATED SECTION -- DO NOT REMOVE  
CgroupMountpoint="/sys/fs/cgroup"  
CgroupAutomount=no  
TaskAffinity=no  
ConstrainCores=yes  
ConstrainRAMSpace=no  
ConstrainSwapSpace=no  
ConstrainDevices=yes  
ConstrainKmemSpace=yes  
AllowedRamSpace=100.00  
AllowedSwapSpace=0.00  
MinKmemSpace=30  
MaxKmemPercent=100.00  
MaxRAMPercent=100.00  
MaxSwapPercent=100.00  
MinRAMSpace=30  
# END AUTOGENERATED SECTION -- DO NOT REMOVE
```

8、启动服务并设置开机自启：

```
systemctl start slurmctld  
systemctl enable slurmctld  
systemctl start slurmd  
systemctl enable slurmd
```

9、查看服务状态：

```
systemctl status slurmctld  
systemctl status slurmd
```

systemctl status slurmdbd

10、测试命令:

```
root@amax:/etc/slurm-llnl# sinfo
PARTITION AVAIL  TIMELIMIT  NODES  STATE NODELIST
debug*    up       infinite   1      idle  amax
```