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Ubuntu22.04 (2)slurm部署与配置/完整安装高性能计算集群(ldap,slurm,scow)无废话

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纯粹

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前提：部署机器一台服务端，一台客户端

服务端	172.23.10.32
客户端	172.23.10.33

一、Slurm 安装与配置规划

笔者在Ubuntu22.04上亲自实践安装Slurm21.08.8.,按照本教程顺利安装。（注意：**服务端可以免密登录客户端**）

二、服务端安装（172.23.10.32）

1.安装必要库文件

```
sudo su
apt-get install make hwloc libhwloc-dev libmunge-dev libmunge2 munge mariadb-se
```

2.启动munge服务

```
systemctl enable munge    // 设置munge开机自启动
systemctl start munge     // 启动munge服务
systemctl status munge    // 查看munge状态
```

生成密钥信息

```
#等待随机数据（推荐给偏执狂）：
dd if=/dev/random bs=1 count=1024 >/etc/munge/munge.key
```

新建用户并修改文件所属用户（全部节点）注意：客户端也需要同样的操作，在客户端安装好必要的软件之后

```
#新建用户及其主目录和登录shell
useradd munge -m -s /bin/bash
#给用户赋密码
passwd munge
#修改目录属主
chown -R munge.munge /var/{lib,log,run}/munge
chown -R munge.munge /etc/munge
#修改目录模式
chmod 711 /var/lib/munge
chmod 700 /var/log/munge
chmod 755 /var/run/munge
chmod 700 /etc/munge
chmod 400 /etc/munge/munge.key
```

拷贝密钥（主节点）

```
#拷贝主节点密钥到其余节点
scp /etc/munge/munge.key munge@ip:/etc/munge
```

重启munge服务

```
systemctl restart munge
```

3.编译安装slurm

```
# 将slurm-21.08.8.tar.bz2源码包放置在/home/dlmu/package目录下
cd /home/dlmu/package
tar -jxvf slurm-21.08.8.tar.bz2
cd slurm-21.08.8/
./configure --prefix=/opt/slurm/21.08.8 --sysconfdir=/opt/slurm/21.08.8/etc
make -j16
make install
```

4.配置数据库

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```
systemctl start mariadb          // 启动mariadb服务
systemctl status mariadb         // 查看mariadb状态
```

进入数据库

```
mysql
CREATE USER 'slurm'@'localhost' IDENTIFIED BY '密码';
GRANT ALL ON *.* TO 'slurm'@'localhost';
create database slurm_acct_db;
grant all on slurm_acct_db.* to 'slurm'@'localhost' identified by '密码' with g
exit;
```

5. 修改slurm 服务端的配置文件

```
mkdir /opt/slurm/21.08.8/etc
```

在/opt/slurm/21.08.8/etc 下创建cgroup.conf文件：（原封不动的粘进去）

```
###
#
# Slurm cgroup support configuration file
#
# See man slurm.conf and man cgroup.conf for further
# information on cgroup configuration parameters
#--
CgroupAutomount=yes

ConstrainCores=no
ConstrainRAMSpace=no
```

在/opt/slurm/21.08.8/etc 下创建slurm.conf文件：（原封不动的粘进去，一些密码需要修改）这个配置文件，实现了 gpus 的限制，以及队列的分配，

```
#
# Example slurm.conf file. Please run configurator.html
# (in doc/html) to build a configuration file customized
# for your environment.
#
#
# 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=hpc01
SlurmctldHost=aictrl3
#SlurmctldHost=
#
MpiDefault=none
ProctrackType=proctrack/cgroup
ReturnToService=1
SlurmctldPidFile=/var/run/slurmctld.pid
SlurmctldPort=6817
SlurmdPidFile=/var/run/slurmd.pid
SlurmdPort=6818
SlurmdSpoolDir=/var/spool/slurmd
SlurmdUser=root
StateSaveLocation=/var/spool/slurmctld
SwitchType=switch/none
TaskPlugin=task/affinity

#
#
# TIMERS
InactiveLimit=0
KillWait=30
MinJobAge=300
SlurmctldTimeout=120
SlurmdTimeout=300

Waittime=0

# SCHEDULING
SchedulerType=sched/backfill
SelectType=select/cons_tres
SelectTypeParameters=CR_Core_Memory
#
#
# JOB PRIORITY
AccountingStorageEnforce=qos,limits
AccountingStorageHost=localhost
AccountingStoragePass=/var/run/munge/munge.socket.2
AccountingStorageType=accounting_storage/slurmdbd
AccountingStorageTRES=gres/gpu
JobCompHost=localhost
JobCompLoc=slurm_acct_db
JobCompPass=123456
JobCompType=jobcomp/none
```

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```
JobAcctGatherFrequency=30
JobAcctGatherType=jobacct_gather/linux
SlurmctldDebug=info
SlurmctldLogFile=/var/log/slurmctld.log
SlurmdDebug=info
SlurmdLogFile=/var/log/slurmd.log
GresTypes=gpu
NodeName=aiwkr1  RealMemory=1000000 Gres=gpu:8 State=UNKNOWN Sockets=2 CoresPer
NodeName=aiwkr2  RealMemory=1000000 Gres=gpu:8 State=UNKNOWN Sockets=2 CoresPer
NodeName=aiwkr3  RealMemory=1000000 Gres=gpu:8 State=UNKNOWN Sockets=2 CoresPer
PartitionName=gpu1 Nodes=aiwkr[1-3] Default=YES MaxTime=168:00:00 State=UP
PartitionName=gpu2-8 Nodes=aiwkr[1-3] Default=YES MaxTime=168:00:00 State=UP
PartitionName=cpu Nodes=aiwkr[1-3] Default=YES MaxTime=168:00:00 State=UP
```

在/opt/slurm/21.08.8/etc 下创建gres.conf文件：在服务端里面不放任何内容

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```
AuthType=auth/munge
AuthInfo=/var/run/munge/munge.socket.2
#
# slurmDBD info
DbdAddr=127.0.0.1
DbdHost=localhost
#DbdPort=7031
SlurmUser=root
#MessageTimeout=300
DebugLevel=verbose
#DefaultQOS=normal,standby
LogFile=/var/log/slurm/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=123456
StorageUser=slurm
StorageLoc=slurm_acct_db
```

6.启动slurm服务

```
在服务端只需要启动 slurmdbd   slurmctld
systemctl enable slurmdbd
systemctl start slurmdbd
systemctl status slurmdbd

systemctl enable slurmctld
systemctl start slurmctld
systemctl status slurmctld
```

7.配置slurm

```
SLURMPATH=/opt/slurm/21.08.8
echo "export PATH=\$PATH:$SLURMPATH/bin:$SLURMPATH/sbin" >> /etc/bash.bashrc
source /etc/bash.bashrc
```

三、客户端安装（172.23.10.33）

1.安装必要库文件

```
sudo su
apt-get install make hwloc libhwloc-dev libmunge-dev libmunge2 munge  -y
```

2.启动munge服务

```
systemctl enable munge   // 设置munge开机自启动
systemctl start munge    // 启动munge服务
systemctl status munge   // 查看munge状态
```

新建用户并修改文件所属用户

```
#新建用户及其主目录和登录shell
useradd munge -m -s /bin/bash
#给用户赋密码
passwd munge
#修改目录属主
chown -R munge.munge /var/{lib,log,run}/munge
chown -R munge.munge /etc/munge
#修改目录模式
chmod 711 /var/lib/munge
chmod 700 /var/log/munge
chmod 755 /var/run/munge
chmod 700 /etc/munge
chmod 400 /etc/munge/munge.key
```

重启munge服务

```
systemctl restart munge
```

3.编译安装slurm

```
# 将slurm-21.08.8.tar.bz2源码包放置在/home/dlmu/package目录下
cd /home/dlmu/package
tar -jxvf slurm-21.08.8.tar.bz2
cd slurm-21.08.8/
```

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```
make install
```

4. 修改slurm 客户端的配置文件

```
mkdir /opt/slurm/21.08.8/etc
```

在/opt/slurm/21.08.8/etc 下创建cgroup.conf文件：（原封不动的粘进去）

```
###
#
# Slurm cgroup support configuration file
#
# See man slurm.conf and man cgroup.conf for further
# information on cgroup configuration parameters
#--
CgroupAutomount=yes

ConstrainCores=no
ConstrainRAMSpace=no
```

在/opt/slurm/21.08.8/etc 下创建slurm.conf文件：（原封不动的粘进去，一些密码需要修改）这个配置文件，实现了 gpus 的限制，以及队列的分配，

```
#
# Example slurm.conf file. Please run configurator.html
# (in doc/html) to build a configuration file customized
# for your environment.
#
#
# 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=hpc01
SlurmctldHost=aictrl3
#SlurmctldHost=
#
MpiDefault=none
ProctrackType=proctrack/cgroup
ReturnToService=1
SlurmctldPidFile=/var/run/slurmctld.pid
SlurmctldPort=6817
SlurmdPidFile=/var/run/slurmd.pid
SlurmdPort=6818
SlurmdSpoolDir=/var/spool/slurmd
SlurmdUser=root
StateSaveLocation=/var/spool/slurmctld
SwitchType=switch/none
TaskPlugin=task/affinity

#
#
# TIMERS
InactiveLimit=0
KillWait=30
MinJobAge=300
SlurmctldTimeout=120
SlurmdTimeout=300

Waittime=0

# SCHEDULING
SchedulerType=sched/backfill
SelectType=select/cons_tres
SelectTypeParameters=CR_Core_Memory
#
#
# JOB PRIORITY
AccountingStorageEnforce=qos,limits
AccountingStorageHost=localhost
AccountingStoragePass=/var/run/munge/munge.socket.2
AccountingStorageType=accounting_storage/slurmdbd
AccountingStorageTRES=gres/gpu
JobCompHost=localhost
JobCompLoc=slurm_acct_db
JobCompPass=123456
JobCompType=jobcomp/none
JobCompUser=slurm
JobAcctGatherFrequency=30
JobAcctGatherType=jobacct_gather/linux
SlurmctldDebug=info
SlurmctldLogFile=/var/log/slurmctld.log
SlurmdDebug=info
SlurmdLogFile=/var/log/slurmd.log
GresTypes=gpu
NodeName=aiwkr1  RealMemory=1000000 Gres=gpu:8 State=UNKNOWN Sockets=2 CoresPer
NodeName=aiwkr2  RealMemory=1000000 Gres=gpu:8 State=UNKNOWN Sockets=2 CoresPer
NodeName=aiwkr3  RealMemory=1000000 Gres=gpu:8 State=UNKNOWN Sockets=2 CoresPer
```

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```
PartitionName=gpu2-8 Nodes=aiwkr[1-3] Default=YES MaxTime=168:00:00 State=UP
PartitionName=cpu Nodes=aiwkr[1-3] Default=YES MaxTime=168:00:00 State=UP
```

在/opt/slurm/21.08.8/etc 下创建gres.conf文件：

```
Name=gpu Type=A800 File=/dev/nvidia[0-7]
```

在/opt/slurm/21.08.8/etc 下创建slurmdbd.conf文件（原封不动粘进去，一些密码需要修改）

```
AuthType=auth/munge
AuthInfo=/var/run/munge/munge.socket.2
#
# slurmDBD info
DbdAddr=127.0.0.1
DbdHost=localhost
#DbdPort=7031
SlurmUser=root
#MessageTimeout=300
DebugLevel=verbose
#DefaultQOS=normal,standby
LogFile=/var/log/slurm/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=123456
StorageUser=slurm
StorageLoc=slurm_acct_db
```

5.启动slurm服务

```
在客户端只需要启动slurmd
systemctl enable slurmd
systemctl start slurmd
systemctl status slurmd
```

6.配置slurm

```
SLURMPATH=/opt/slurm/21.08.8
echo "export PATH=\$PATH:$SLURMPATH/bin:$SLURMPATH/sbin" >> /etc/bash.bashrc
source /etc/bash.bashrc
```

注意：按照命令行依次安装，就可以安装成功。具体的slurm 使用，请查相关命令，如有任何问题请与我联系。

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集群   Ubuntu   SLURM

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余丫的小弟
请问 5步骤这，"在/opt/slurm/21.08.8/etc 下创建slurm.conf文件：（原封不动的粘进去，一些密码需要修改）这个配置文件，实现了 gpus 的限制，以及队列的分配"中的一些密码要改是指什么密码呀，123456那边吗?
2023-11-08 · IP 属地江苏   ● 回复 ♡ 1

> **Dino** 作者
> 对的
> 2023-11-29 · IP 属地辽宁   ● 回复 ♡ 喜欢

路还长
大佬，slurmdbd服务一直起不来，可以帮忙指导下吗- -。
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> **我本可忍受黑暗** ▸ Dino
> 大佬，安装好后state 显示是inval，有遇到这种情况吗
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