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SGE on Ubuntu servers

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Tutorial for setting up SGE on Ubuntu servers, both as master and client nodes. It covers installation steps and configurations required for proper functioning of the Grid Engine system.

Setting up SGE (Sun Grid Engine) on Ubuntu

Master Server — Part 1

1. Update:

```
apt-get update
```

2. Add a new user

```
adduser gsadmin --uid 500
```

3. Download Grid Engine package:

```
wget http://downloads.sourceforge.net/project/gridscheduler/GE2011.11p1/GE2011.11p1.tar.gz
tar -zxvf GE2011.11p1.tar.gz
```

```
mv GE2011.11p1 /home/gsadmin/  
chown -R gsadmin:gsadmin /home/gsadmin/
```

4. Install NFS Server (Network File System):

```
apt-get install nfs-kernel-server  
echo "/home/gsadmin *(rw,sync,no_subtree_check,no_root_squash)" >> /etc/exports  
exportfs -a  
service nfs-kernel-server restart
```

5. Install OpenJDK-8:

```
apt-get install openjdk-8-jdk  
echo "export JAVA_HOME=/usr/lib/jvm/java-8-openjdk-amd64/" >> ~/.bashrc  
export JAVA_HOME=/usr/lib/jvm/java-8-openjdk-amd64/  
echo "export PATH=$PATH:/usr/lib/jvm/java-8-openjdk-amd64/bin" >> ~/.bashrc  
export PATH=$PATH:/usr/lib/jvm/java-8-openjdk-amd64/bin  
echo "export SGE_ROOT=/home/gsadmin/GE2011.11p1" >> ~/.bashrc  
export SGE_ROOT=/home/gsadmin/GE2011.11p1/  
source ~/.bashrc
```

Host (Client) Server — Part 1

1. Add a user:

```
adduser gsadmin --uid 500
```

2. Install NFS client:

```
apt-get install nfs-common
```

3. Mount shared directory:

```
mount xxx.xxx.xxx.xxx:/home/gsadmin /home/gsadmin/  
# Note: Handle any errors if encountered
```

4. Set up auto-mount:

```
echo "xxx.xxx.xxx.xxx:/home/gsadmin /home/gsadmin nfs" >> /etc/fstab
```

Master Server — Part 2

1. Install gridengine-master:

```
apt-get install gridengine-master
```

2. Modify /etc/hosts:

```
#127.0.0.1  
#127.0.1.1  
xxx.xxx.xxx.xxx master master  
yyy.yyy.yyy.yyy node01 node01  
zzz.zzz.zzz.zzz node02 node02
```

3. Restart after modifications:

```
service gridengine-master restart
```

4. Confirm installation:

```
qhost
# Ensure qmaster entry in /etc/hosts and /var/lib/gridengine/default/common/act
ln -s /var/lib/gridengine/default /home/gsadmin/GE2011.11.pl/default
```

Host (Client) Server — Part 2

1. Install gridengine-client:

```
apt-get install gridengine-client
```

2. Install gridengine-exec:

```
apt-get install gridengine-exec
```

3. Restart

```
/etc/init.d/gridengine-exec restart
```

Master Server — Part 3

1. Add nodes to admin list:

```
qconf -ah node01
qconf -ah node02
```

2. Add gsadmin group:

```
qconf -au gsadmin gsadmin
```

3. Add nodes to commit hosts:

```
qconf -as node01  
qconf -as node02
```

4. Add queues to cluster:

```
qconf -aq main.q
```

5. Modify main.q:

```
qconf -mq main.q  
# Configure hostlist and slots accordingly
```

6. Restart:

```
service gridengine-master restart
```

Host (Client) Server — Part 3

1. Modify /etc/hosts to match master server:

```
# Update /etc/hosts to match the master server
```

2. Restart:

```
/etc/init.d/gridengine-exec restart
```

3. Check status

```
qhost
```

End

Additional commands such as `qstat`, `qmod`, `qsub` etc., can be used for various tasks.

- `qstat -f` : To display full and detailed information about all jobs and queues.
- `qstat -F` : To display complete information about all jobs and queues.
- `qmod -c main.q@hostname` : To clear a job from a specific queue (`main.q`) at a given hostname.
- `qmod -d main.q@hostname` : To disable a job in a specific queue (`main.q`) at a given hostname.
- `qmod -e main.q@hostname` : To enable a job in a specific queue (`main.q`) at a given hostname.
- `qdel listnum` : To delete a job with the specified job number.
- `qsub` : To submit a job for execution.

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Engine System

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```
ADMIN@DESKTOP-E1LG4KC: MINGW64 /C/dev/jhipster/orchestra/danyuksha (main)
$ mysql -u root -p
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 39
Server version: 10.4.28-MariaDB mariadb.org binary distribution

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

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

MariaDB [(none)]> create database orchestra;
Query OK, 1 row affected (0.001 sec)

MariaDB [(none)]> show databases;
+-----+
| Database |
+-----+
| centro_di_ricerca |
| information_schema |
| mysql |
| orchestra |
| performance_schema |
| phpmyadmin |
| test |
+-----+
7 rows in set (0.001 sec)

MariaDB [(none)]>
```

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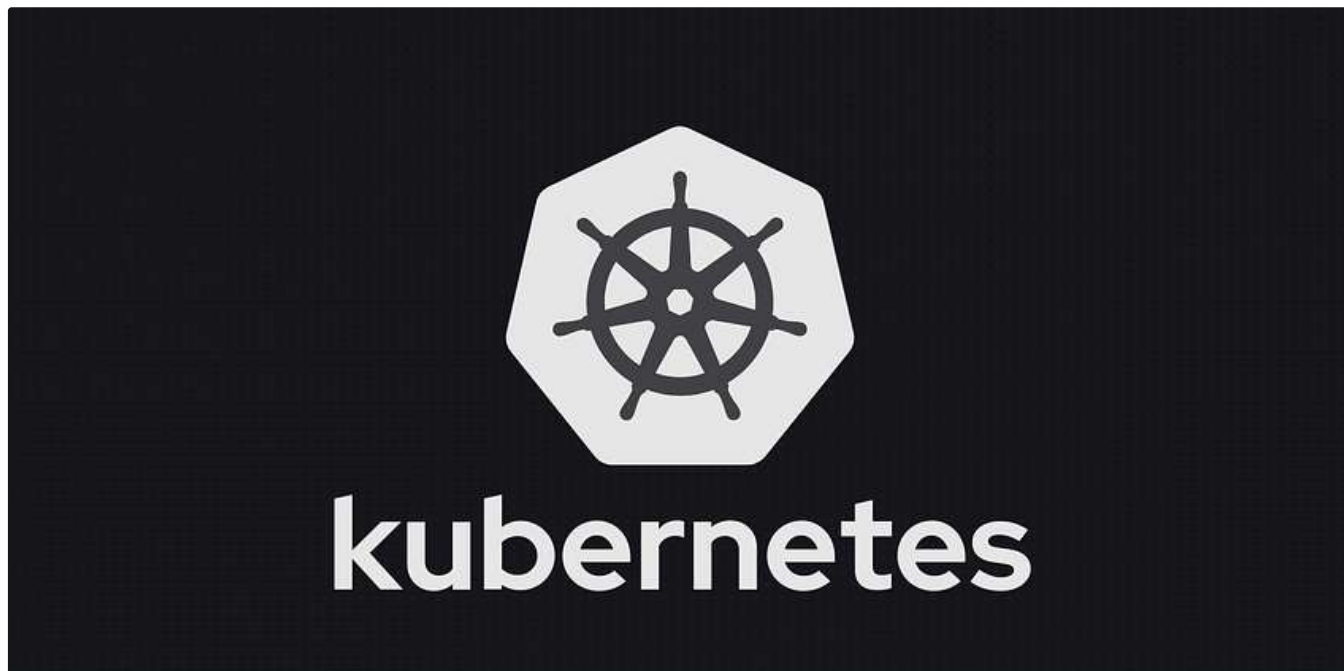
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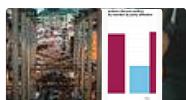
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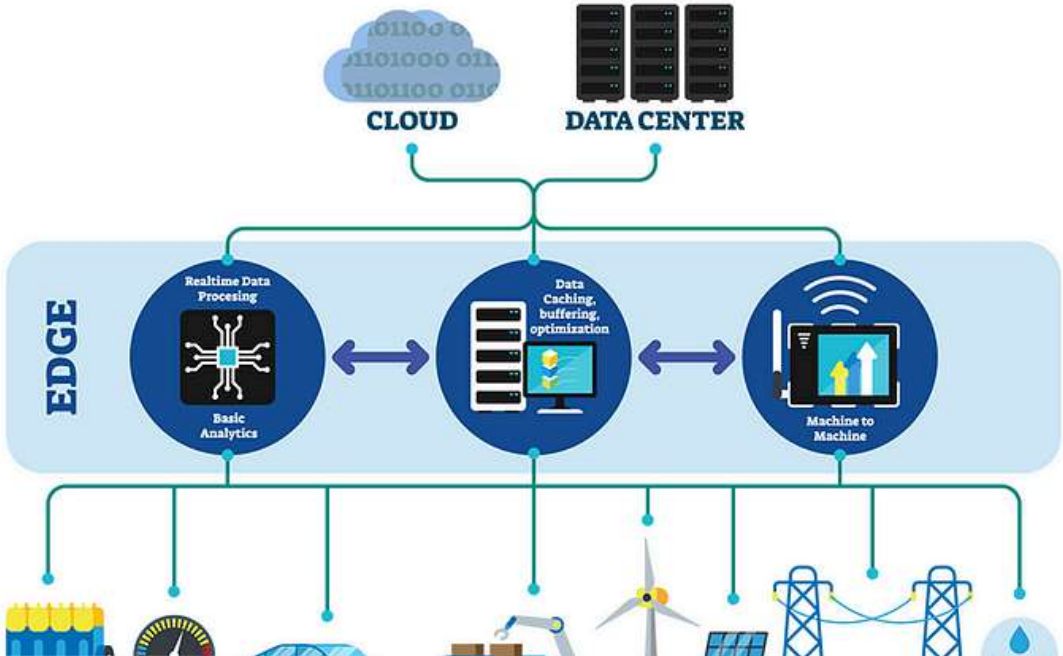
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