

Tutorial 3

From ACE Lab

Team Name: _____

Part 0 - Create a User account (Only if you do not have LDAP working)

1. On both the headnode and compute node execute:

```
yum install sudo  
adduser <name>  
passwd <name>
```

2. Edit /etc/sudoers and at the bottom of the file add:

```
<name>    ALL=(ALL)    ALL
```

3. Login to your cluster with the new users: `ssh <name>@<headnode>` 4. To execute a command as root put "sudo" before the command 5. To drop to a root shell execute "sudo su"

Part 1 - NFS

NFS enables you to easily share filesystems over the network. This tutorial will show you how to export a filesystem on the head node and mount it through the network on the compute nodes. With the shared file system in place it is easy to enable key base ssh authentication. This will allow you to ssh into all the computers in your cluster without requiring you to type your password each time.

1. Install, start and enable nfs service

2. On the head node edit /etc/sysconfig/nfs and add:

```
MOUNTD_NFS_V3="yes"  
RPCNFSDARGS="-N 4"
```

3. On the head node edit the exports file and add this line

```
/home *(rw,async,insecure,no_root_squash)
```

4. Restart the NFS service

QUESTION 1:

Explain the parameters of the above filesystem export?

5. On the compute nodes edit fstab and add:

```
headnode.cluster.scc:/home /home nfs _netdev,intr 0 0
```

6. Execute mount -a to mount the filesystems

7. To enable passwordless login generate a certificate

```
ssh-keygen
```

8. Add the public key to the authorized keys file

```
cp id_rsa.pub authorized_keys
```

9. Test passwordless login by sshing into another machine

Part 2 - Ganglia Server Setup

Ganglia is a useful tool for monitoring clusters. Ganglia displays information on the utilisation of your cluster which you can use to ensure the cluster is operating optimally.

1. Install the EPEL repository

```
sudo yum install epel-release
```

QUESTION 2:

What is a repository?

2. Install Ganglia dependencies:

```
sudo yum install apr-devel rrdtool-devel libconfuse-devel pcre-devel expat-devel gcc z
```

3. Create group and users:

```
useradd -M ganglia  
usermod -L ganglia
```

4. Download monitoring core:

```
http://sourceforge.net/projects/ganglia/files/ganglia%20monitoring%20core/
```

5. Extract then compile:

```
./configure --with-gmetad  
make  
sudo make install
```

NOTE: Files are installed to:

```
/usr/local/etc/  
/usr/local/sbin  
/usr/local/bin
```

6. Create directories for Ganglia:

```
mkdir -p /var/lib/ganglia/rrds  
chown -R ganglia:ganglia /var/lib/ganglia  
mkdir /usr/local/etc/conf.d
```

7. Download sample configuration files and extract:

```
wget --no-check-certificate https://www.ace.chpc.ac.za/acewiki/images/d/d4/Ganglia-conf
```

8. Copy the etc dir to /usr/local/etc

9. Edit /usr/local/etc/gmetad.conf and change the data_source line:

```
data_source "SCC Cluster" localhost
```

10. Edit /usr/local/etc/gmond.conf and customise it to your cluster and add after the udp_send_channel stanza

```
udp_rcv_channel {  
    port = 8649  
}
```

```
tcp_accept_channel {  
    port = 8649  
}
```

11. Put the Ganglia service scripts in place:

```
cp <archive>/gmond /etc/init.d/gmond  
cp <archive>/gmetad /etc/init.d/gmetad
```

12. Fix the path in the gmond and gmetad start scripts, if necessary

13. Set the services to start on boot, then start the service

QUESTION 3:

What is a service?

Part 3 - Web Frontend

1. Download Ganglia web

```
http://sourceforge.net/projects/ganglia/files/
```

2. Extract the tar to:

```
/var/www/html/ganglia
```

3. Make sure the directory is owned by root:root

```
sudo chown -R root:root /var/www/html/ganglia
```

4. Install Ganglia web dependencies

```
yum install rsync php
```

5. Install Ganglia web

```
make install
```

6. Visit the website at:

```
headnode.cluster.scc/ganglia
```

Part 4 – Ganglia Client Setup

The following steps need to be completed on all compute nodes in your cluster.

1. Install EPEL repository
2. Install dependencies
3. Create group and user
4. Extract and compile the Ganglia core
5. Create Ganglia directories
6. Download and copy Ganglia sample config files.
7. Edit `/usr/local/etc/gmetad.conf`
8. Edit `/usr/local/etc/gmond.conf` and update it with the supplied samples (Don't add the recv stanzans).
9. Prepare the Ganglia init scripts:
10. fix bin path in gmond and gmetad startup scripts
11. Set the Ganglia services to start on boot and start the services.

QUESTION 4:

Explain the client server model?

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- This page was last modified on 9 June 2016, at 14:02.
 - This page has been accessed 36 times.