NIC BONDING

Network Interface Controller (NIC) Bonding:

Using more than one hard drive to archive better performance and fault tolerance is very common.

In Linux, bonding (also known as link aggregation) combines multiple physical network interfaces into a single logical interface. This creates a stronger, more reliable connection with increased bandwidth and redundancy.

Modes of Bonding:

Balance-rr or 0 :

Sets a round-robin policy for fault tolerance and load balancing.

Transmissions are received and sent out sequentially on each bonded slave interface beginning with the first one available.

Active-backup or 1:

Sets an active-backup policy for fault tolerance. Transmissions are received and sent out via the first available bonded slave interface. Another bonded slave interface is only used if the active bonded slave interface fails.

Step1:

- ➔ Check whether the server is having two Ethernet adapter or not

#ifconfig | grep –I eth*

#ifconfig

root@master-server:~

```
[root@master-server ~]# ifconfig
eth1      Link encap:Ethernet  HWaddr 00:0C:29:9B:CE:A2
          inet addr:192.168.111.135  Bcast:192.168.111.255  Mask:255.255.255.0
          inet6 addr: fe80::20c:29ff:fe9b:cea2/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:83 errors:0 dropped:0 overruns:0 frame:0
          TX packets:87 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:10248 (10.0 KiB)  TX bytes:11944 (11.6 KiB)

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
          RX packets:12 errors:0 dropped:0 overruns:0 frame:0
          TX packets:12 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:720 (720.0 b)  TX bytes:720 (720.0 b)

[root@master-server ~]#
```

So to create a bonding we required 2 nic cards. So add one more nic card.

By going to the v-center and add nic cards to the settings.

root@master-server:~

```
[root@master-server ~]# ifconfig  | grep eth*
eth1      Link encap:Ethernet  HWaddr 00:0C:29:9B:CE:A2
          inet addr:192.168.111.135  Bcast:192.168.111.255  Mask:255.255.255.0
          inet6 addr: fe80::20c:29ff:fe9b:cea2/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:144 errors:0 dropped:0 overruns:0 frame:0
          TX packets:111 errors:0 dropped:0 overruns:0 carrier:0
eth2      Link encap:Ethernet  HWaddr 00:0C:29:9B:CE:AC
          inet addr:192.168.111.136  Bcast:192.168.111.255  Mask:255.255.255.0
          inet6 addr: fe80::20c:29ff:fe9b:ceac/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:67 errors:0 dropped:0 overruns:0 frame:0
          TX packets:64 errors:0 dropped:0 overruns:0 carrier:0
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
          RX packets:12 errors:0 dropped:0 overruns:0 frame:0
          TX packets:12 errors:0 dropped:0 overruns:0 carrier:0
[root@master-server ~]#
```

Now we can see two nic cards.

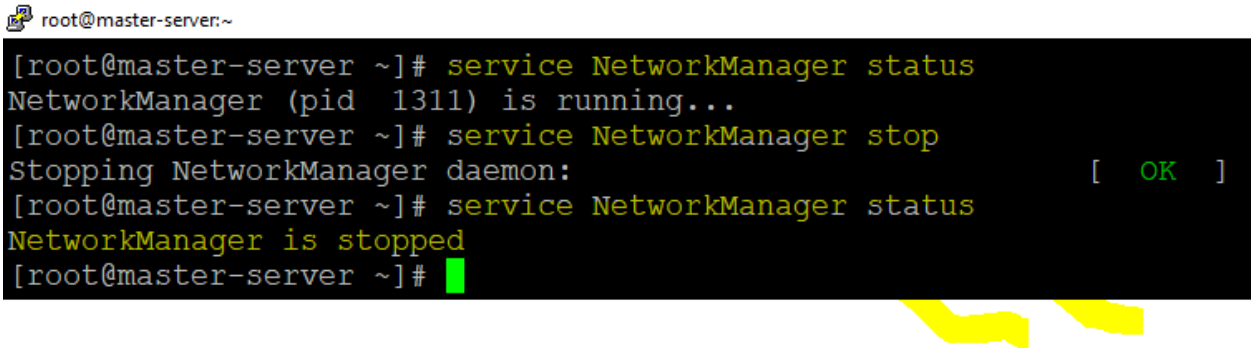
Step2:

Make sure that Network Manager is not running. If running stop the services for it and make it permanent.

#service NetworkManager status

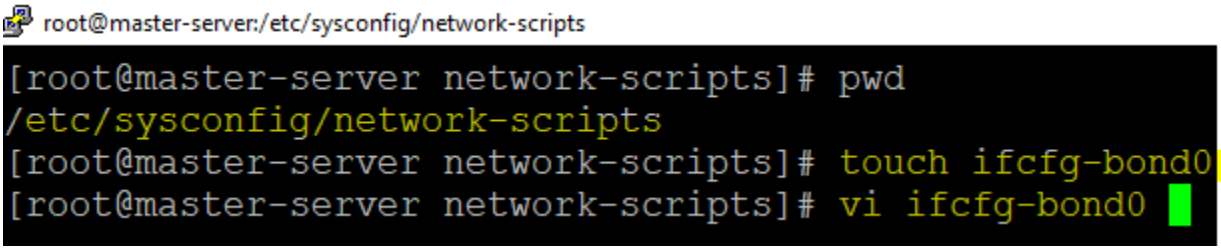
#service NetworkManager stop

#service NetwrokManager status



Step3:

Create a bonding configuration file, say bond0 in /etc/sysconfig/network-scripts/



Bonding entries are below

root@master-server:/etc/sysconfig/network-scripts

```
[root@master-server network-scripts]# cat ifcfg-bond0
DEVICE=bond0
TYPE=Ethernet
ONBOOT=yes
NM_CONTROLLED=no
BOOTPROTO=none
IPADDR=192.168.104.98
NETMASK=255.255.255.0
GATEWAY=192.168.104.1
BONDING_OPTS="mode=1 miimon=100"
[root@master-server network-scripts]#
```

Miimon=<time_in_milliseconds>

Specifies (in milliseconds) how often MII link monitoring occurs. This is useful if high availability is required because MII is used to verify that the NIC is active.

To verify that the driver for a particular NIC supports the MII tool, type the following command as root:

#ethtool <interface_name> | grep “Link detected:”

Step4:

Modify the **eth1** and **eth2** configuration file to make it participant of bond0

Details should entered in **eth1** like below

root@master-server:/etc/sysconfig/network-scripts

```
[root@master-server network-scripts]# vi ifcfg-eth1
[root@master-server network-scripts]# cat ifcfg-eth1
DEVICE="eth1"
TYPE=Ethernet
HWADDR="00:0C:29:9B:CE:A2"
NM_CONTROLLED="yes"
ONBOOT="yes"
MASTER=bond0
SLAVE=yes
[root@master-server network-scripts]#
```

Details should entered in **eth2** like below

root@master-server:/etc/sysconfig/network-scripts

```
[root@master-server network-scripts]# vi ifcfg-eth2
[root@master-server network-scripts]# cat ifcfg-eth2
DEVICE="eth2"
TYPE=Ethernet
HWADDR="00:0C:29:9B:CE:AC"
NM_CONTROLLED="no"
ONBOOT="yes"
MASTER=bond0
SLAVE=yes
[root@master-server network-scripts]#
```

Step5:

Load bond driver/module b creating the following file.

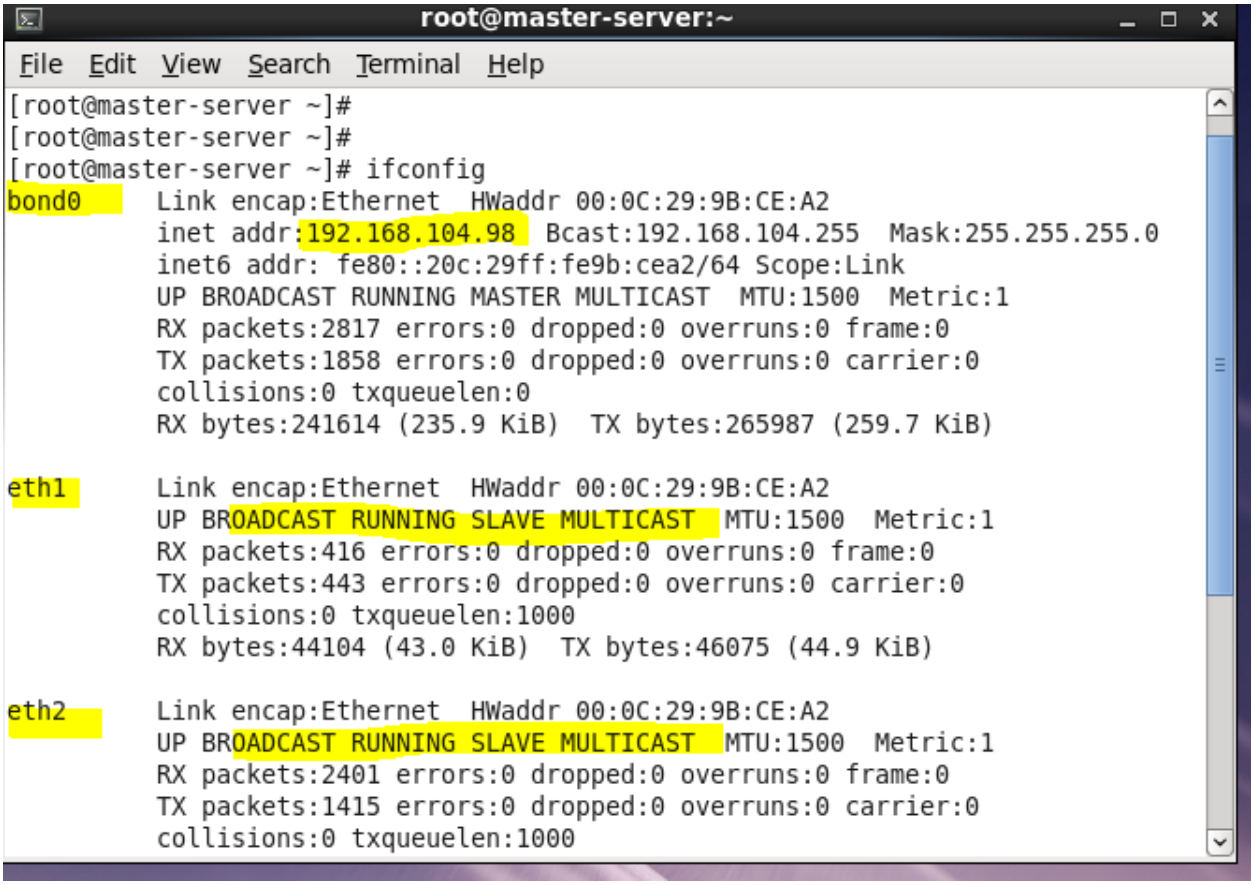
root@master-server:/etc/modprobe.d

```
[root@master-server modprobe.d]# touch bonding.conf
[root@master-server modprobe.d]# vi bonding.conf
[root@master-server modprobe.d]# cat bonding.conf
alias bond0 bonding
[root@master-server modprobe.d]# pwd
/etc/modprobe.d
[root@master-server modprobe.d]#
```

Step6:

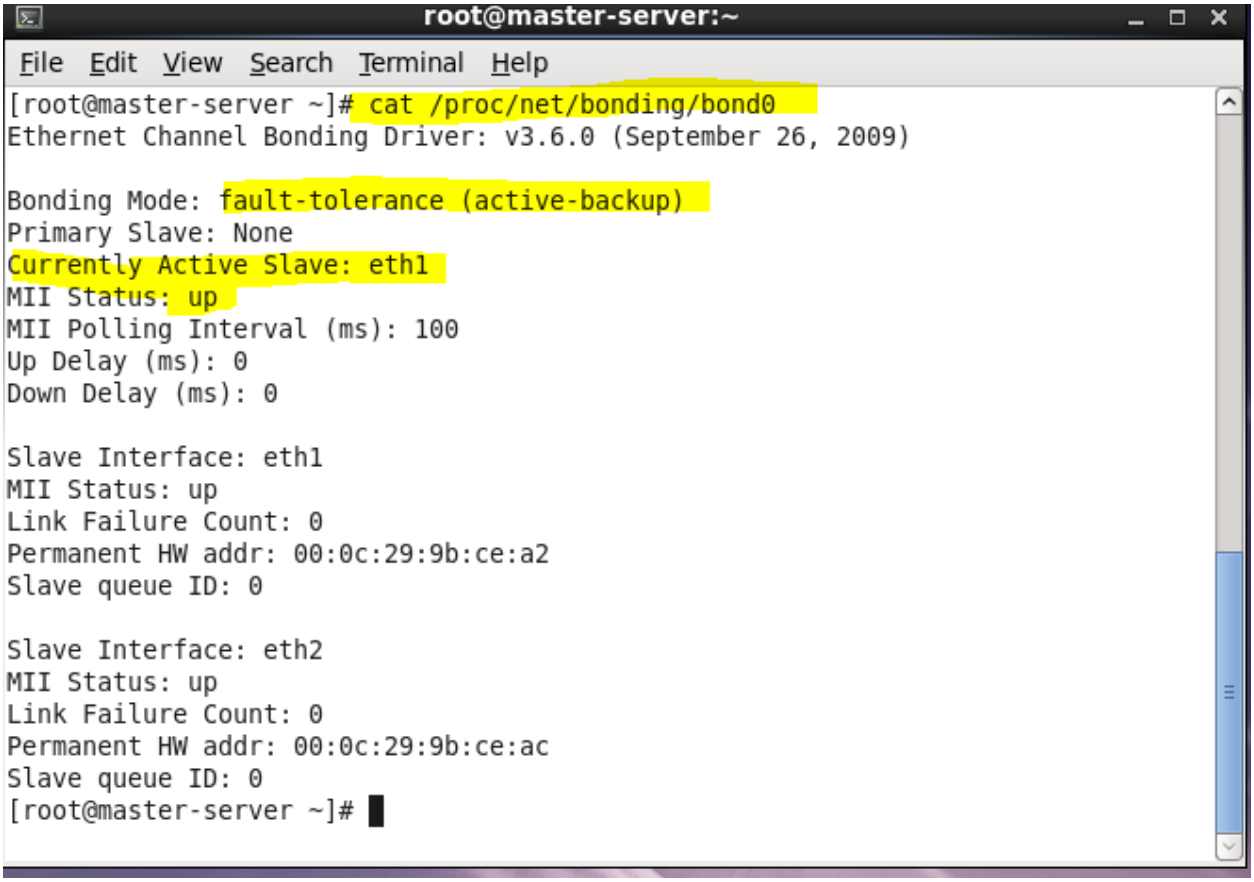
Restart the network service and check on which adapter ip address is assigned

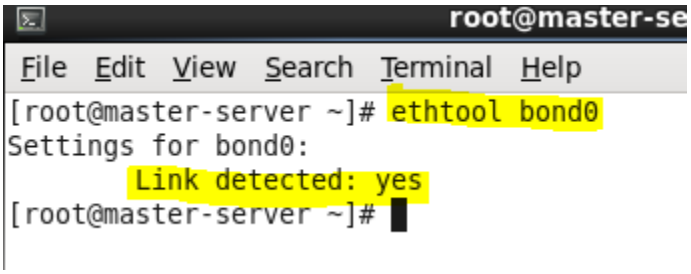
#service network restart

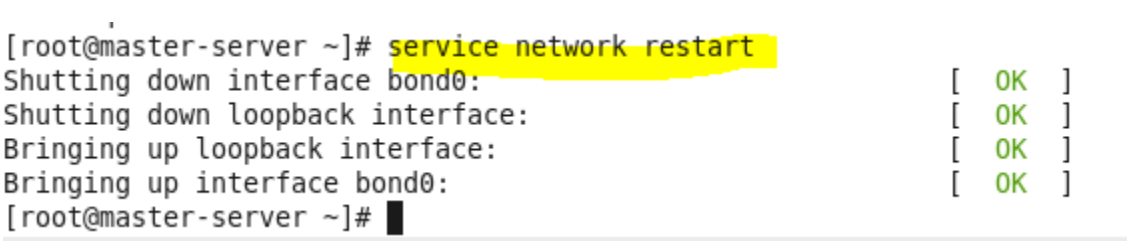


Step7:

#check status of bonding in #cat /proc/bonding/bond0







Ending Bonding