Linux Cluster Management Console

By : Abdul Jabbar

Operating System Details:
uname -r
Node01: 2.6.18-92.el5
Node02: 2.6.18-92.el5

IP Addressing
Node01:
eth0: 192.168.1.10 /24
eth1: 10.10.10.1 /24
Node02:
eth0: 192.168.1.11 /24
eth1: 10.10.10.2 /24

Installation of Time Server:
[root@Node01 ~]# yum install -y ntp
[root@Node02 ~]# yum install -y ntp

Installation of Apache Server Install:
[root@Node01 ~]# yum install -y httpd
[root@Node02 ~]# yum install -y httpd

Verify the package is installed:
[root@Node01 ~]# rpm -qa httpd
httpd-2.2.3-87.el5.centos

Starting httpd demon on both Nodes:
- service httpd start
- chkconfig httpd on

Setting up Apache server health page for DRBD testing...
[root@Node01 ~]# vi /etc/httpd/conf/httpd.conf
We need add or un comment the following lines....

```
<Location /server-status>
SetHandler server-status
Order deny,allow
Deny from all
Allow from 127.0.0.1
</Location>
```

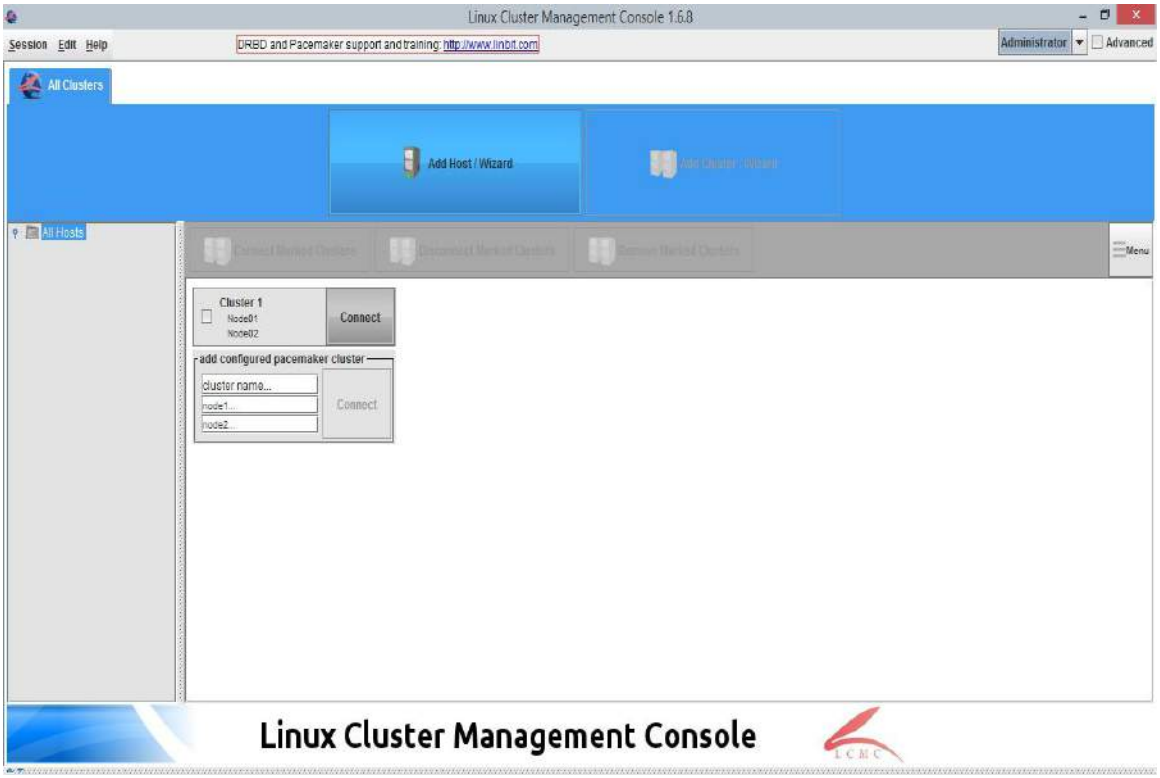
Verify on Both Servers--

```
[root@Node01 ~]# service httpd restart
[root@Node01 ~]# wget http://127.0.0.1/server-status
--02:36:24-- http://127.0.0.1/server-status
Connecting to 127.0.0.1:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 1737 (1.7K) [text/html]
Saving to: `server-status.2'

100%[==========================================================================================
==========================>] 1,737 --.-K/s in 0s

02:36:24 (92.0 MB/s) - `server-status.2' saved [1737/1737]
```

Download LCMC – Linux Cluster Management Console.
We will use to manage the DRBD - Cluster nodes deployment procedures .
LCMC can be installed on the Windows/Linux/Sun Solaris Systems.
Here is the link : http://sourceforge.net/projects/lcmc/files/LCMC-1.6.8.jar/download

Once “LCMC-1.6.8.jar” downloaded You just need to double click and start the java applet.

Step - 1 -- Adding Hosts in the LCMC console.



Connecting both hosts via SSH..

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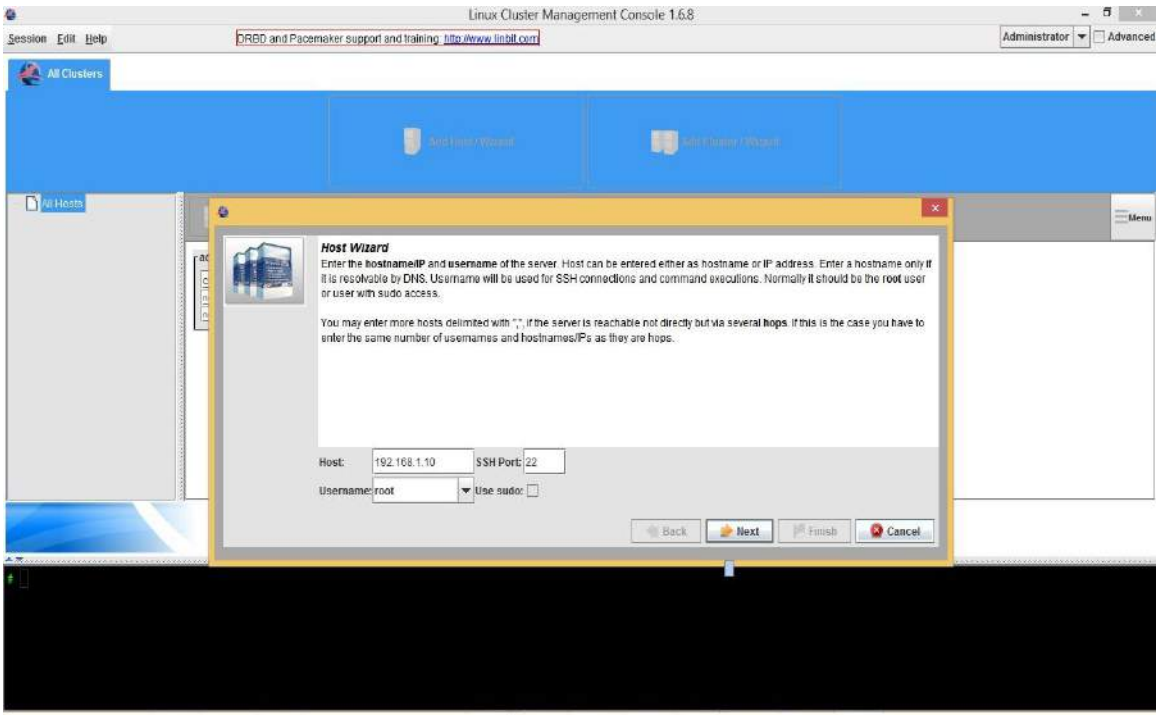
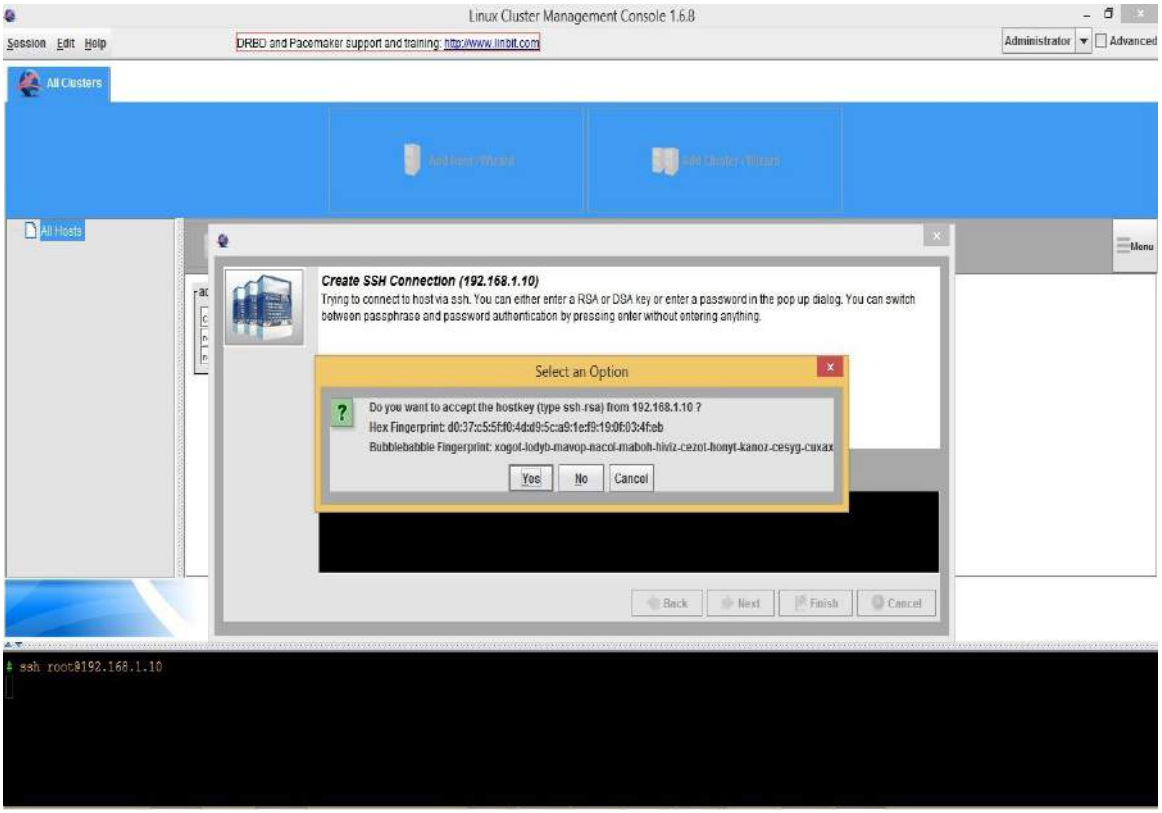
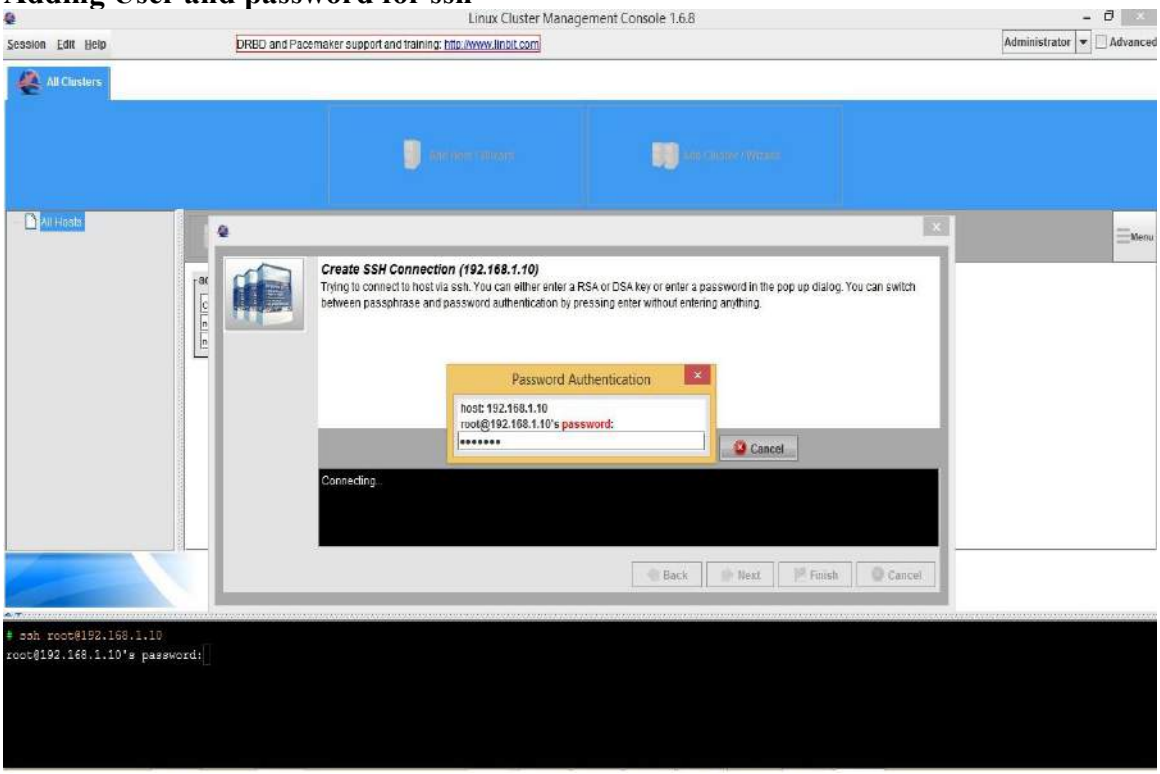
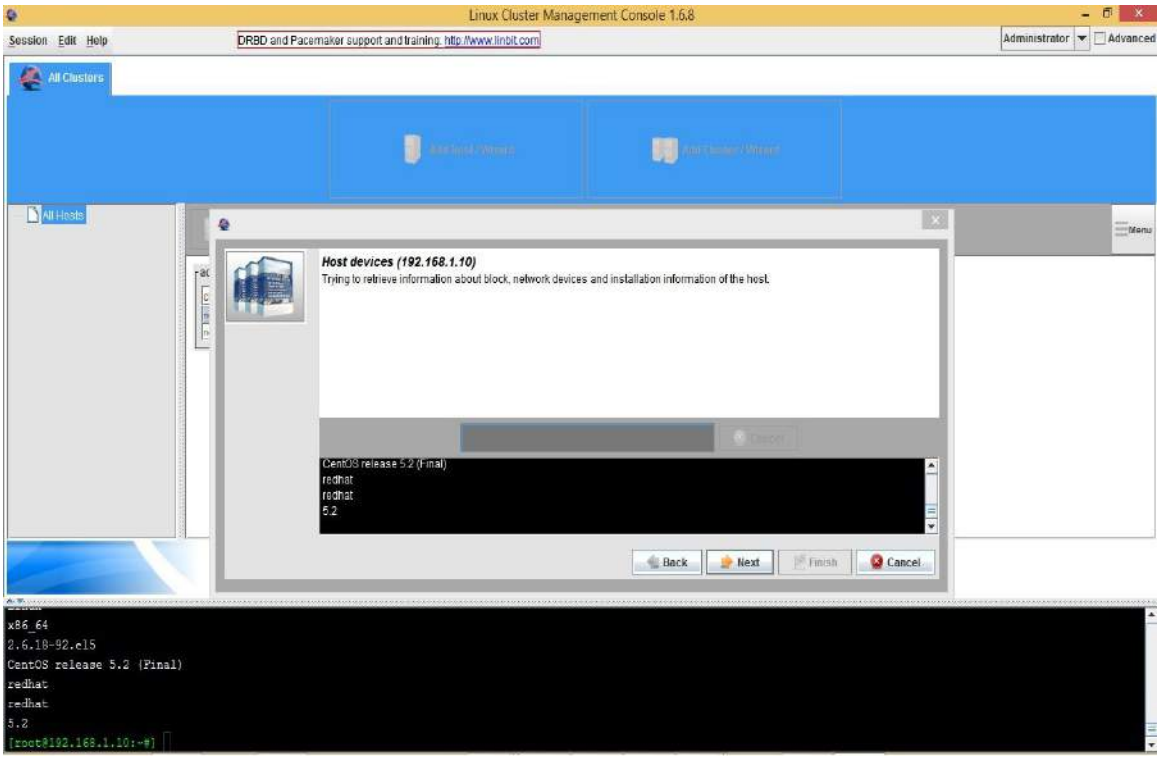




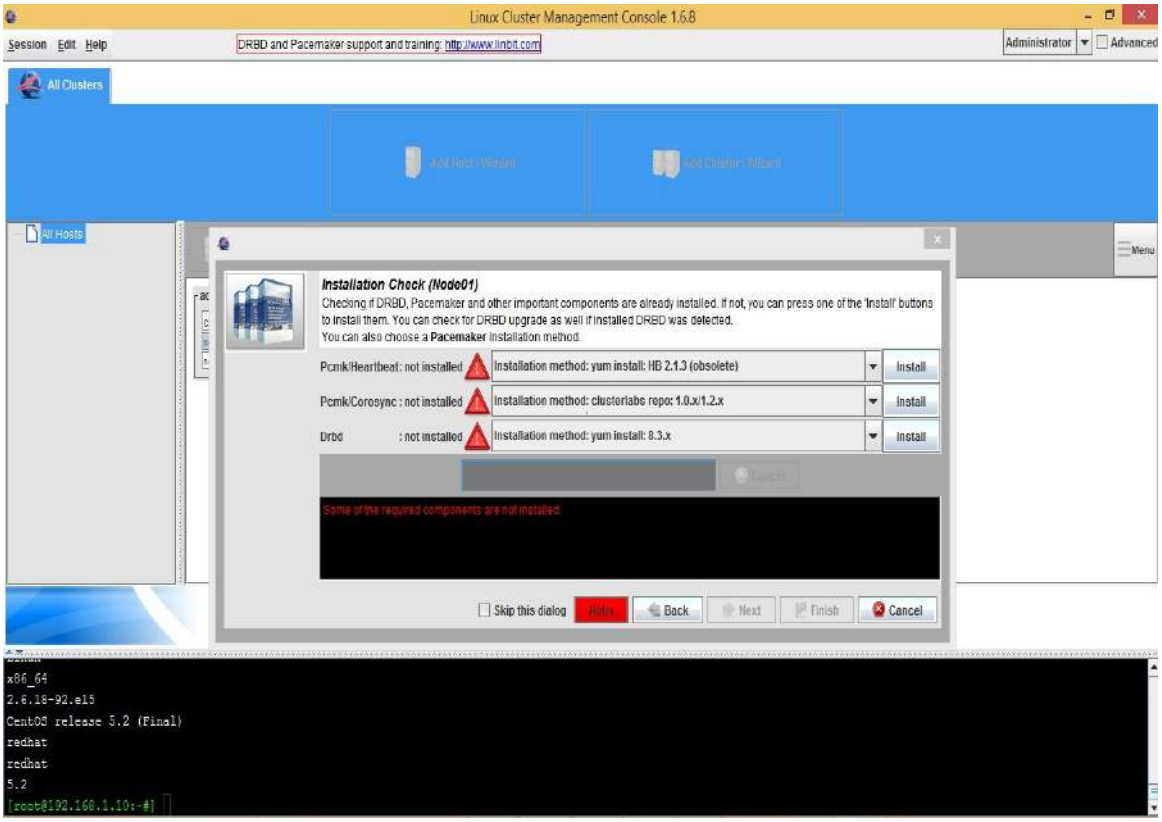
Adding User and password for ssh

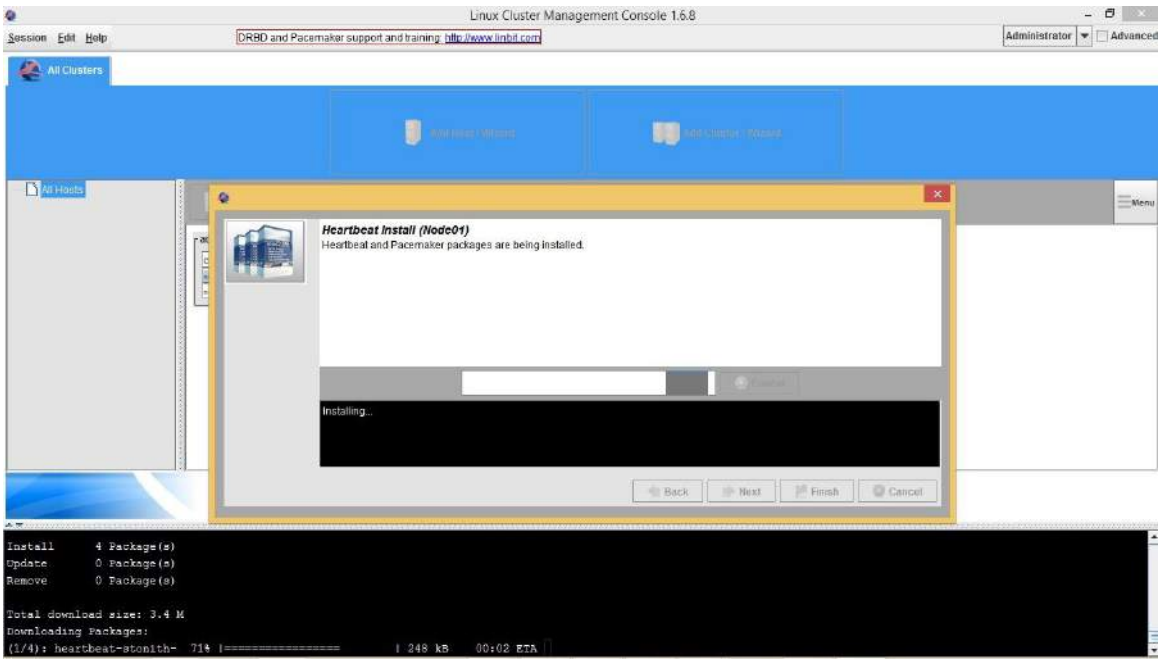


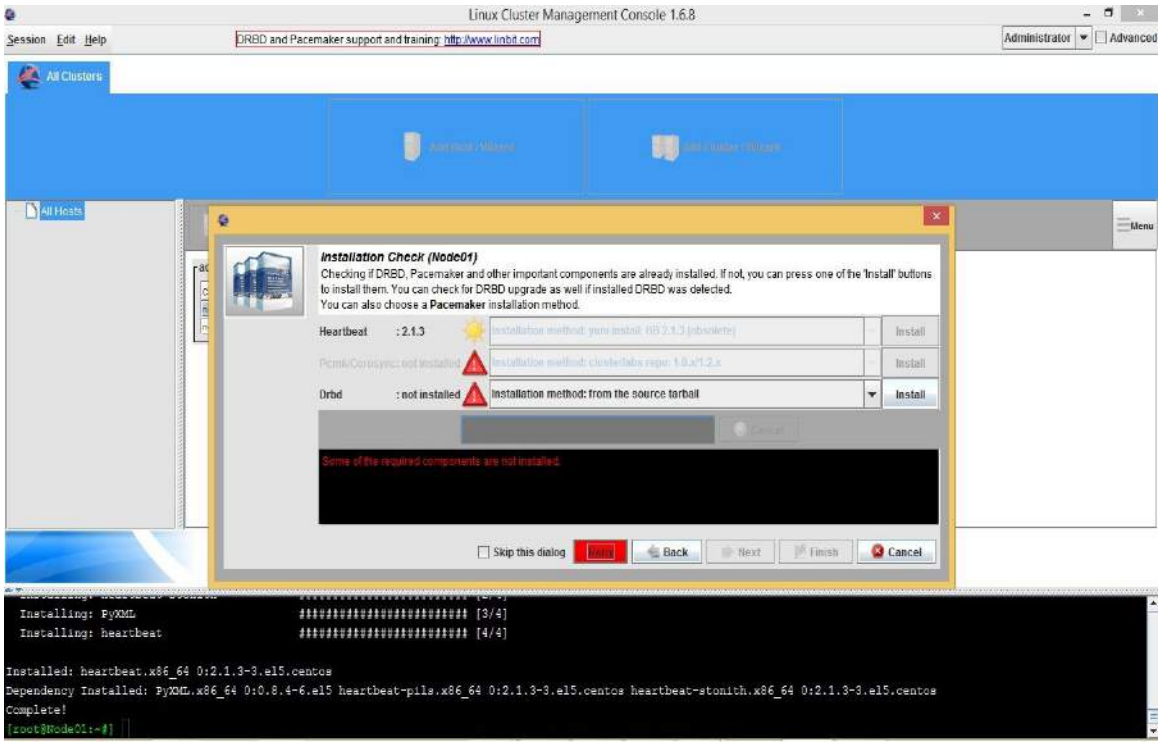


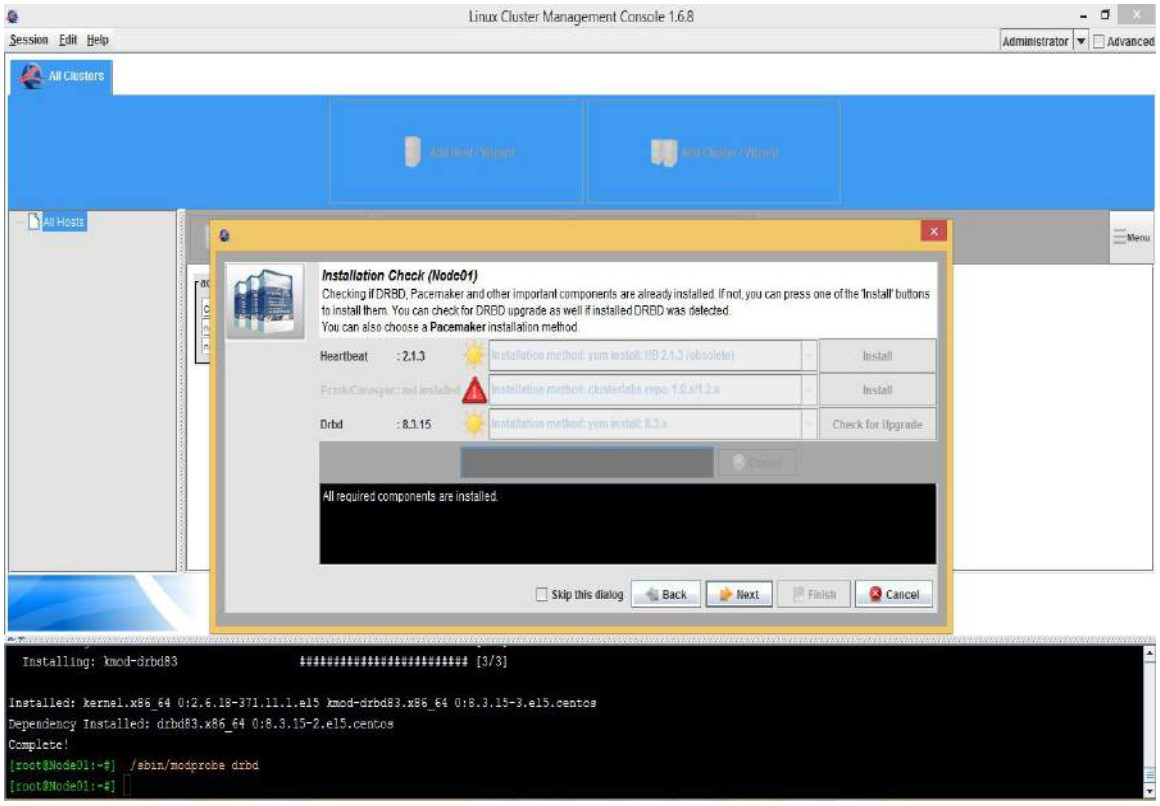
Step-2 Installing DRBD and Heartbeat using LCMC.

You can connect to your existing setup of DRBD + HB, , In this case I will install the HB 2.1.3 and DRBD 8.3.






Linux Cluster Management Console 1.6.8
Session Edit Help
DRBD and Pacemaker support and training: http://www.linbit.com/
Administrator
Advanced
All Clusters
All Hosts
Menu
Installation Check (Node01)
Checking if DRBD, Pacemaker and other important components are already installed. If not, you can press one of the 'Install' buttons to install them. You can check for DRBD upgrade as well if installed DRBD was detected.
You can also choose a Pacemaker installation method.
Heartbeat : 2.1.3
Install
Drbd : not installed
installation method: from the source tarball
Install
Some of the required components are not installed.
Skip this dialog
Back
Next
Finish
Cancel
Installing: PyXML ########################## [3/4]
Installing: heartbeat ########################## [4/4]
Installed: heartbeat.x86_64 0:2.1.3-3.el5.centos
Dependency Installed: PyXML.x86_64 0:0.8.4-6.el5 heartbeat-pils.x86_64 0:2.1.3-3.el5.centos heartbeat-stonith.x86_64 0:2.1.3-3.el5.centos
Complete!
[root@Node01:~#]


Linux Cluster Management Console 1.6.8
Session Edit Help
Administrator
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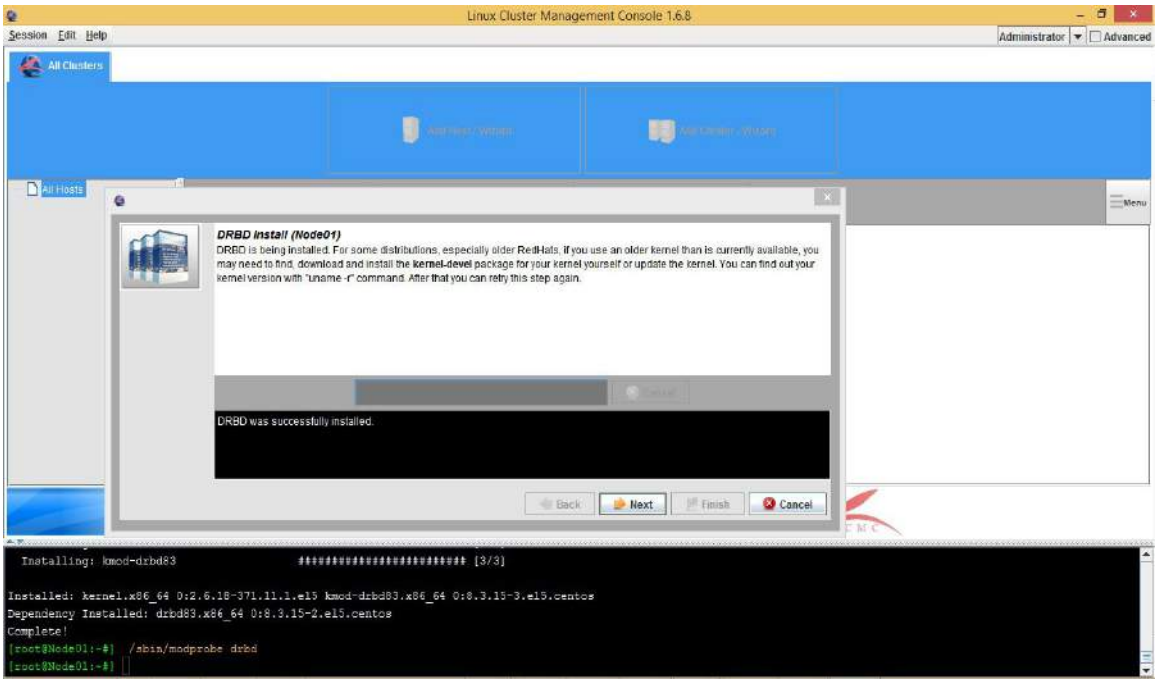
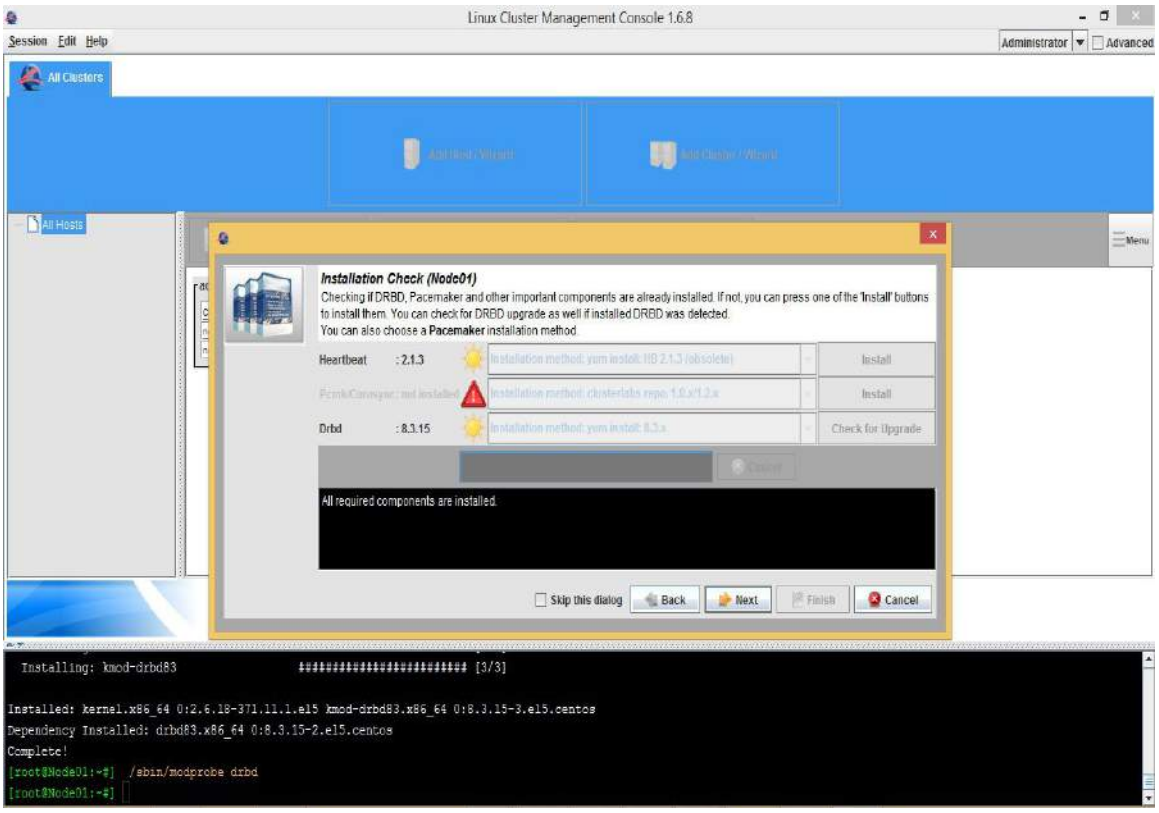
All Hosts
Menu
Installation Check (Node01)
Checking if DRBD, Pacemaker and other important components are already installed. If not, you can press one of the 'Install' buttons to install them. You can check for DRBD upgrade as well if installed DRBD was detected.
You can also choose a Pacemaker installation method.
Heartbeat : 2.1.3
Install
Drbd : 8.3.15
Check for Upgrade
All required components are installed.
Skip this dialog
Back
Next
Finish
Cancel
Installing: kmod-drbd83 ########################## [3/3]
Installed: kernel.x86_64 0:2.6.18-371.11.1.el5 kmod-drbd83.x86_64 0:8.3.15-3.el5.centos
Dependency Installed: drbd83.x86_64 0:8.3.15-2.el5.centos
Complete!
[root@Node01:~#] /sbin/modprobe drbd
[root@Node01:~#]

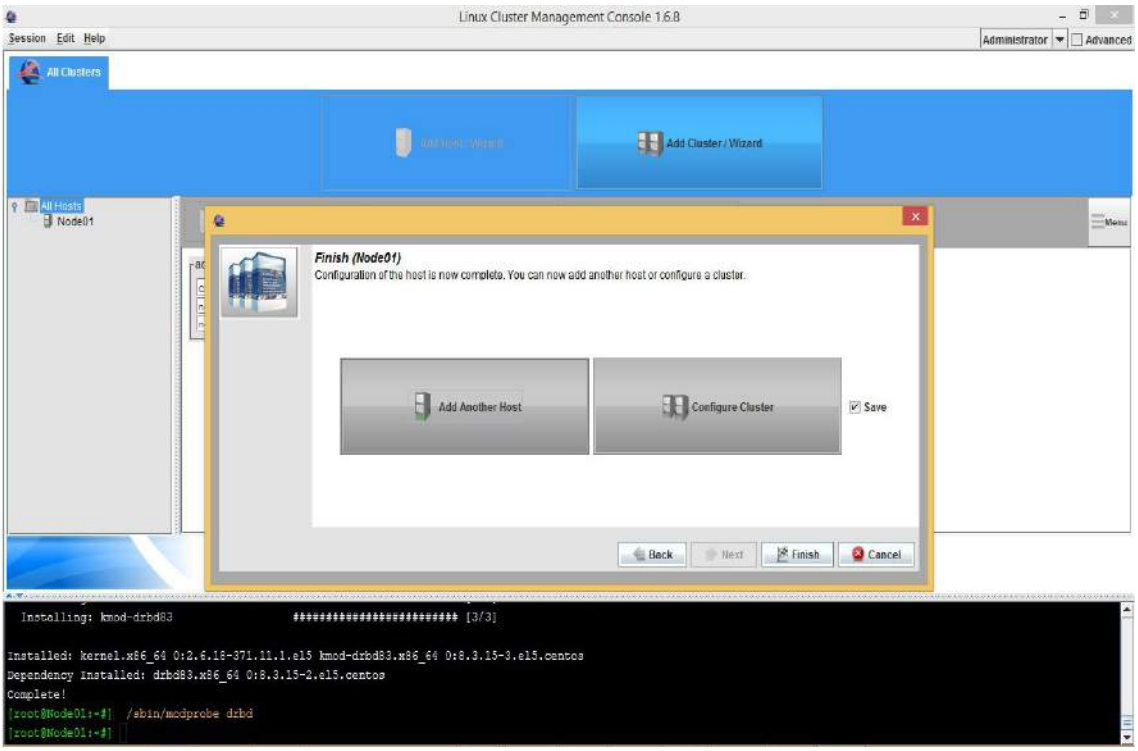
Installing DRBD now...

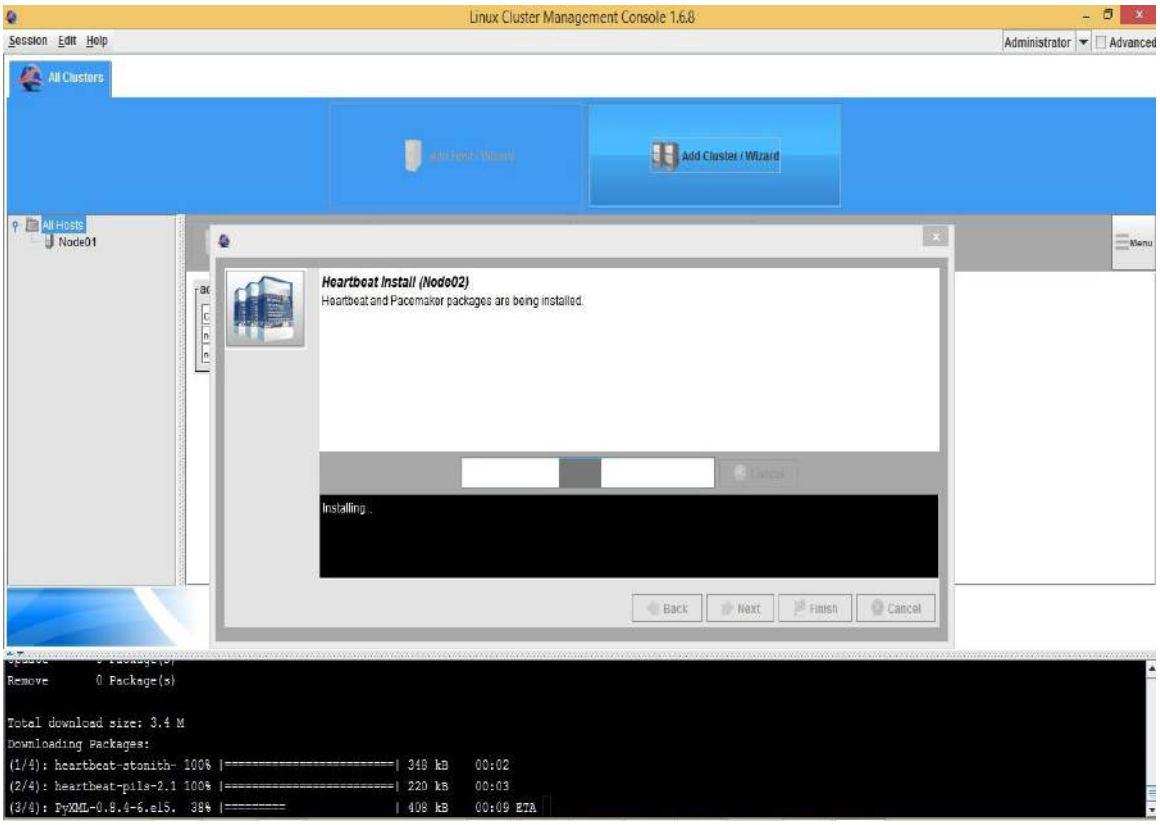


Required software's installed..

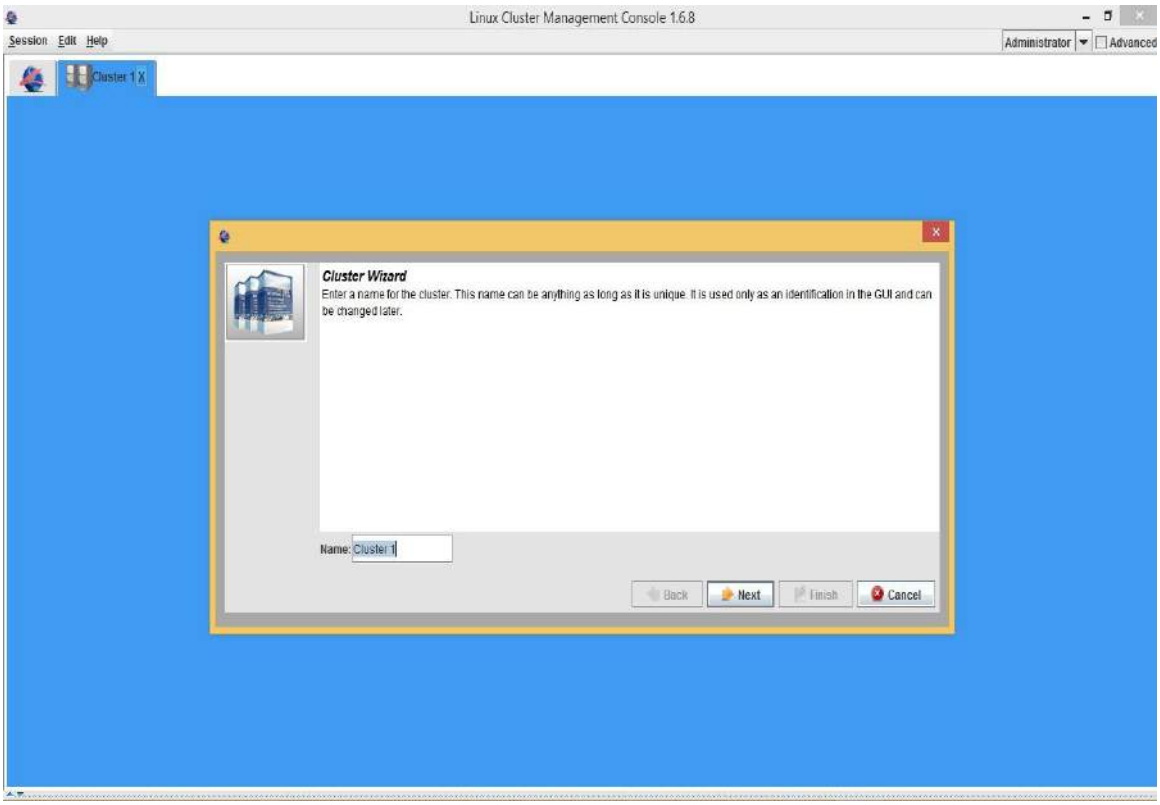


Adding Node02 (Other host using same procedure)

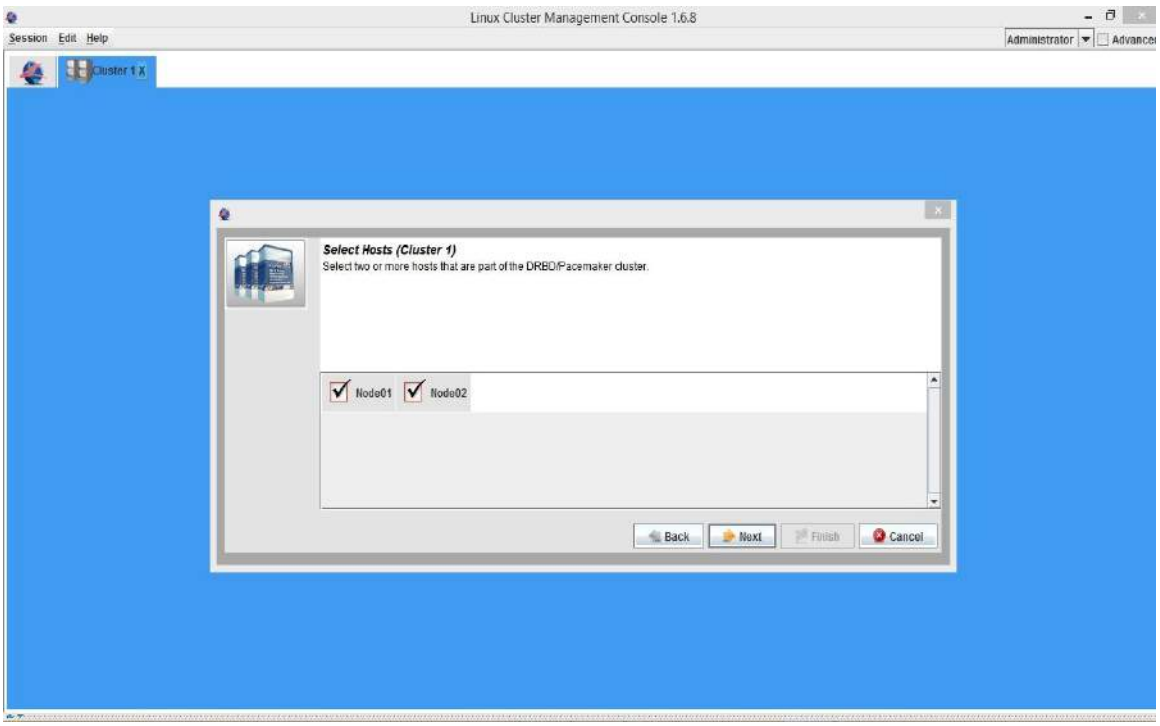


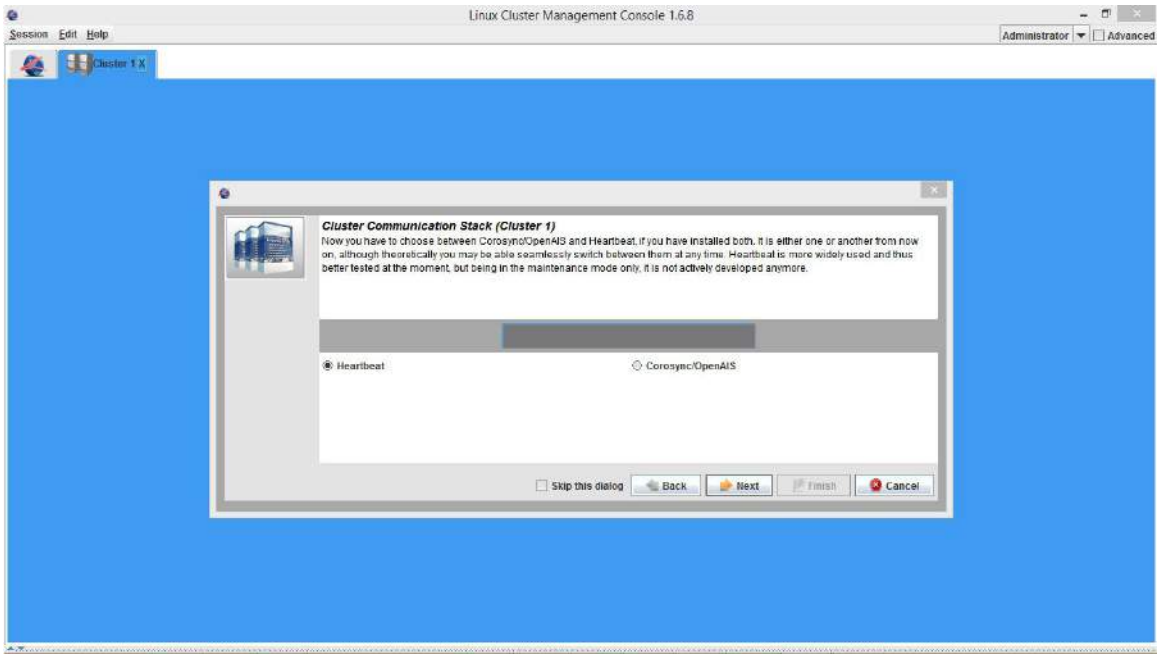


Step-3 Creating & Deploying Cluster

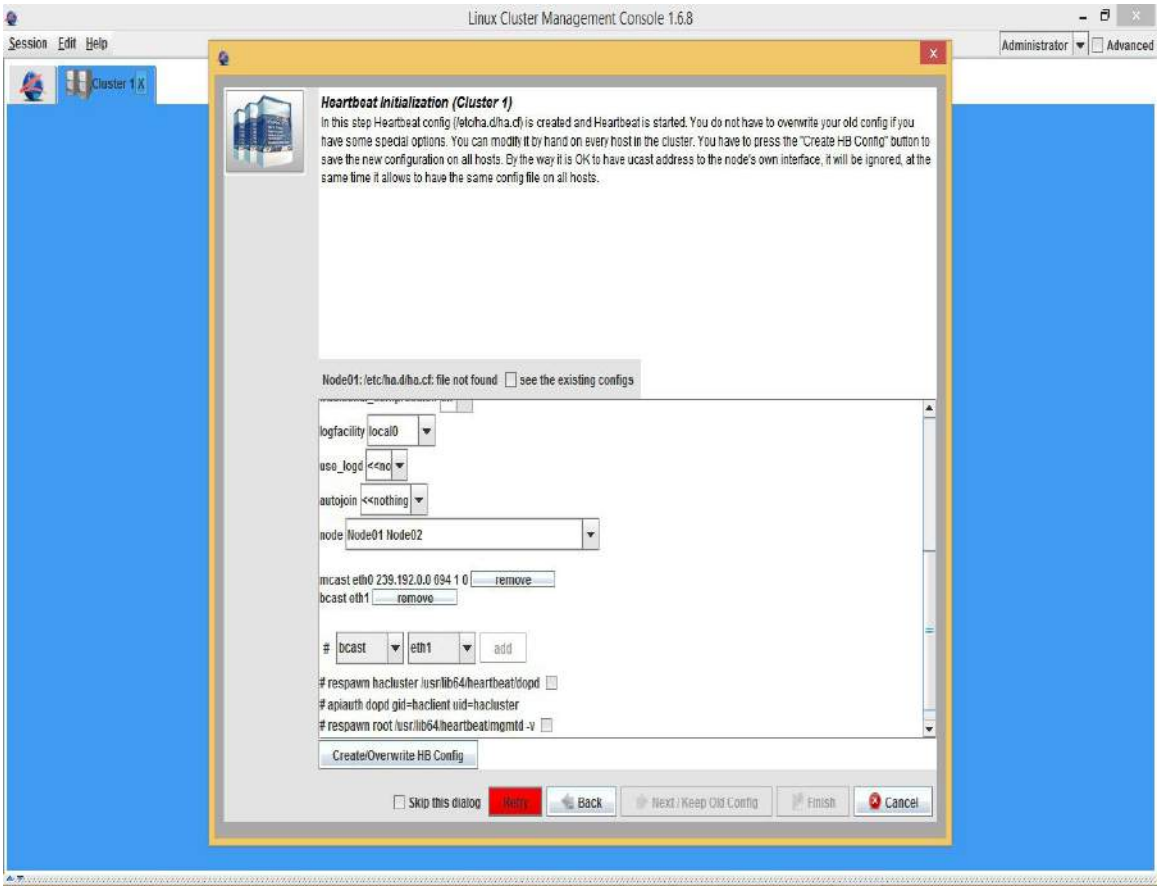


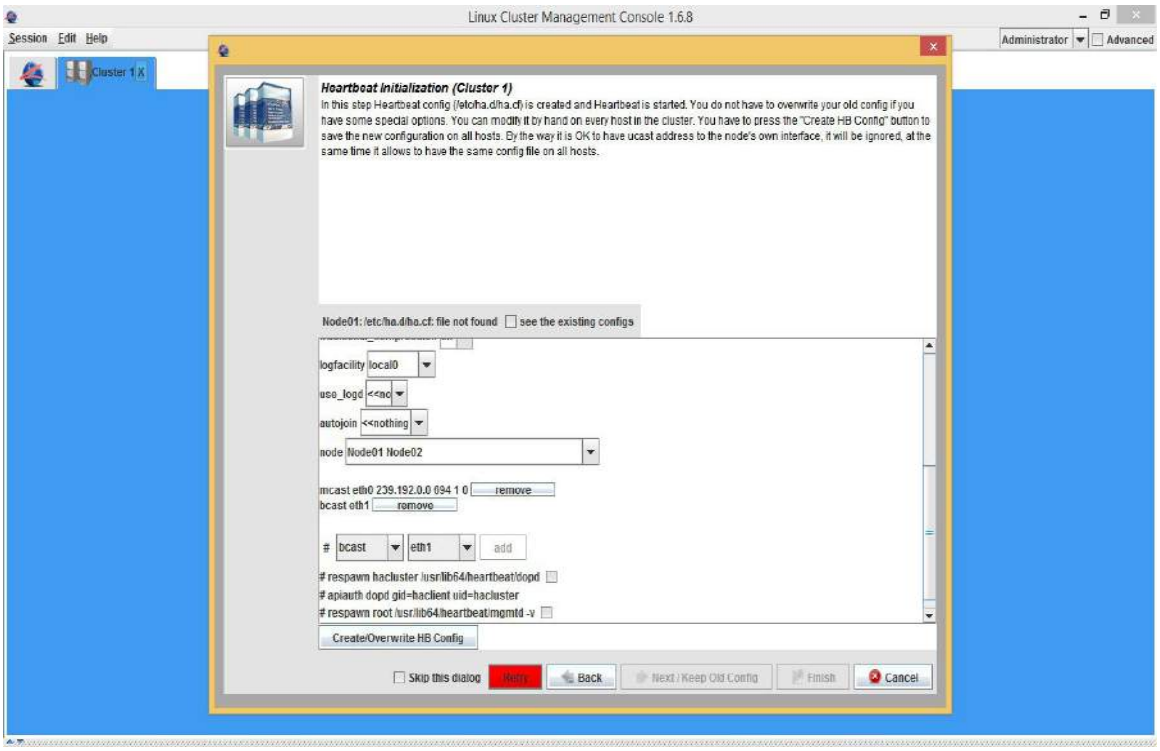
Adding Node01 and Node02 in to the cluster.



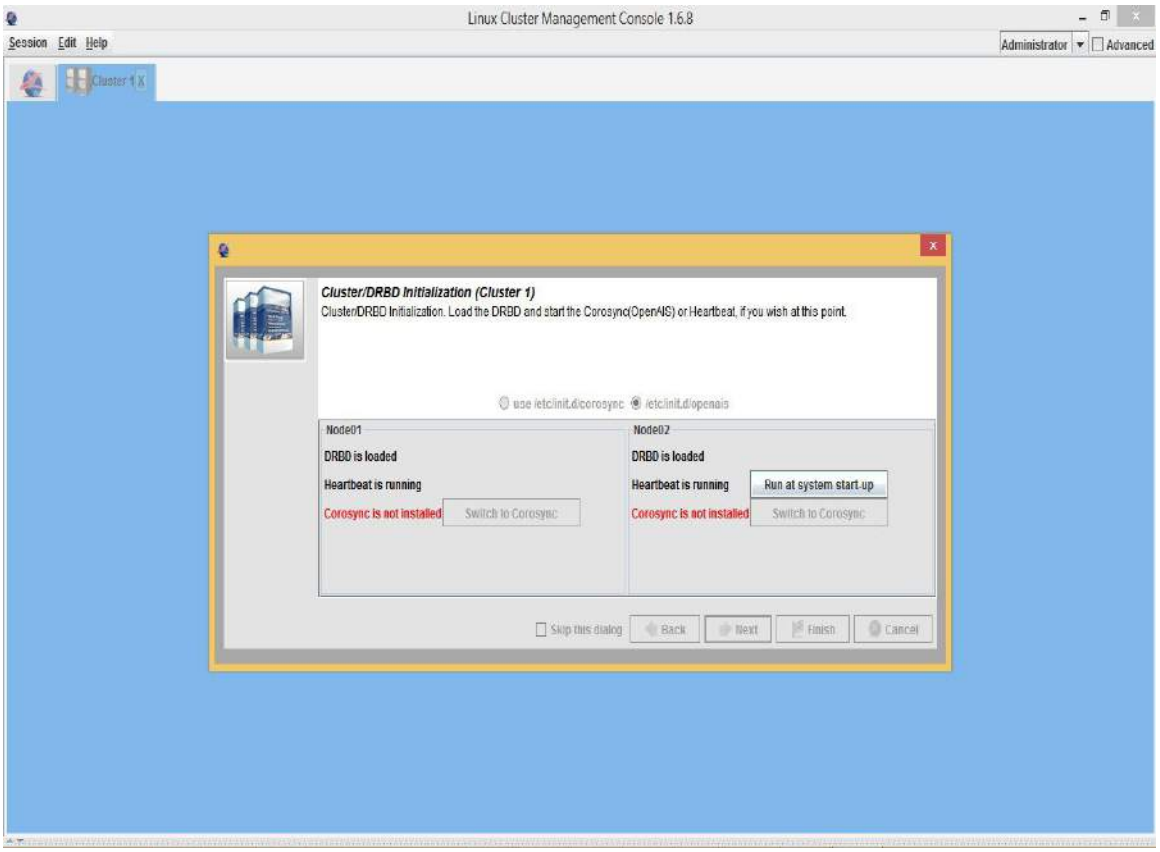


Cluster configuration file we can use for mcast eth0 default IP settings. For internal communication (Heartbeat+replication) between Node01 and Node02 I'm using eth1: 10.10.10.0/24.. its up to you how would you like to configure it....

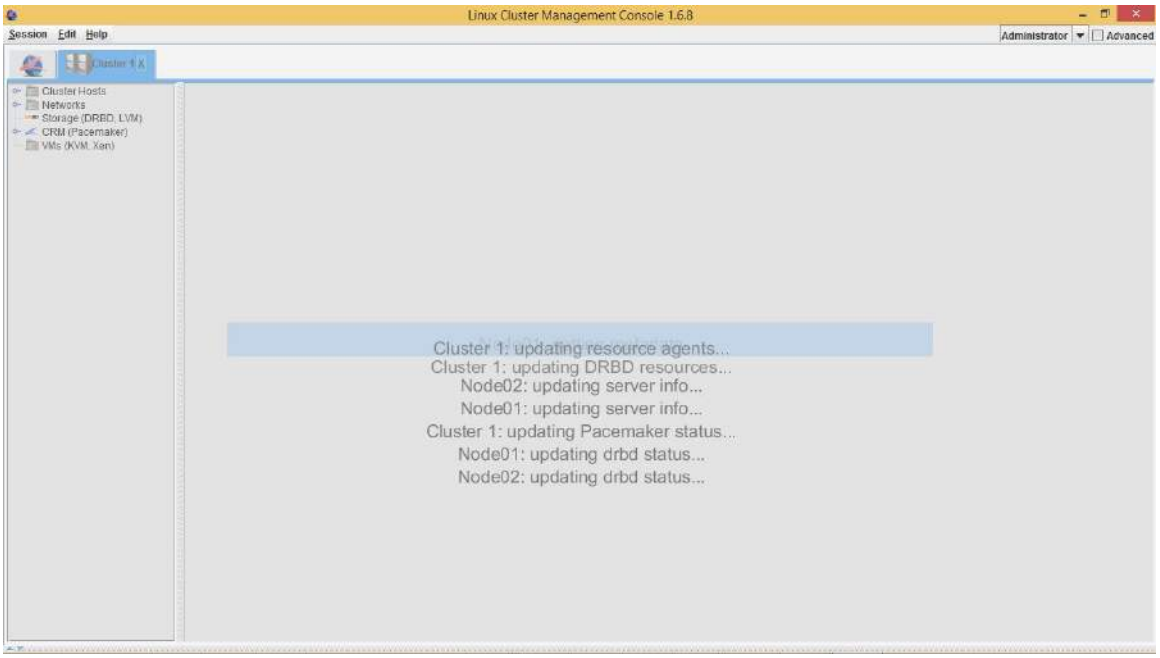




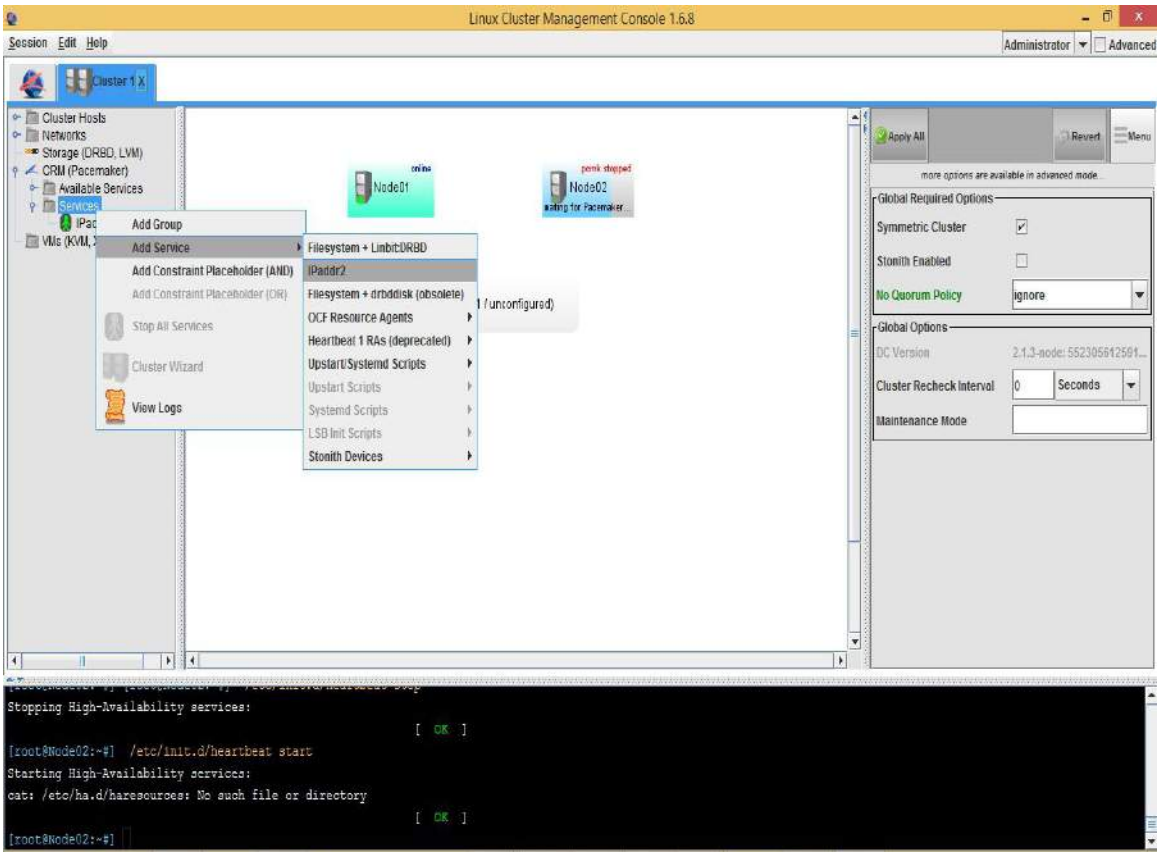
Now we need to start Heartbeat on both Nodes..

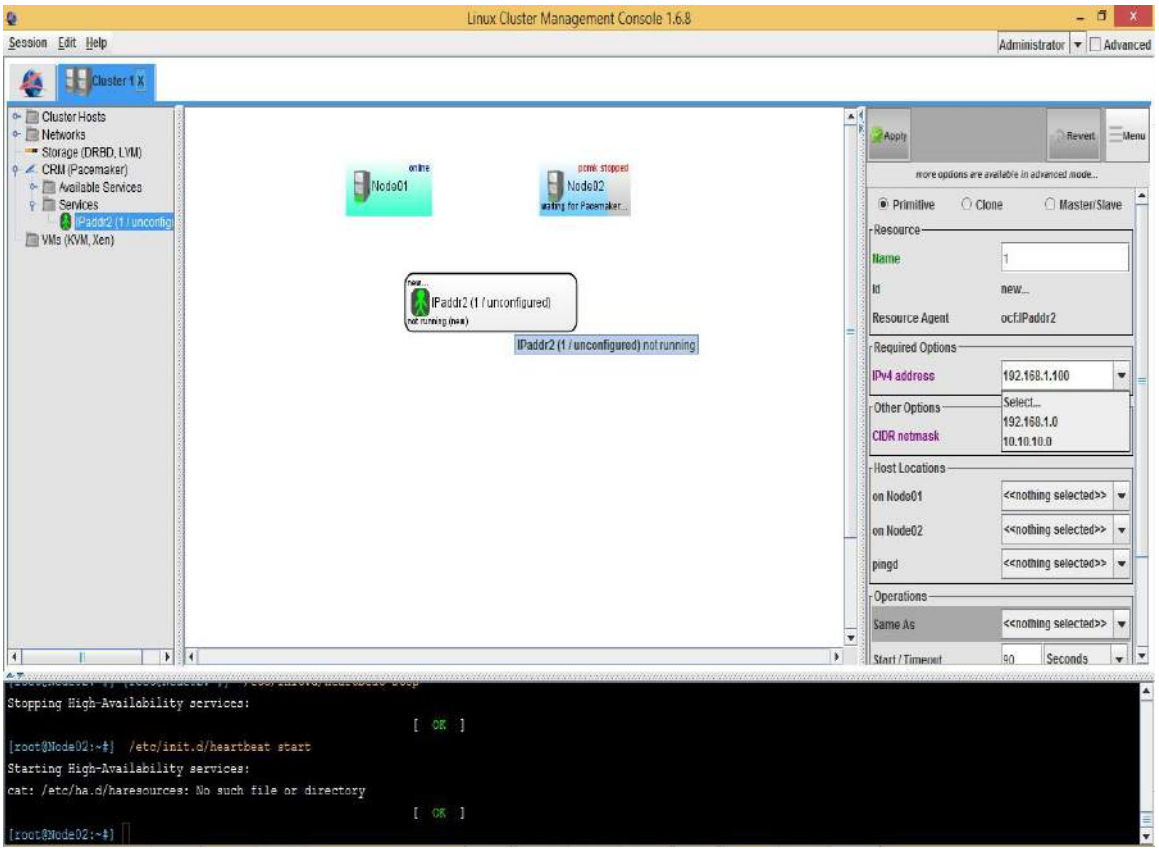


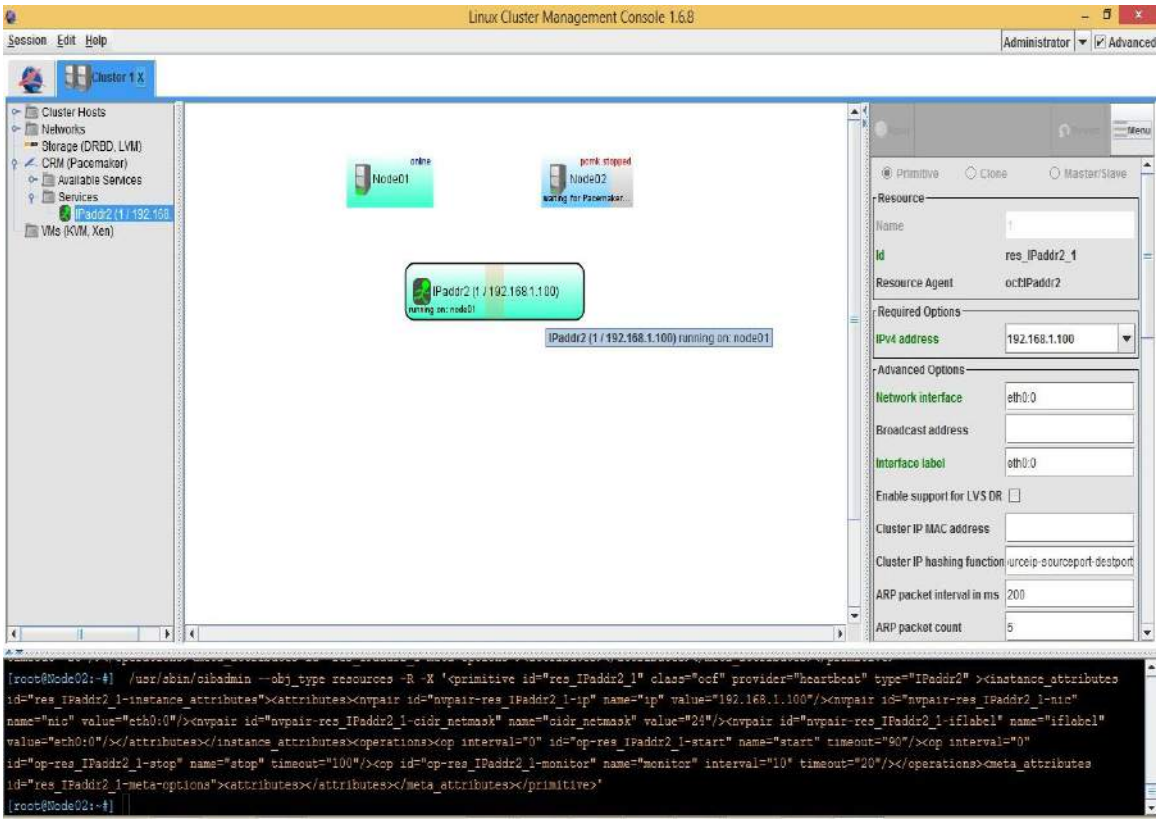
Cluster Service is initializing the resources it will took 1 to 3 mins...



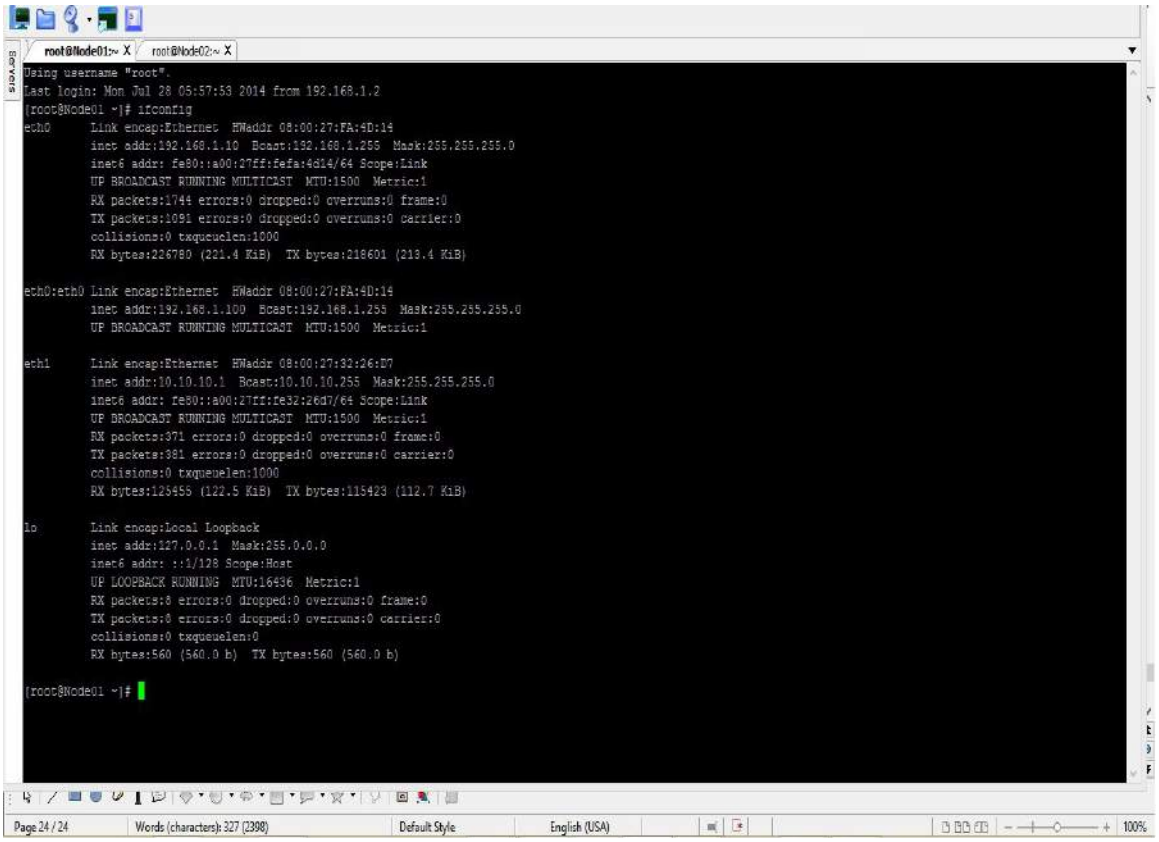
Step- 4 Adding Virtual IP - 192.168.1.100 in cluster



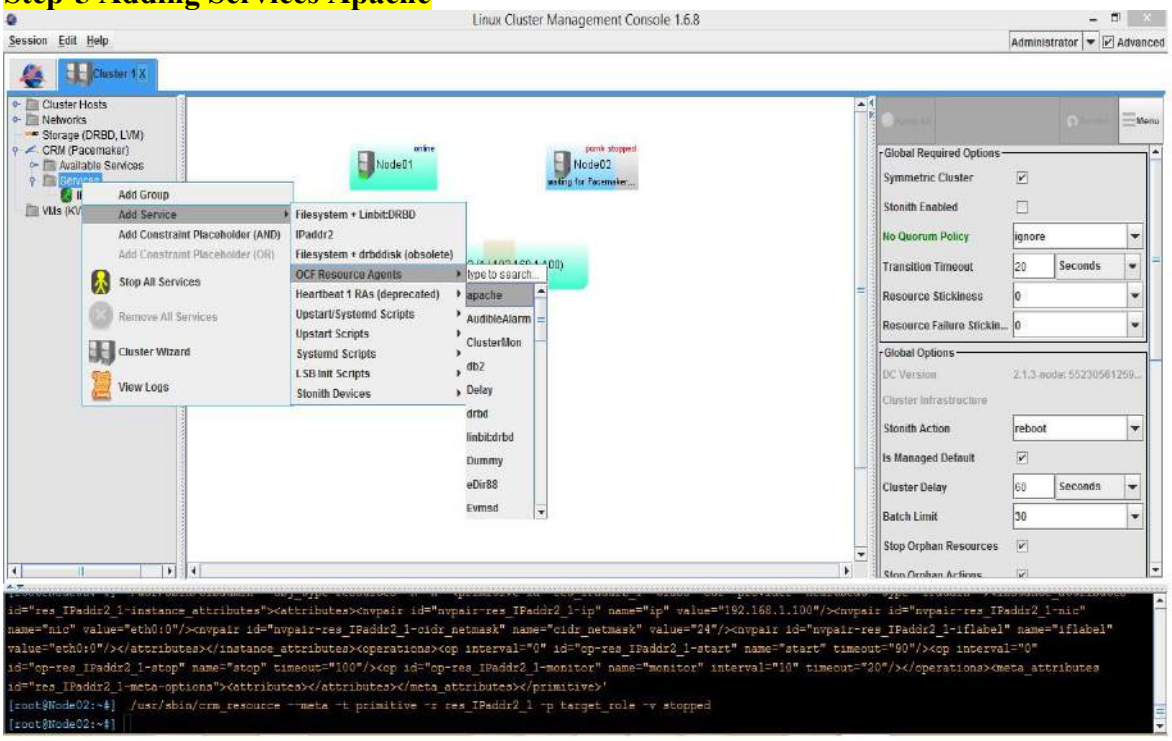

Linux Cluster Management Console 1.6.8
Session Edit Help
Administrator
Advanced
Cluster 1
Cluster Hosts
Networks
Storage (DRBD, LVM)
CRM (Pacemaker)
Available Services
Services
IPaddr2 (1 / unconfig)
VMs (KVM, Xen)
Node01
online
Node02
pcmk stopped
waiting for Pacemaker...
IPaddr2 (1 / unconfigured)
not running (wait)
IPaddr2 (1 / unconfigured) not running
Apply
Revert
Menu
more options are available in advanced mode...
Primitive
Clone
Master/Slave
Resource
Name
Id
new...
Resource Agent
ocf:IPaddr2
Required Options
IPv4 address
192.168.1.100
Select...
192.168.1.0
10.10.10.0
Other Options
CIDR netmask
Host Locations
on Node01
on Node02
pingd
<<nothing selected>>
Operations
Same As
Start / Timeout
90
Seconds
Stopping High-Availability services:
[OK]
[root@Node02:~#] /etc/init.d/heartbeat start
Starting High-Availability services:
cat: /etc/ha.d/haresources: No such file or directory
[OK]
[root@Node02:~#]

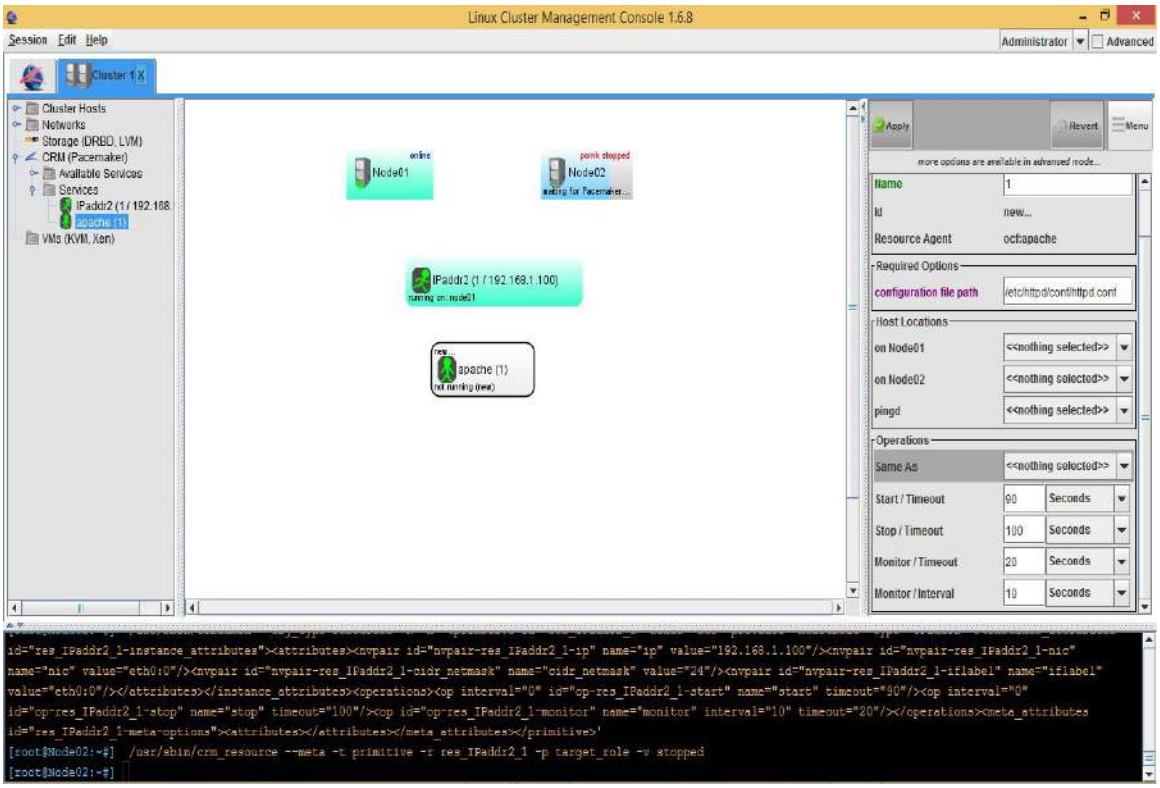

Linux Cluster Management Console 1.6.8
Session Edit Help
Administrator
Advanced
Cluster 1
Cluster Hosts
Networks
Storage (DRBD, LVM)
CRM (Pacemaker)
Available Services
Services
IPaddr2 (1 / 192.168.1.100)
VMs (KVM, Xen)
Node01
online
Node02
pcmk stopped
waiting for Pacemaker...
IPaddr2 (1 / 192.168.1.100)
running on: node01
IPaddr2 (1 / 192.168.1.100) running on: node01
Primitive
Clone
Master/Slave
Resource
Name
Id
res_IPaddr2_1
Resource Agent
ocf:IPaddr2
Required Options
IPv4 address
192.168.1.100
Advanced Options
Network interface
eth0:0
Broadcast address
Interface label
eth0:0
Enable support for LVS DR
Cluster IP MAC address
Cluster IP hashing function
ARP packet interval in ms
200
ARP packet count
5
[root@Node02:~#] /usr/sbin/cibadmin --obj_type resources -R -X '<primitive id="res_IPaddr2_1" class="ocf" provider="heartbeat" type="IPaddr2" ><instance_attributes id="res_IPaddr2_1-instance_attributes"><attributes><nvpair id="nvpair-res_IPaddr2_1-ip" name="ip" value="192.168.1.100"/><nvpair id="nvpair-res_IPaddr2_1-nic" name="nic" value="eth0:0"/><nvpair id="nvpair-res_IPaddr2_1-cidr_netmask" name="cidr_netmask" value="24"/><nvpair id="nvpair-res_IPaddr2_1-iflabel" name="iflabel" value="eth0:0"/></attributes></instance_attributes><operations><op interval="0" id="op-res_IPaddr2_1-start" name="start" timeout="90"/><op interval="0" id="op-res_IPaddr2_1-stop" name="stop" timeout="100"/><op id="op-res_IPaddr2_1-monitor" name="monitor" interval="10" timeout="20"/></operations><meta_attributes id="res_IPaddr2_1-meta-options"><attributes></attributes></meta_attributes></primitive>'
[root@Node02:~#]

IP address mapped to Node01 successfully..

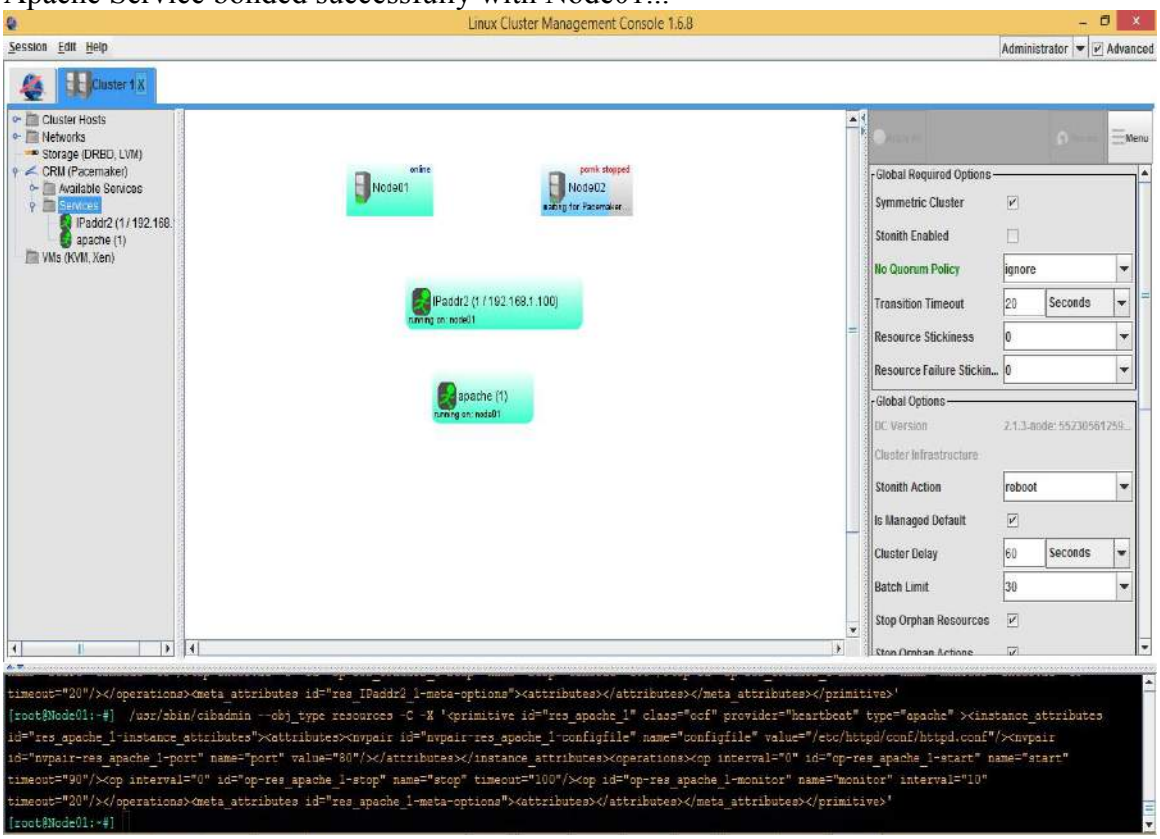


Step-5 Adding Services Apache

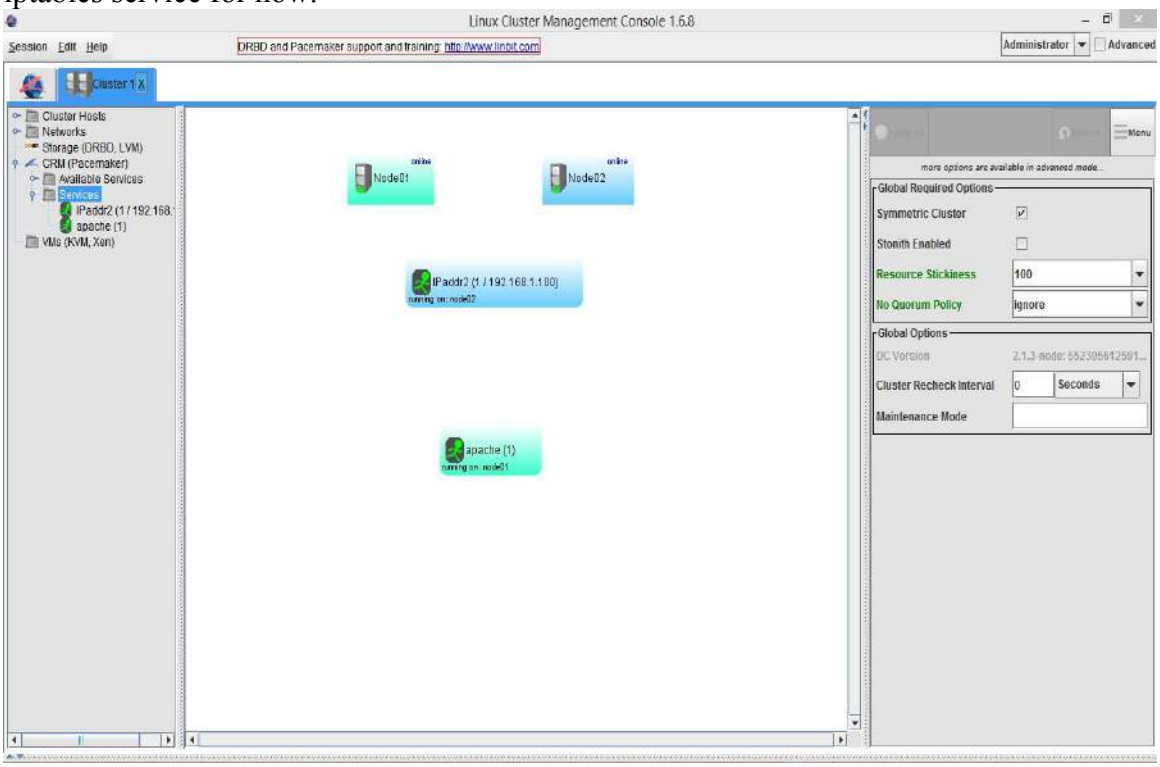




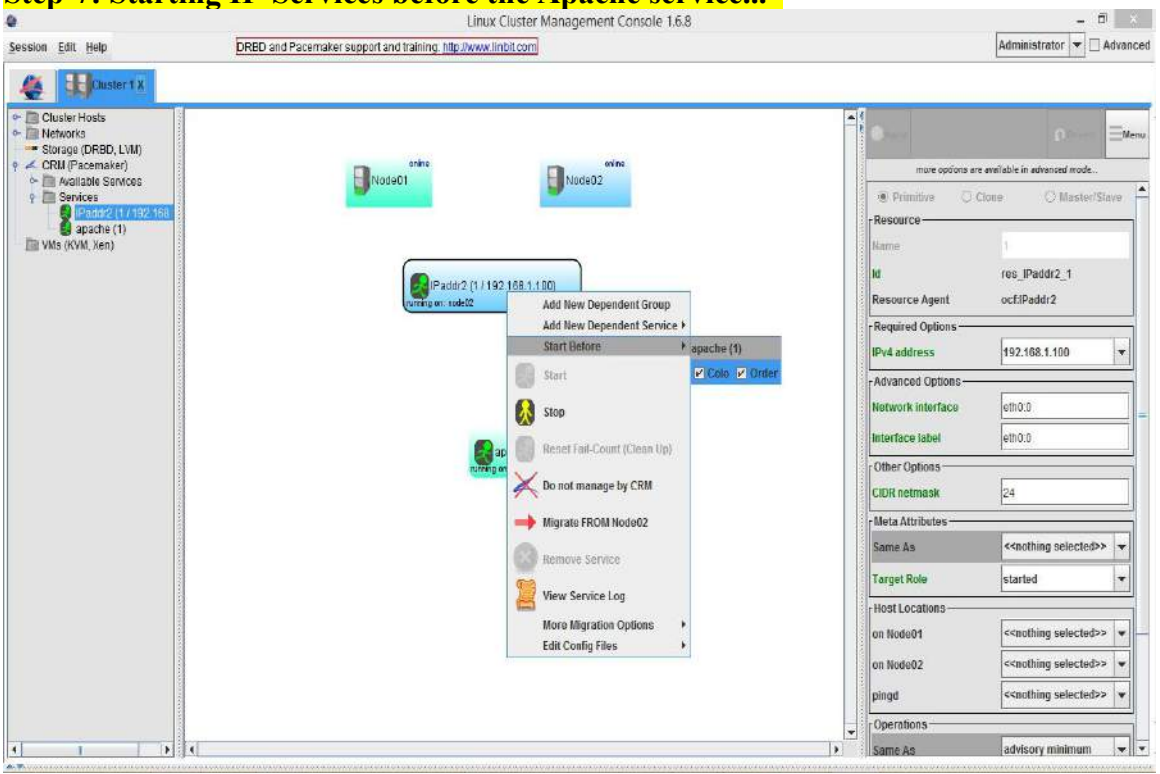
Apache Service bonded successfully with Node01...



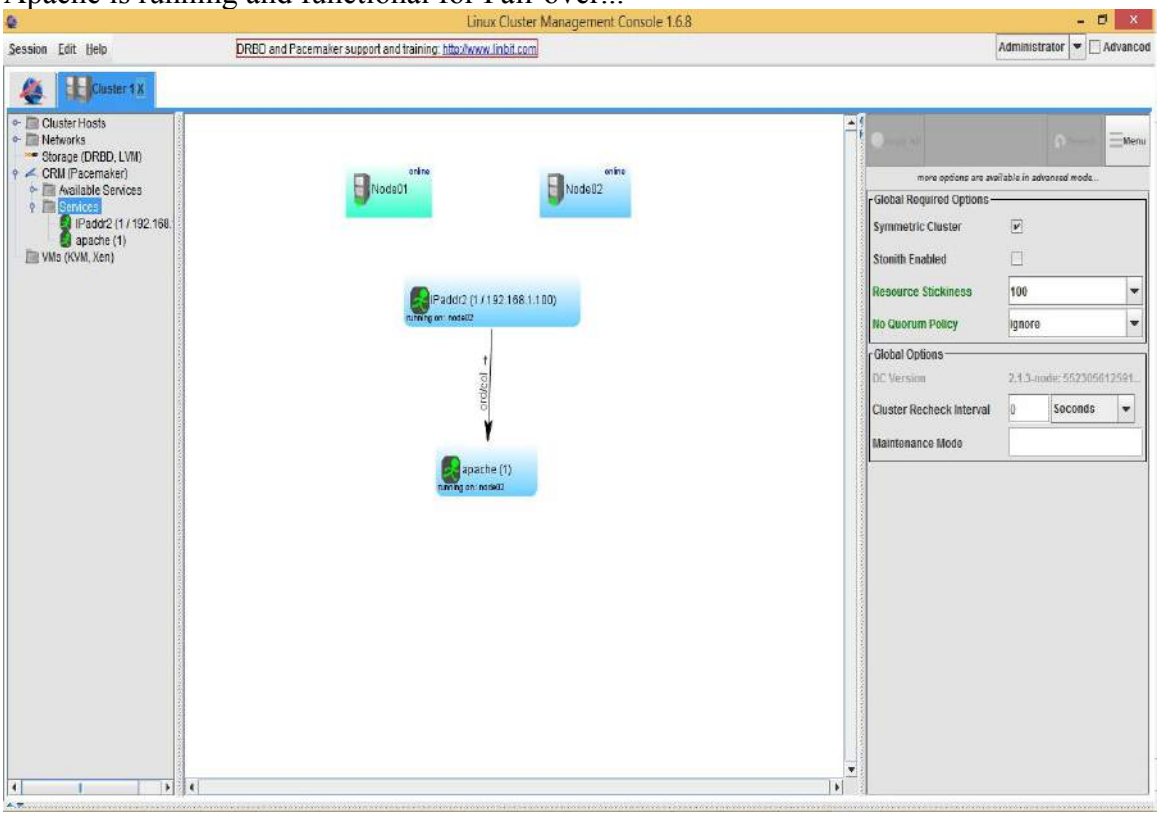
Step- 6: iPtables : Here you can see both Nodes Online Now – iptables services is blocking the heartbeat priority bits, You can add the rule for this purpose. I stopped the iptables service for now.



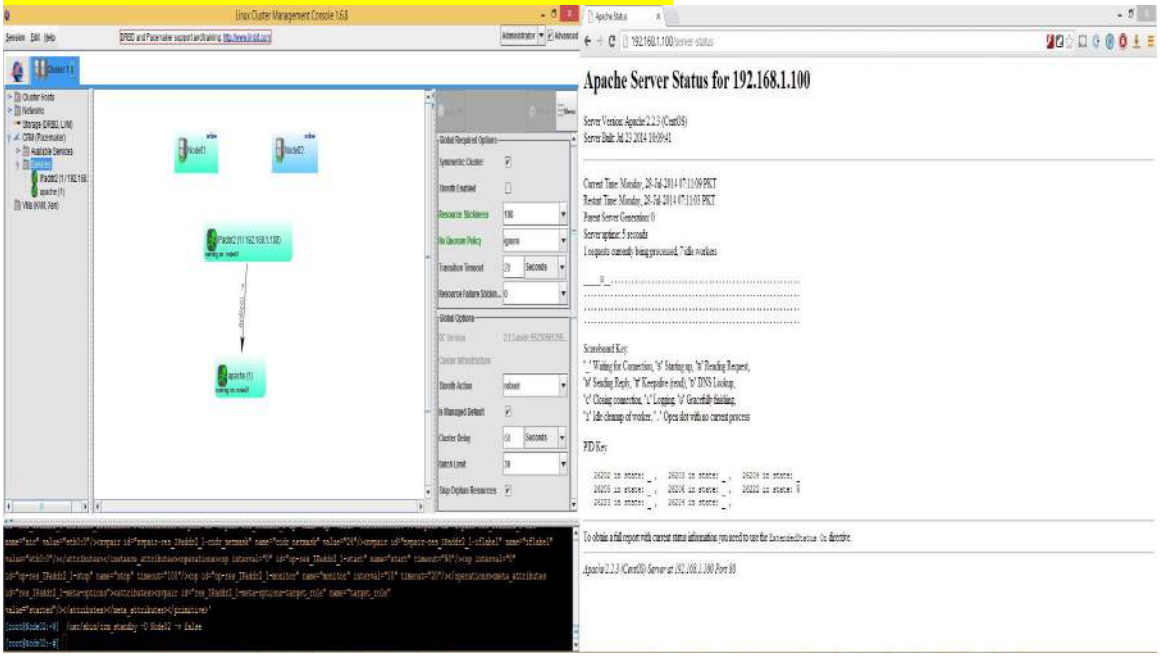
Step-7: Starting IP-Services before the Apache service...



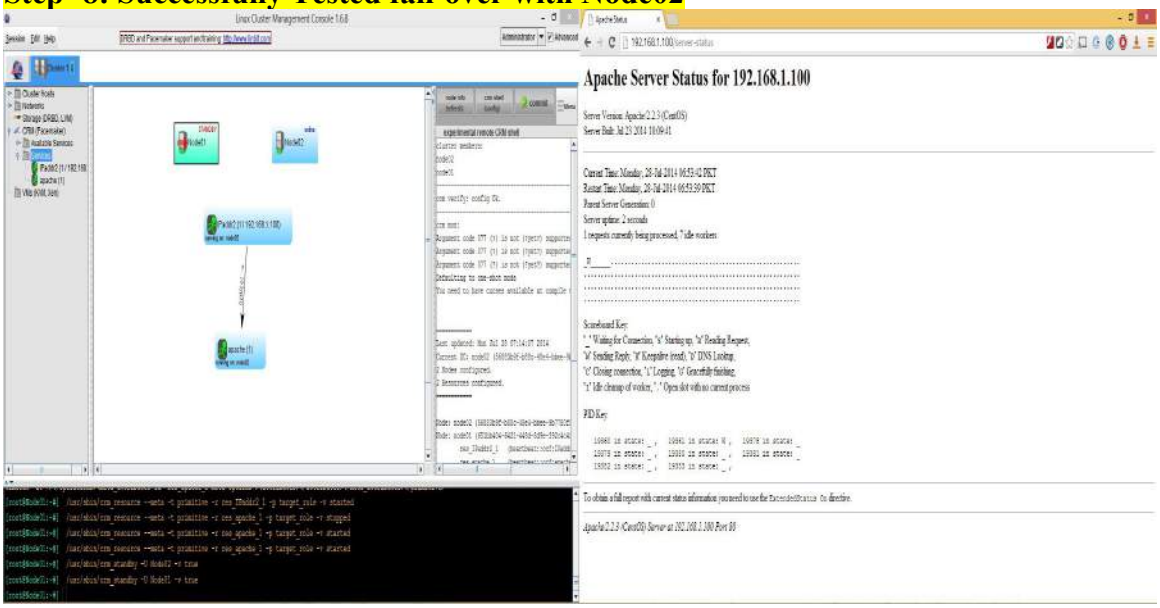
Apache is running and functional for Fail-over...



Site is functional with virtual IP 192.168.1.100...



Step- 8: Successfully Tested fail-over with Node02



Virtual IP Bonded with Node02 Successfully ..