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CLONING VM FOR MULTI NODE CLUSTER

By www.HadoopExam.com

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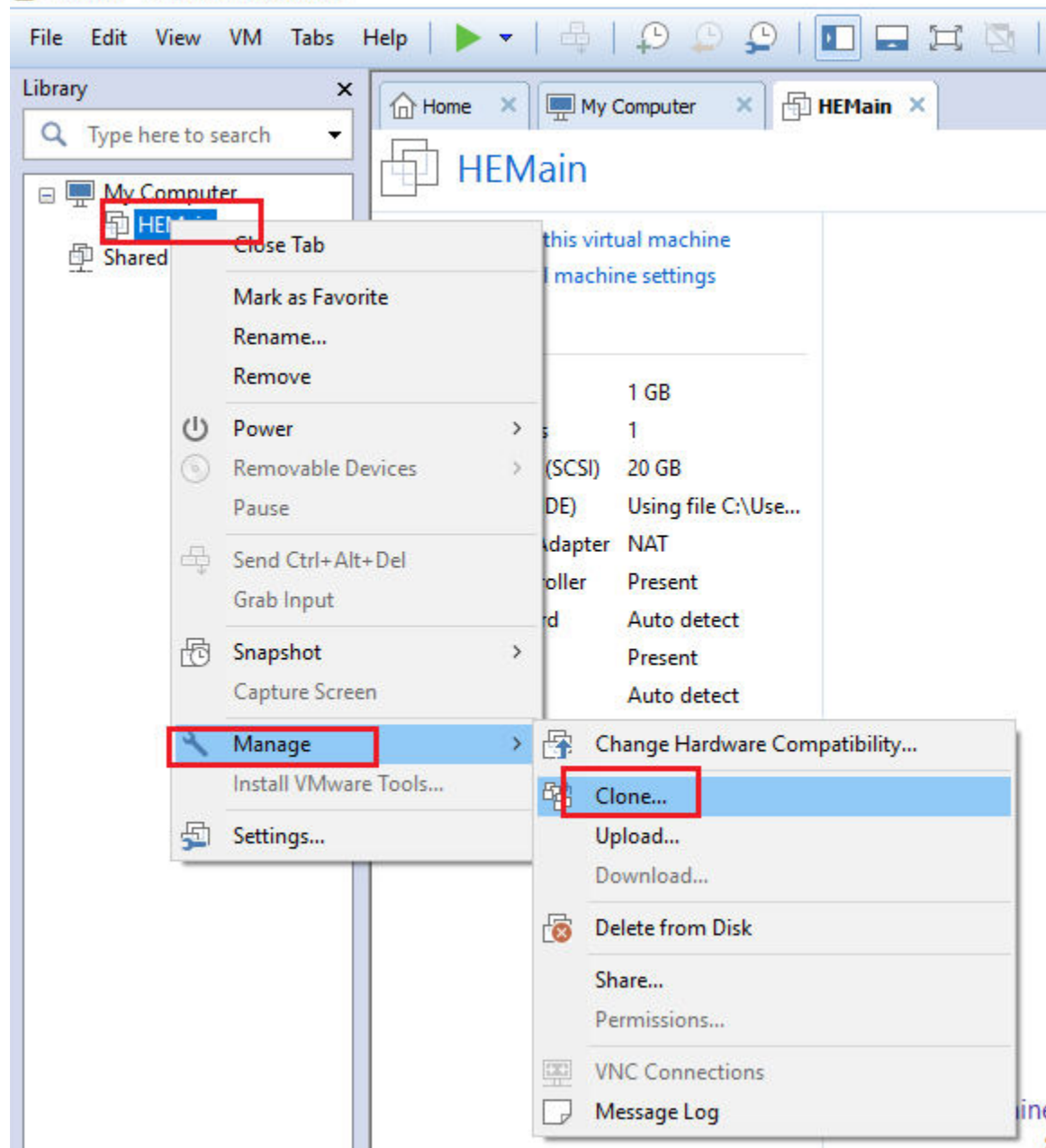
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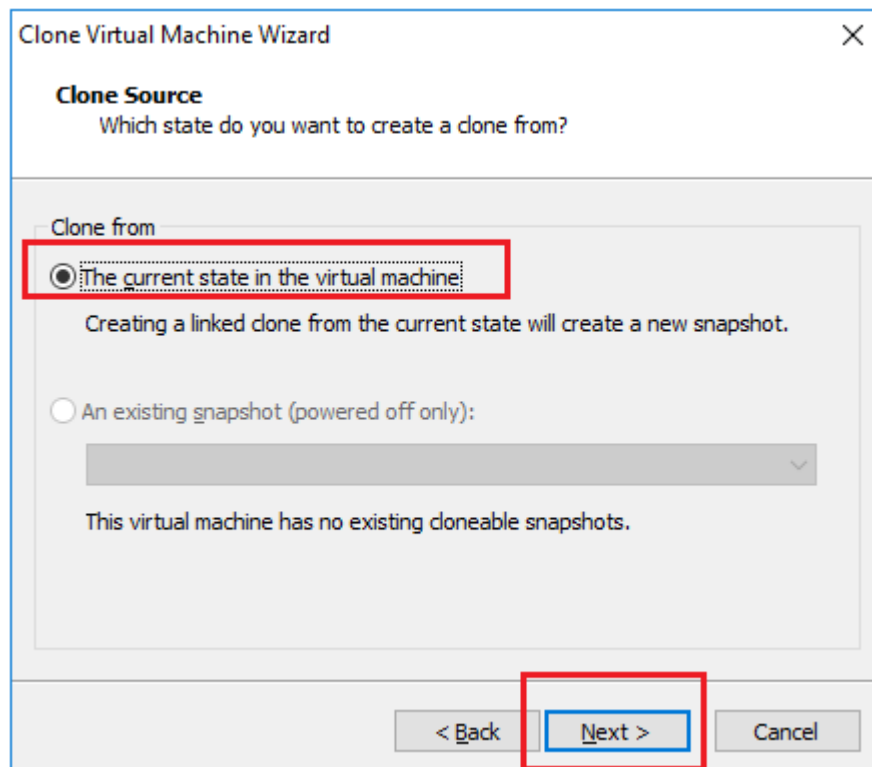
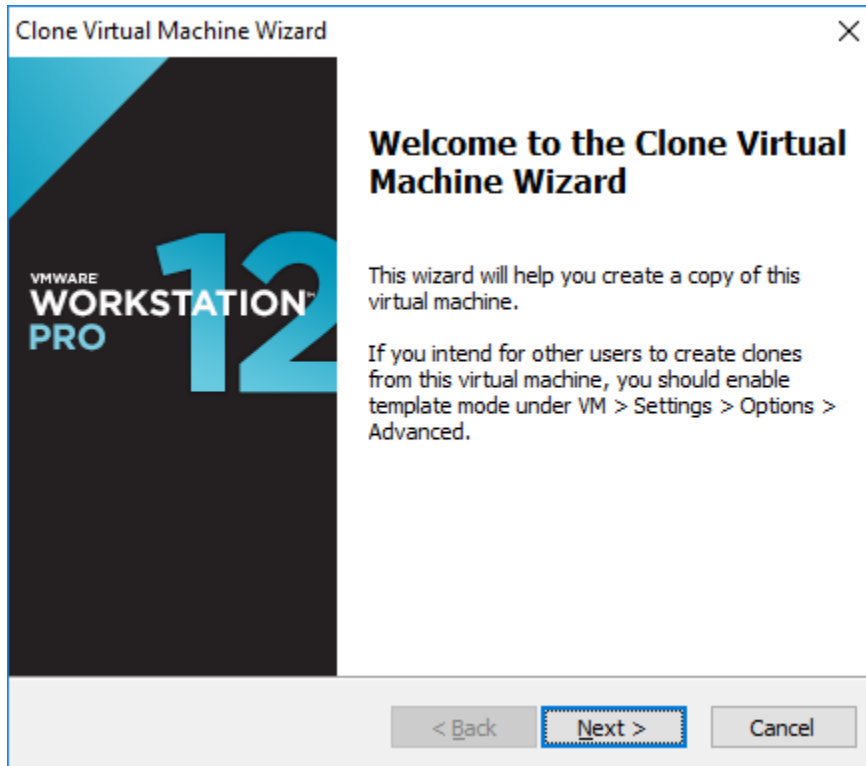
Step 1: Clone the VMs (First shutdown, if vm is running)

```
init 0
```

Step 2: Now start cloning the VM from workstation

HEMain - VMware Workstation





It is important you create full clone.

Clone Virtual Machine Wizard

Clone Type
How do you want to clone this virtual machine?

Clone method

Create a linked clone
A linked clone is a reference to the original virtual machine and requires less disk space to store. However, it cannot run without access to the original virtual machine.

Create a full clone
A full clone is a complete copy of the original virtual machine at its current state. This virtual machine is fully independent, but requires more disk space to store.

< Back Next > Cancel

Give node name like master101.hadoopexam.com

Clone Virtual Machine Wizard

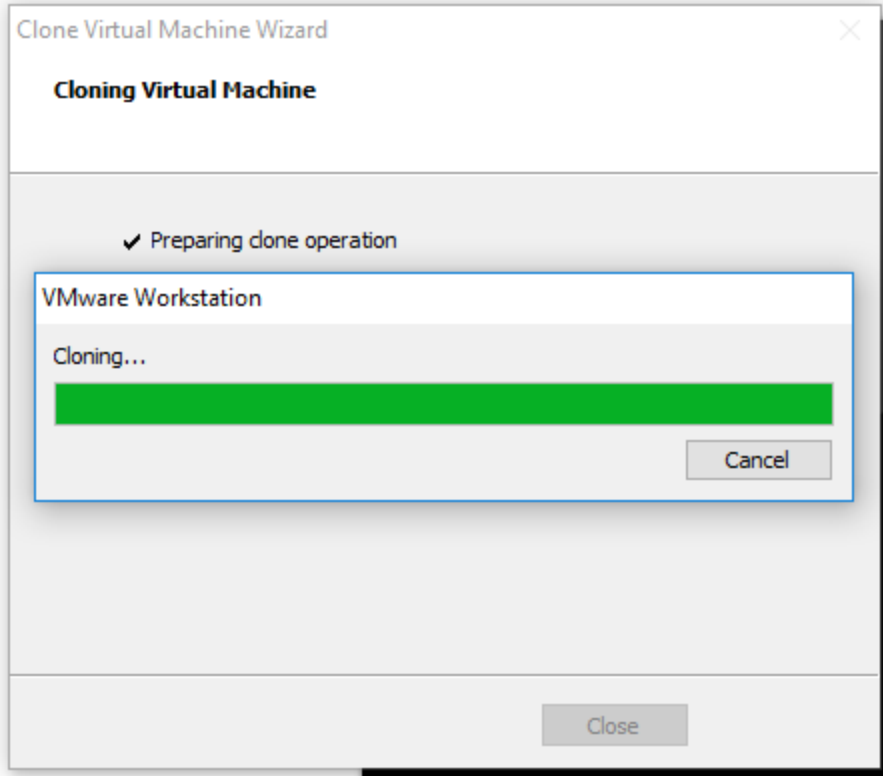
Name of the New Virtual Machine
What name would you like to use for this virtual machine?

Virtual machine name
master101.hadoopexam.com

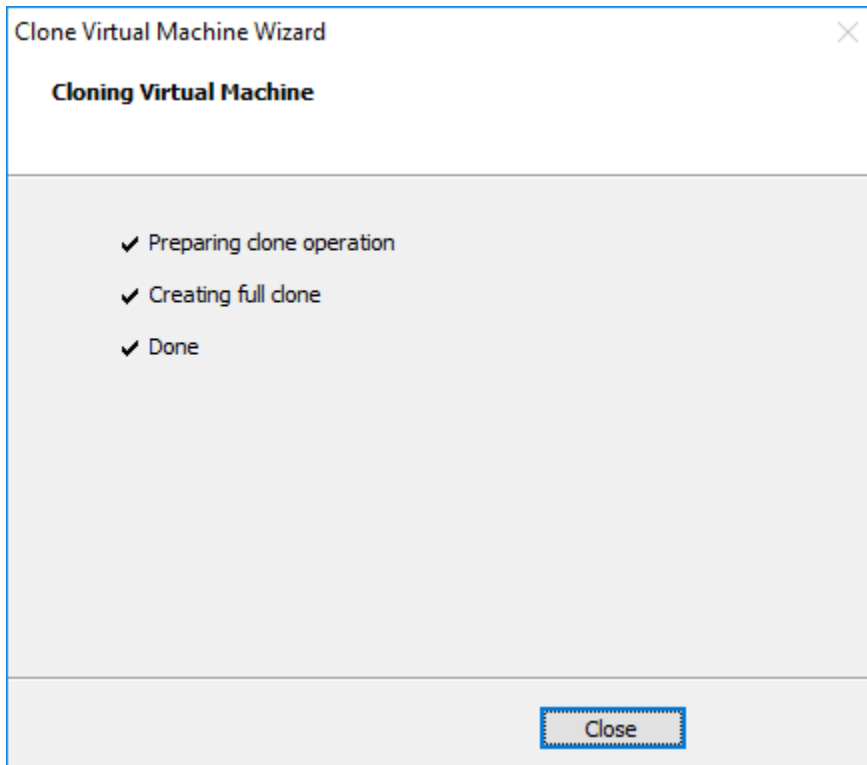
Location
C:\Users\hadoo\Documents\Virtual Machines\master101.hadoop
Browse...

< Back Finish Cancel

Cloning will be finished in few minutes

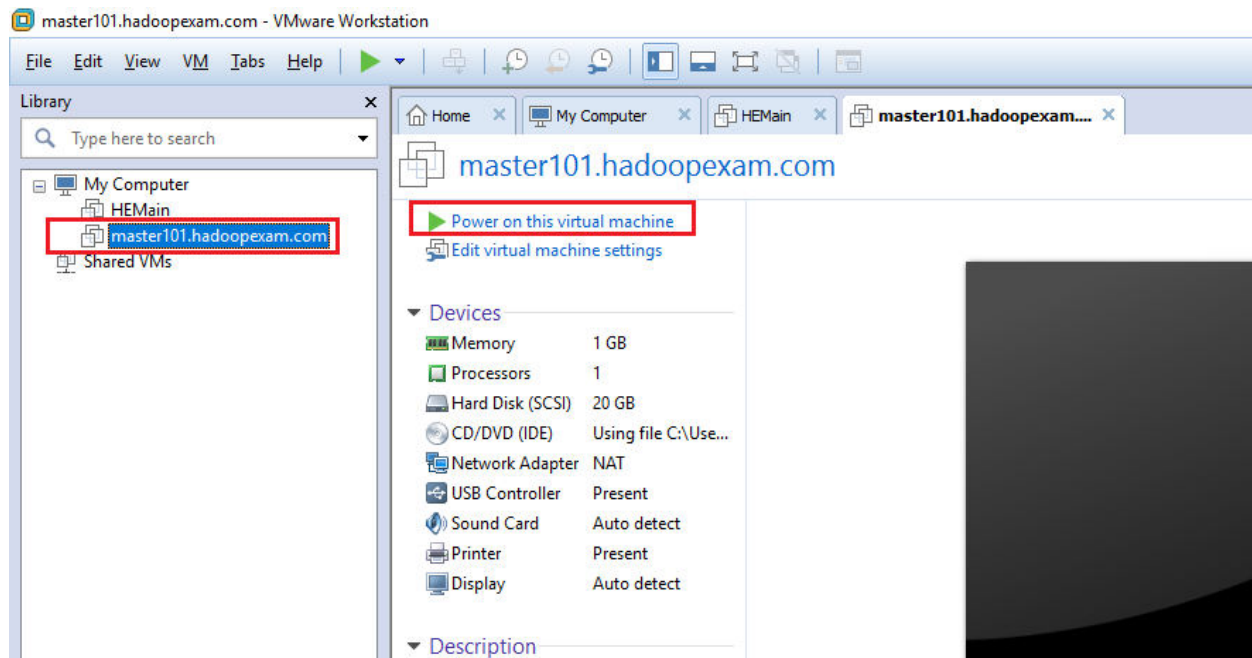


Click close



Now we have one copy of our vm created. As we going to have 4 node cluster, we will first do some configuratios, which is required on all 4 nodes.

Step 3: Now start the cloned vm (master101.hadoopexam.com)



Step 4: Change the hostname

```
vi /etc/sysconfig/network
```


Step 6: Now change the hosts file

```
vi /etc/hosts
```

```
192.168.182.11 master101.hadoopexam.com
```

Step 7: Now restart the network

```
service network restart
```

Check the ip address of this machine

```
"/etc/hosts" 51, 236C written
[root@heman ~]# service network restart
Restarting network (via systemctl): [ OK ]
[root@heman ~]# ifconfig -a
ens33: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.182.11 netmask 255.255.255.0 broadcast 192.168.182.255
    inet6 fe80::20c:29ff:fe70:8b1d prefixlen 64 scopeid 0x20<link>
    ether 00:0c:29:78:8b:1d txqueuelen 1000 (Ethernet)
```

Step 8: Now try to connect from windows Cygwin

```
ssh root@192.168.182.11
```

```
$ ssh root@192.168.182.11
The authenticity of host '192.168.182.11 (192.168.182.11)' can't be established.
ECDSA key fingerprint is SHA256:PcmeiCLtxFtaYxFN5ZAiMz4JD94R8IwxKirY2HFcdq0.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '192.168.182.11' (ECDSA) to the list of known hosts.
Last login: Sat Jun 17 10:26:17 2017
```

Step 9: Now change the/etc/hosts file for other nodes (Which we will be creating soon)

```
echo '192.168.182.12 node102.hadoopexam.com' >> /etc/hosts
echo '192.168.182.13 node103.hadoopexam.com' >> /etc/hosts
echo '192.168.182.14 node104.hadoopexam.com' >> /etc/hosts
```

Step 10: Add the same entry in our windows hosts file.

```
echo '192.168.182.11 master101' >> /etc/hosts
echo '192.168.182.11 master101.hadoopexam.com' >> /etc/hosts

echo '192.168.182.12 node102' >> /etc/hosts
echo '192.168.182.12 node102.hadoopexam.com' >> /etc/hosts
```



```
echo '192.168.182.13 node103' >> /etc/hosts
echo '192.168.182.13 node103.hadoopexam.com' >> /etc/hosts

echo '192.168.182.14 node104' >> /etc/hosts
echo '192.168.182.14 node104.hadoopexam.com' >> /etc/hostss
```

```
192.168.182.101          hemain
192.168.182.11         master101
192.168.182.11         master102.hadoopexam.com
192.168.182.12         node102
192.168.182.12         node102.hadoopexam.com
192.168.182.13         node103
192.168.182.13         node103.hadoopexam.com
192.168.182.14         node104
192.168.182.14         node104.hadoopexam.com
```

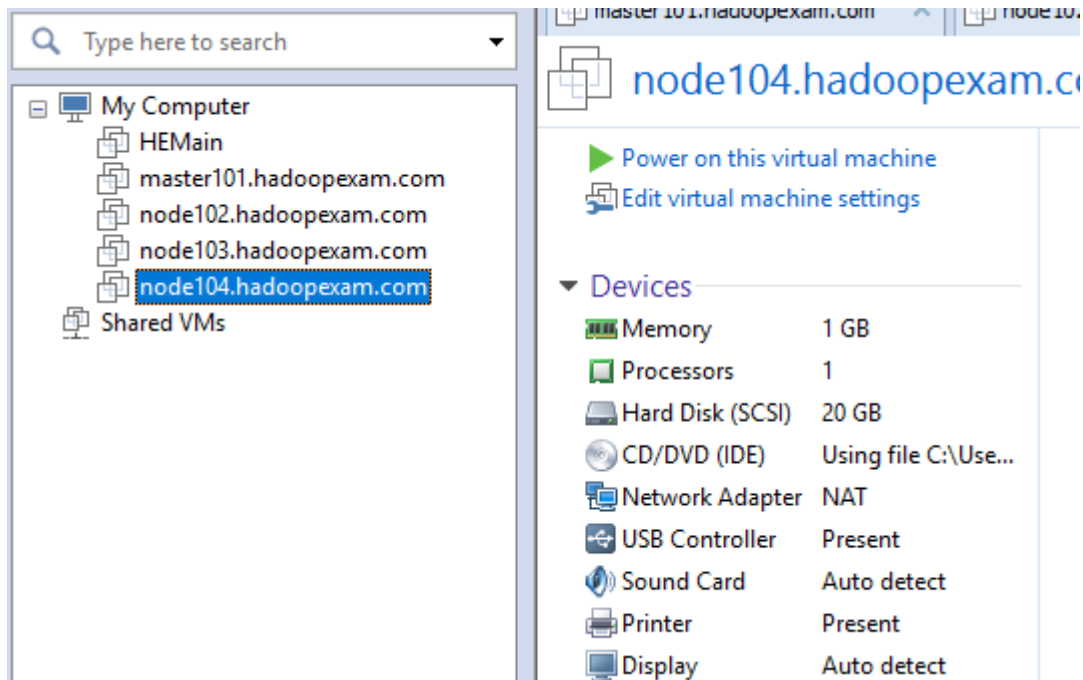
Step 11: Now try to connect master101 from windows, using hostname

```
ssh root@master101
```

```
hadoo@HadoopExam ~
$ ssh root@master101
The authenticity of host 'master101 (192.168.182.11)' can't be established.
ECDSA key fingerprint is SHA256:PcmeiCLtxFtaYxFN5ZAiMz4JD94R8IwxKirY2HFcdq0.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'master101' (ECDSA) to the list of known hosts.
Last login: Sat Jun 17 10:46:24 2017 from 192.168.182.1
[root@master101 ~]#
```

Step 12: Now create remaining 3 VMs by cloning master101 vms

Once you are done, you should have following 4 equals VM created



Step 13: Now start VM one by one and change their ip addresses.

Change the following file

```
vi /etc/sysconfig/network-scripts/ifcfg-ens33
```

Change the IP addresses as below

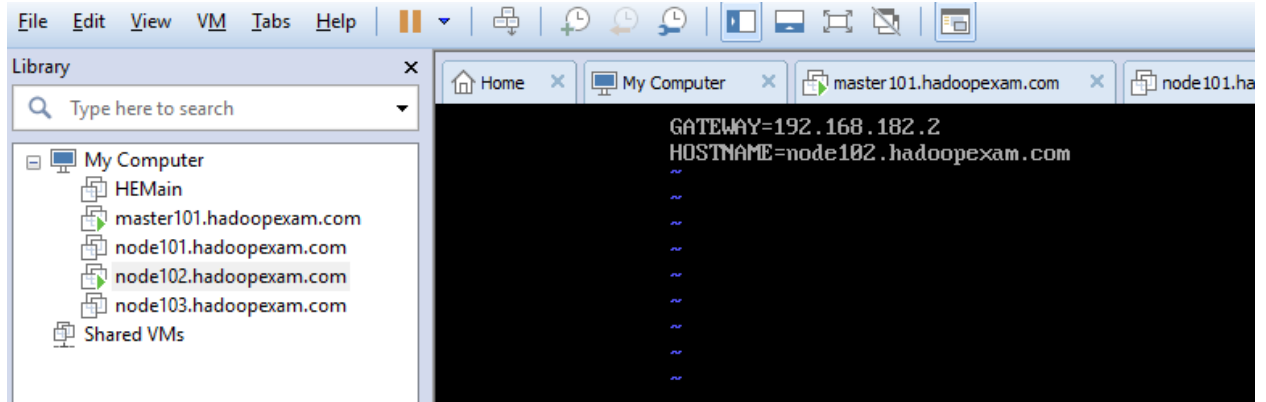
master101.hadoopexam.com	192.168.182.11
node102.hadoopexam.com	192.168.182.12
node103.hadoopexam.com	192.168.182.13
node104.hadoopexam.com	192.168.182.14

Similarly change the hostname on all the 4 servers in following file. One entry on each respective nodes

```
vi /etc/sysconfig/network
```

HOSTNAME=master101.hadoopexam.com
HOSTNAME=node102.hadoopexam.com
HOSTNAME=node103.hadoopexam.com
HOSTNAME=node104.hadoopexam.com

Example , you can see on node102



Now restart all the nodes

Step 14: Now ping from all the machines to check network is properly configured.

```
ping hadoopexam.com
```

Step 15: Now check ip address configuration on respective vm

```
Ifconfig -a
```

Step 16: Now connect from cycgwin to each node.

```
ssh root@master101
exit
ssh root@node102
exit
ssh root@node103
exit
ssh root@node104
```

```

root@node104~
hadoop@HadoopExam ~
$ ssh root@master101
Last login: Sat Jun 17 11:44:15 2017
[root@master101 ~]# exit
logout
Connection to master101 closed.

hadoop@HadoopExam ~
$ ssh root@node101
ssh: Could not resolve hostname node101: Name or service not known

hadoop@HadoopExam ~
$ ssh root@node102
The authenticity of host 'node102 (192.168.182.12)' can't be established.
ECDSA key fingerprint is SHA256:PcmeiCLtxFtaYxfN5ZAiMz4JD94R8IwXkiry2HFcdq0.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'node102,192.168.182.12' (ECDSA) to the list of known hosts.
Last login: Sat Jun 17 11:52:27 2017
[root@node102 ~]# exit
logout
Connection to node102 closed.

hadoop@HadoopExam ~
$ ssh root@node103
The authenticity of host 'node103 (192.168.182.13)' can't be established.
ECDSA key fingerprint is SHA256:PcmeiCLtxFtaYxfN5ZAiMz4JD94R8IwXkiry2HFcdq0.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'node103,192.168.182.13' (ECDSA) to the list of known hosts.
Last login: Sat Jun 17 11:52:42 2017
[root@node103 ~]# exit
logout
Connection to node103 closed.

hadoop@HadoopExam ~
$ ssh root@node104
The authenticity of host 'node104 (192.168.182.14)' can't be established.
ECDSA key fingerprint is SHA256:PcmeiCLtxFtaYxfN5ZAiMz4JD94R8IwXkiry2HFcdq0.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'node104,192.168.182.14' (ECDSA) to the list of known hosts.
Last login: Sat Jun 17 11:52:54 2017
[root@node104 ~]#

```

Step 17: Now we need to setup ssh keys on all the vms, so that master101 can connect to other node without password.

- Login to master101
- Generate ssh keys

```
ssh-keygen
```

- Append public key on authorized keys

```
cat ~/.ssh/id_rsa.pub >> ~/.ssh/authorized_keys
```

- Now check we should have keys appended

```
cat ~/.ssh/authorized_keys
```

- Now copy this authorized keys on all remaining 3 nodes, using scp command

```

Change permissions of .ssh folder on each node
ssh root@node102.hadoopexam.com chmod 700 ~/.ssh
ssh root@node103.hadoopexam.com chmod 700 ~/.ssh
ssh root@node104.hadoopexam.com chmod 700 ~/.ssh

```

Now copy the content of .ssh folder on each host

```

scp /root/.ssh/* root@node102.hadoopexam.com:~/.ssh/
scp /root/.ssh/* root@node103.hadoopexam.com:~/.ssh/
scp /root/.ssh/* root@node104.hadoopexam.com:~/.ssh/

```

- Now try to login each hosts from master node

```

ssh root@node102.hadoopexam.com
ssh root@node103.hadoopexam.com
ssh root@node104.hadoopexam.com

```

Now we have 4 nodes each running with 20GB Disks and 1GB RAM

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