

Implementing JBoss & JRockit Cluster on Centos 4.4 using VMware

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Preface: Idea behind this manual is to give a stepwise howto to newbie in JBoss Application Server, I felt its need when I first started working on JBoss and found it difficult to get such a howto that can give me comprehensive steps for installing and configuring JBoss Cluster.

JBoss 4.2.1 GA stable is considered one of the most stable release from JBoss even for production environment, for further details please visit www.jboss.org, I have used BEA's JRockit (JVM) in this manual; reason is its stability while it is Free software ☺ the version I have used is JRockit 5.0 (27.3) release which is stable for production environment, for more detail please check www.bea.com.

Hardware Requirements: P-4 Intel with minimum 1 GB RAM, anything beyond will improve the performance.

Software Requirements: Operating System is **Centos 4.4** (www.centos.org) which is equivalent to RHEL 4.4 (www.redhat.com), while guest host O.S can be Linux or windows (*as this manual is written on my office's notebook so guest O.S is windows XP, really sorry ☺*). Virtualization tool is VMware Server that is released under GPL for further detail see www.vmware.com.

JRockit 5.0 (27.3) stable release can be downloaded from BEA (<http://www.bea.com/framework.jsp?CNT=index.htm&FP=/content/products/weblogic/jrockit/>)

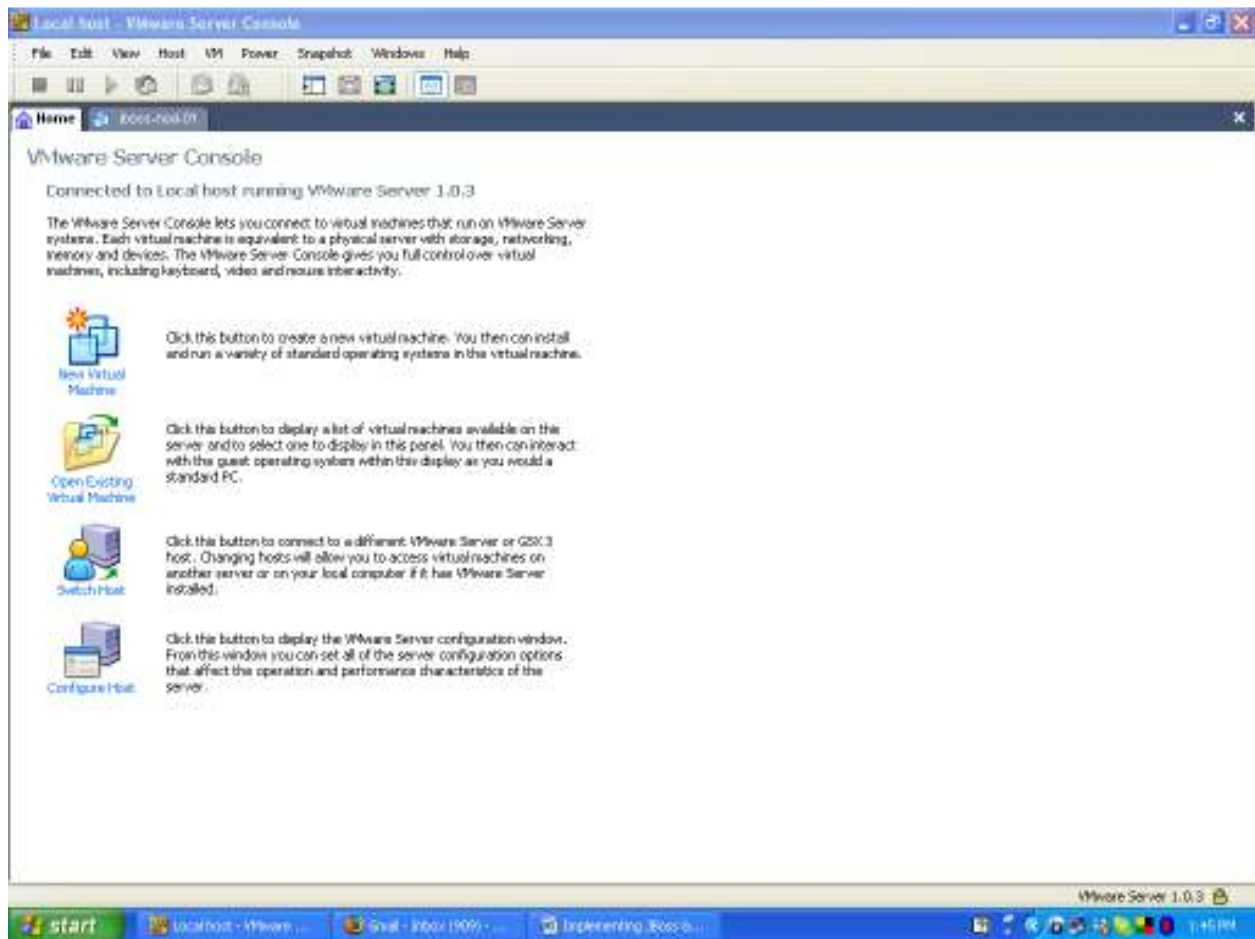
JBoss 4.2.1 GA can be downloaded from (<http://labs.jboss.com/jbossas/downloads>), you can download source or zip version, in manual we are using ZIP version.

Assumption: It is assumed that you have installed VMware Server (www.vmware.com/products/server/) , it does not matter that you have installed it on Linux or windows. (*Please prefer on Linux ☺*) , manual is started from creating Virtual Machines.

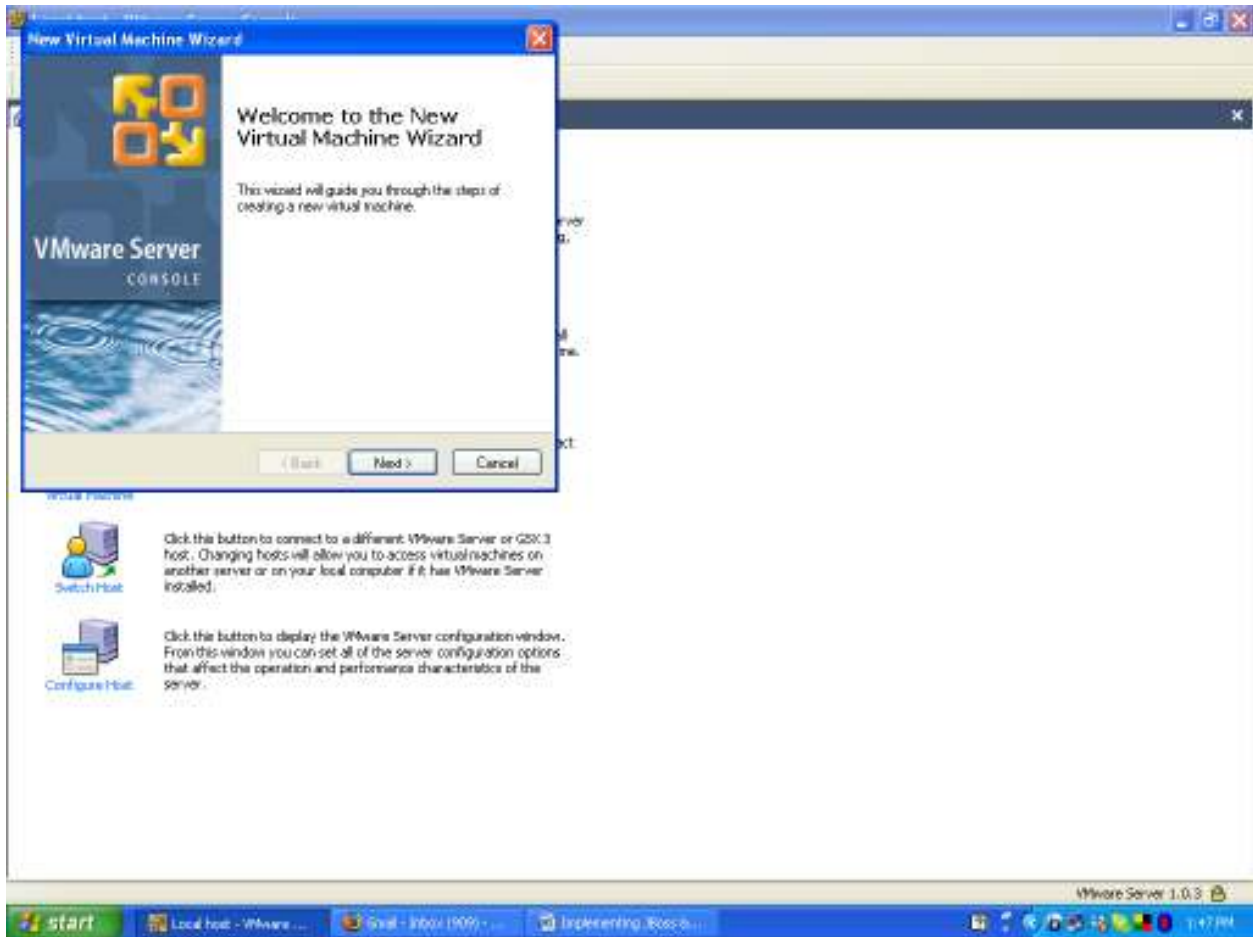
Background: There will be two Virtual Machines, i.e. Jboss01 (IP Address: 192.168.2.1/255.255.255.0) and Jboss02 (IP Address: 192.168.2.2/255.255.255.0), with Centos 4.4 installed, they will be configured as JBoss cluster with JRockit (JVM), **JBoss farming** will also going to be configured in the JBoss cluster which is another cool feature by JBoss.

So it begins:

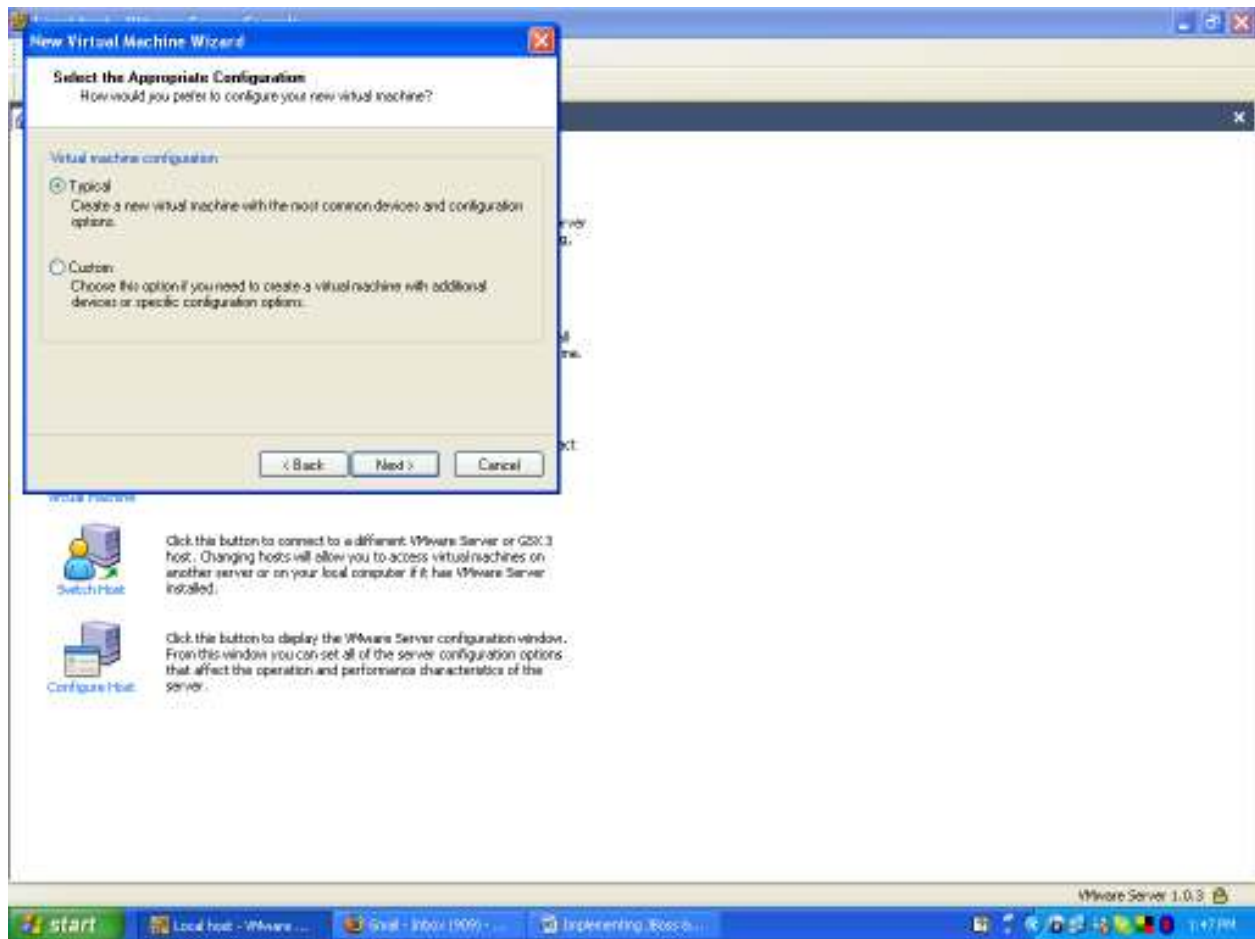
Step No. 1 We will create our first Virtual Machine i.e. Jboss01, by just opening VMware Server Console, follow the coming screenshots for Virtual Machine creation, you can use your own custom configuration. i.e.



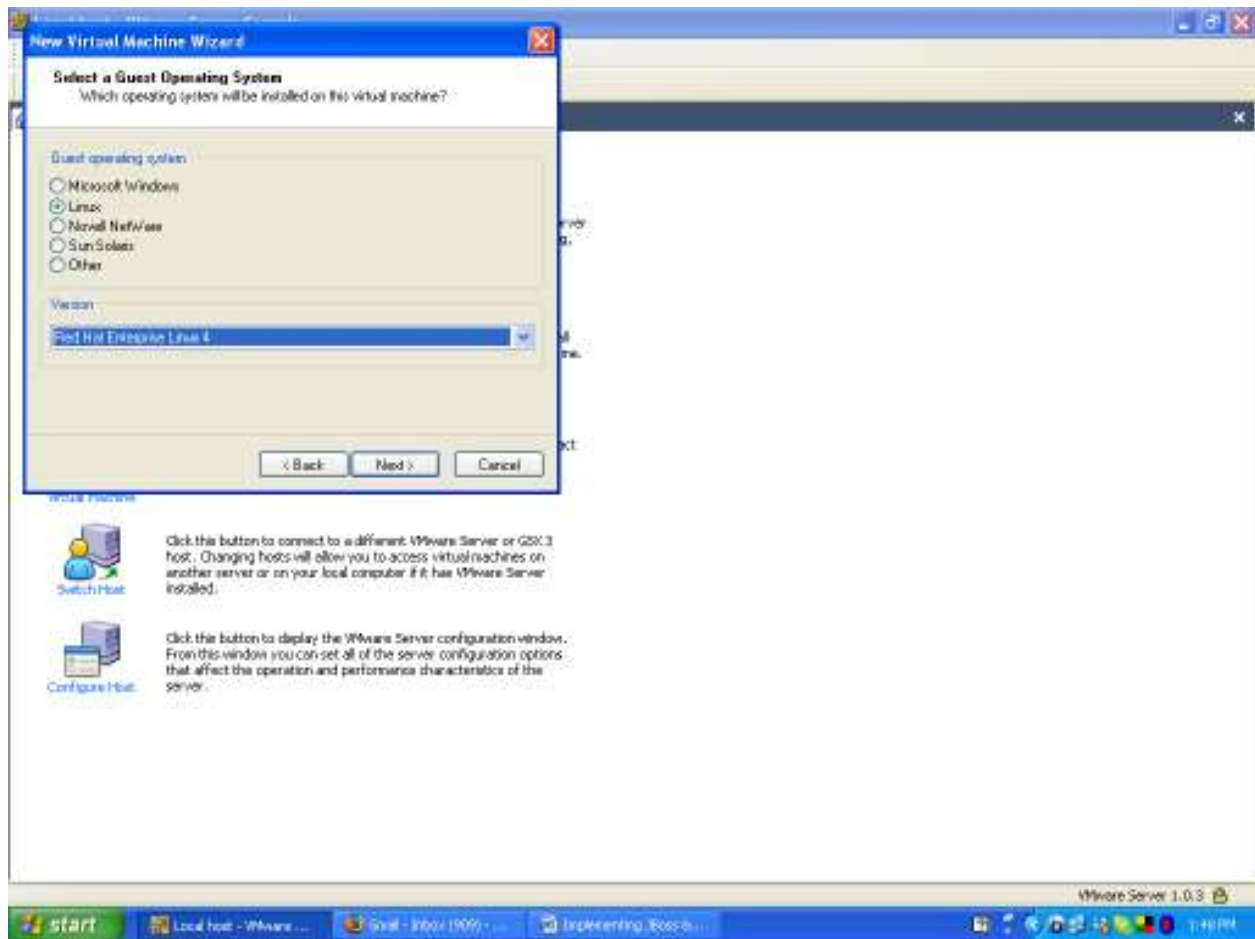
Click on “**New Virtual Machine**” button



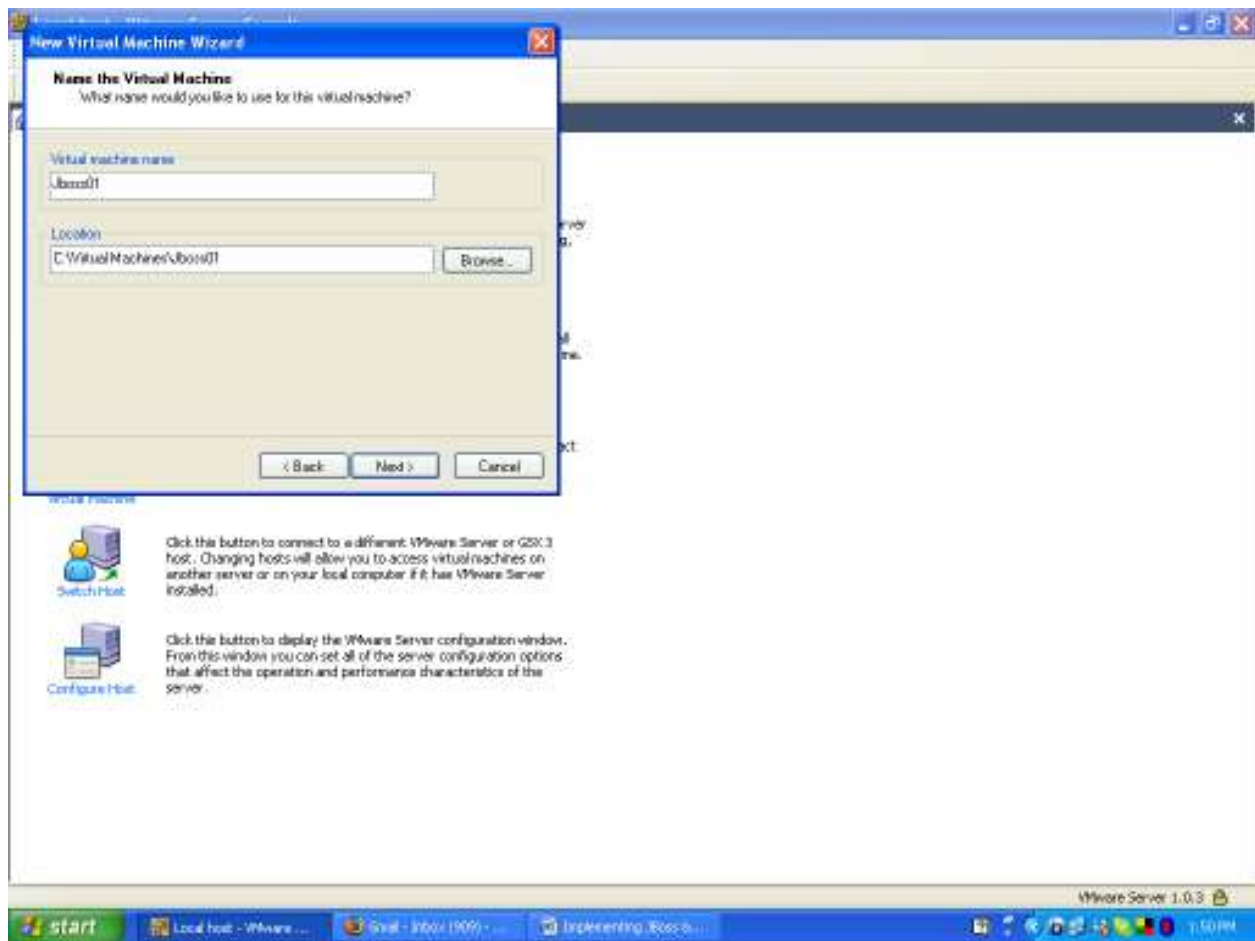
Click on **Next**



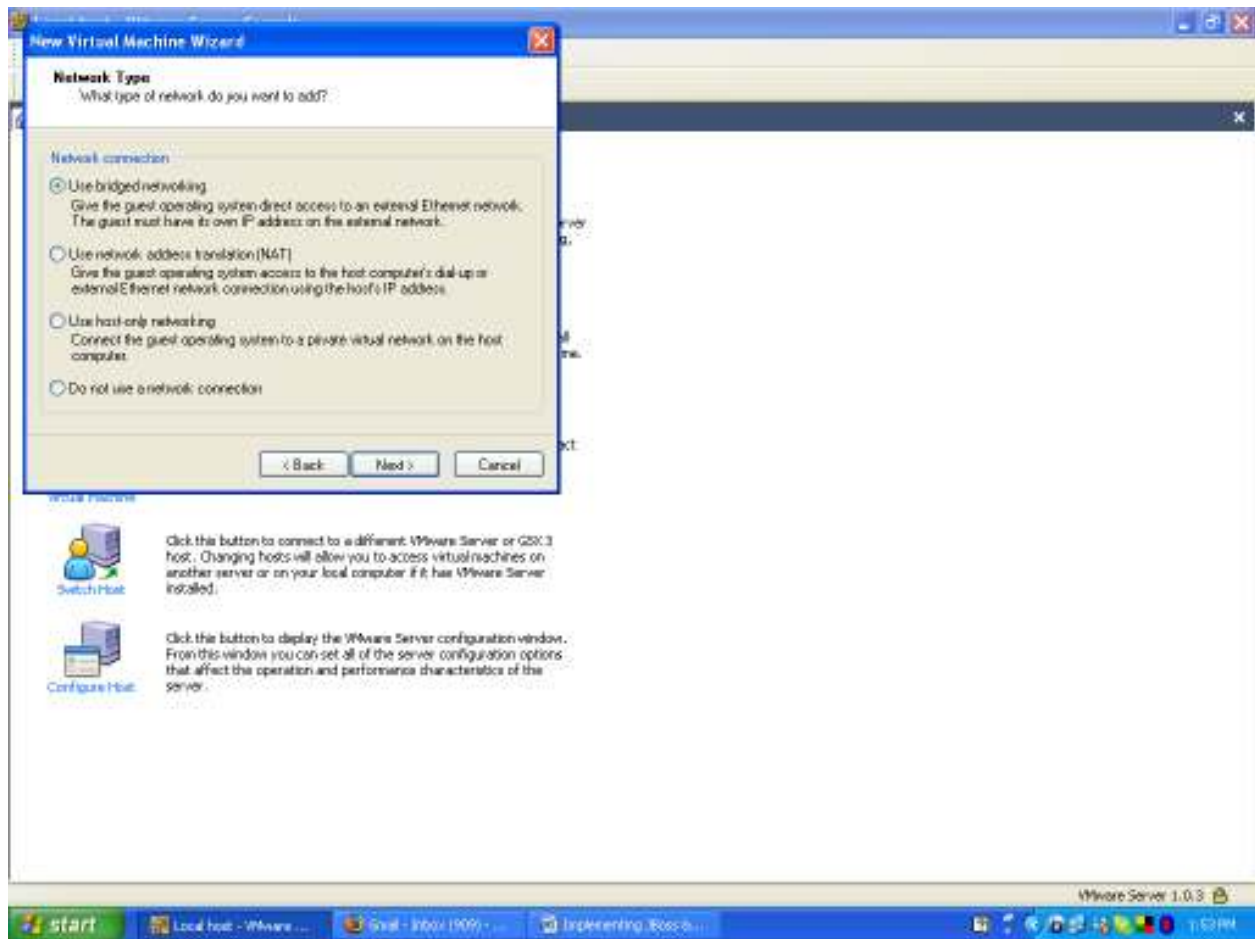
Select **Typical** and click **Next**.



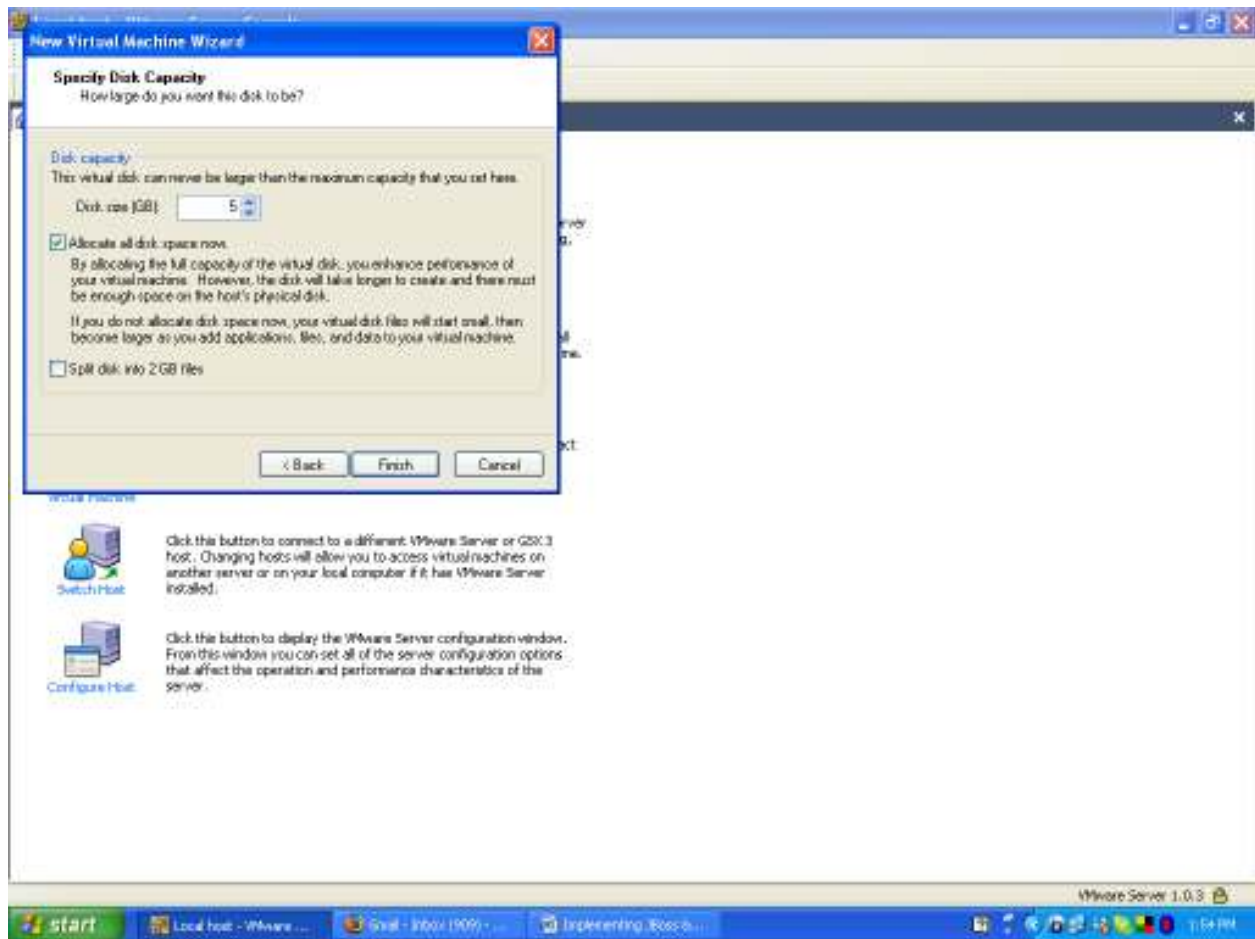
Select **Linux** and in Version "**Red Hat Enterprise Linux 4**", click **Next**.



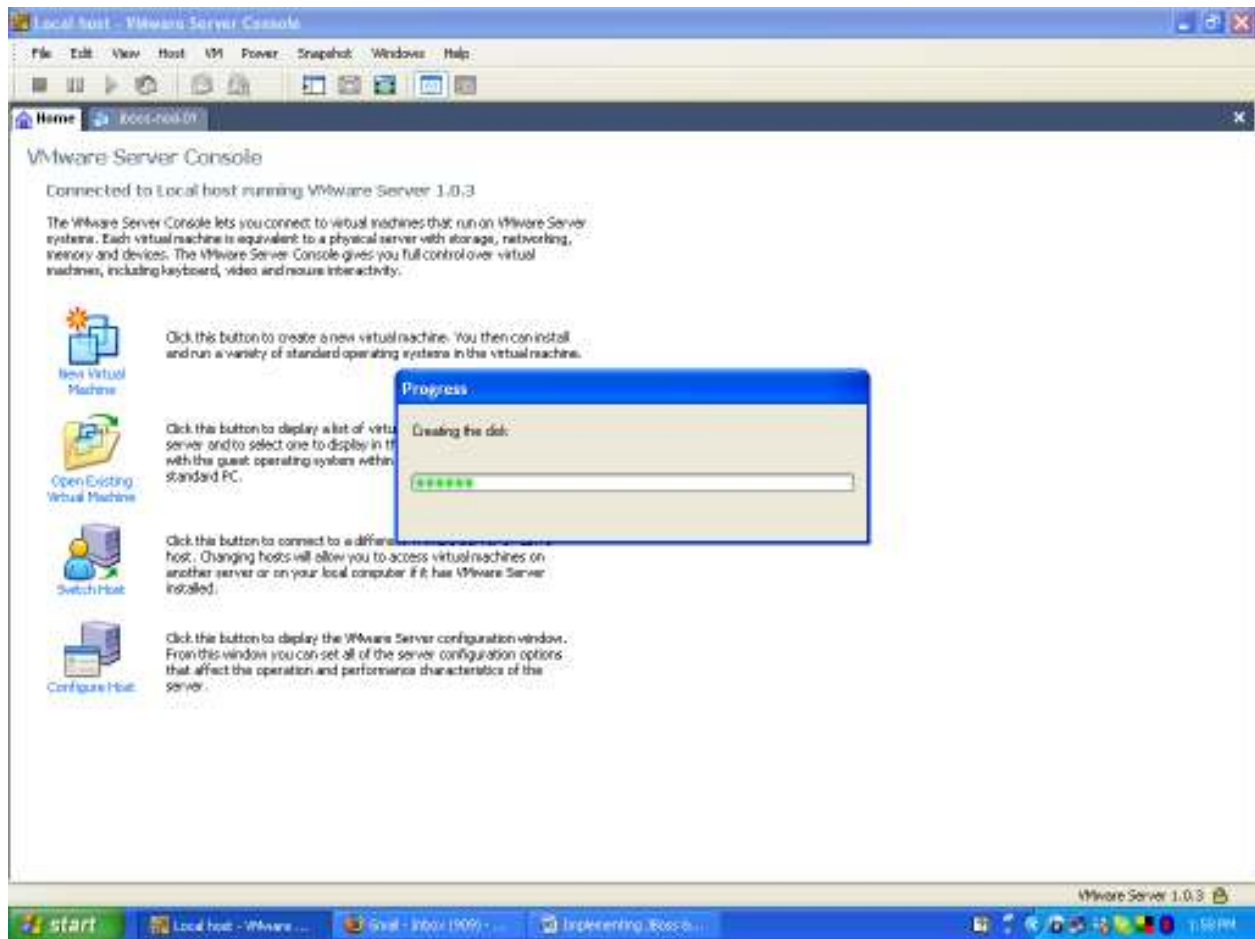
Write “**Jboss01**” in “**virtual machine name**”, and select your preferred **location**, (*location in figure is for windows*) if your guest host O.S is Linux give appropriate location.



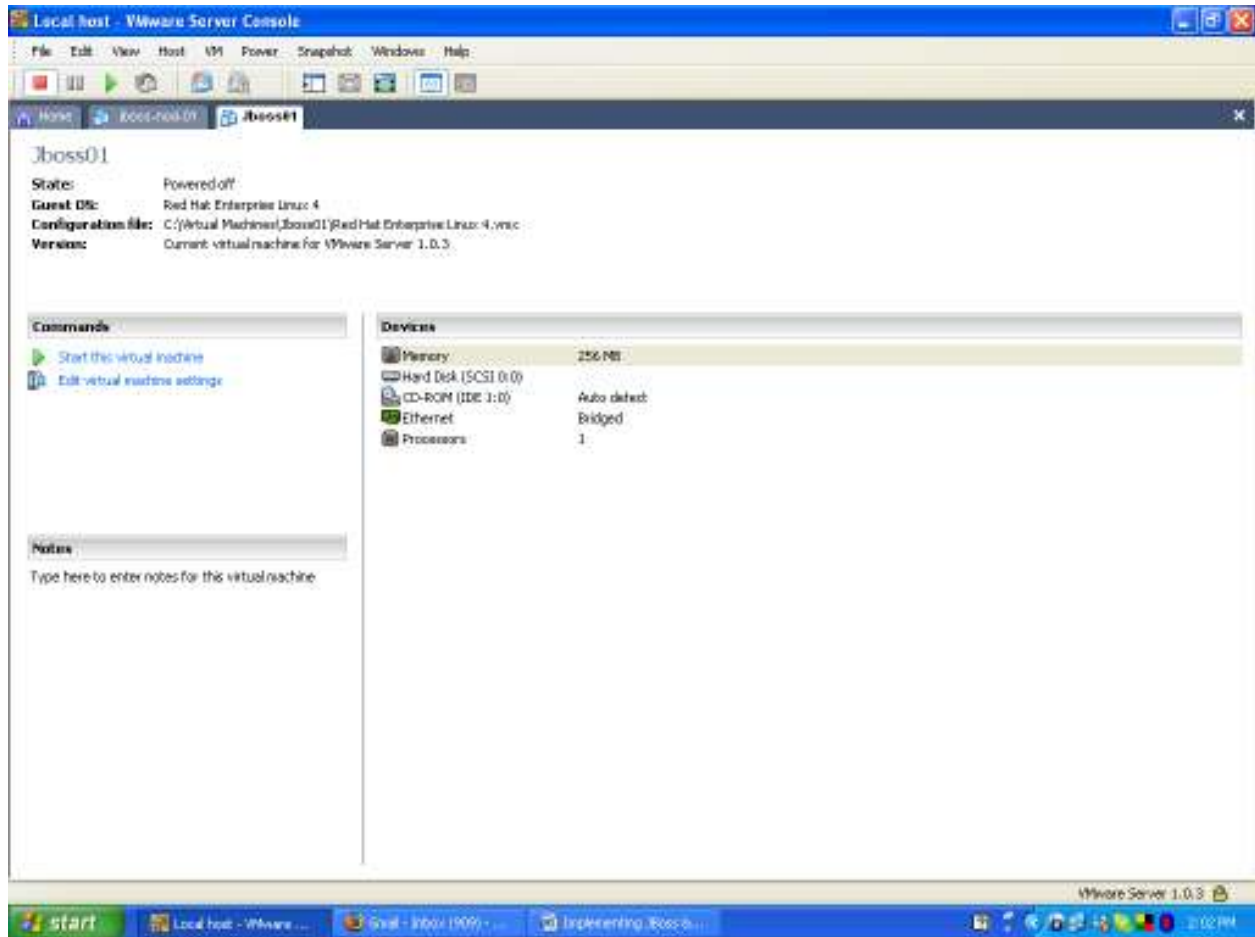
Select **"Use bridged networking"** click **Next**



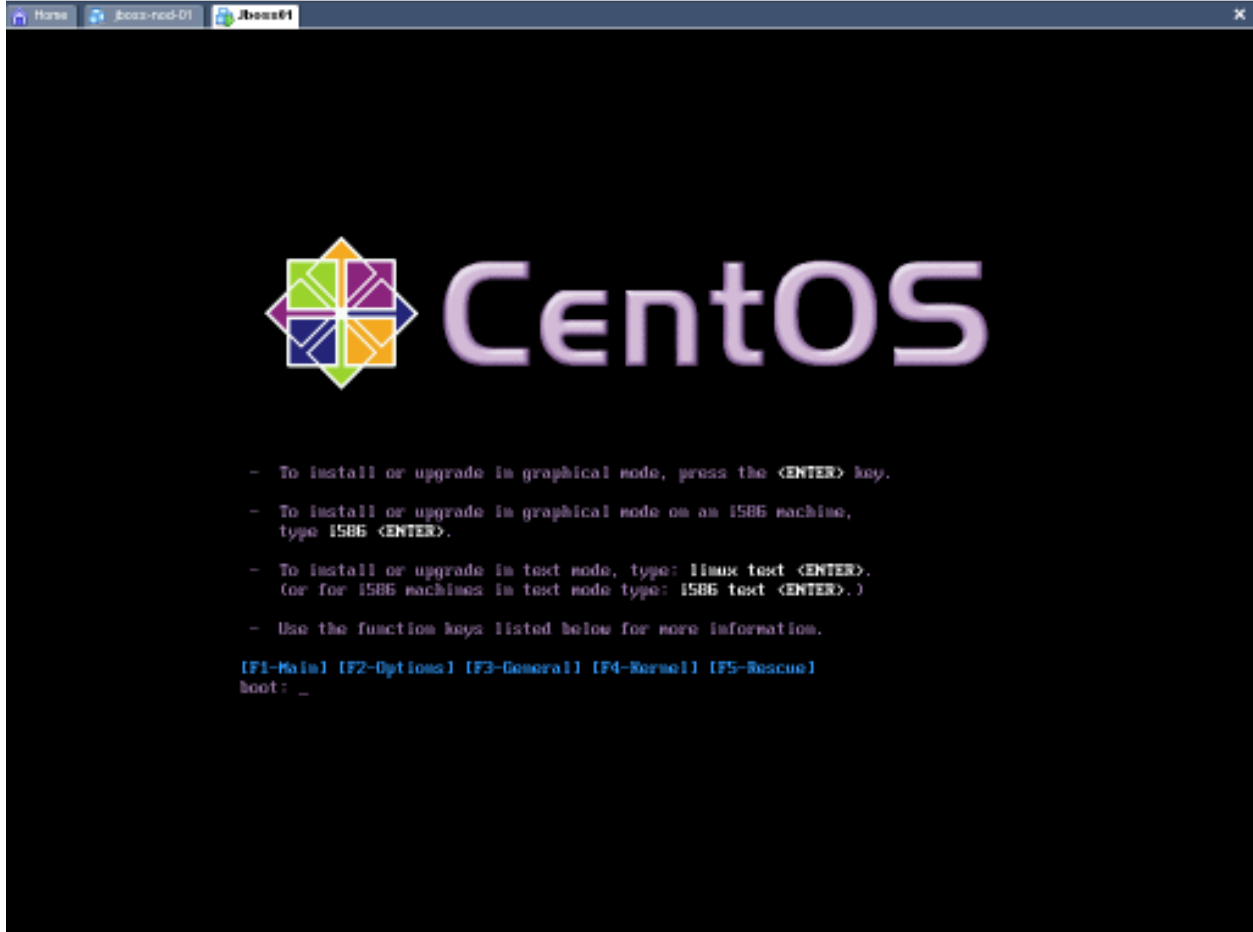
Write **5 GB** in **Disk Capacity**, check **“Allocate all disk space now”**, uncheck **“Split disk into 2Gb”** files, click **Finish**.



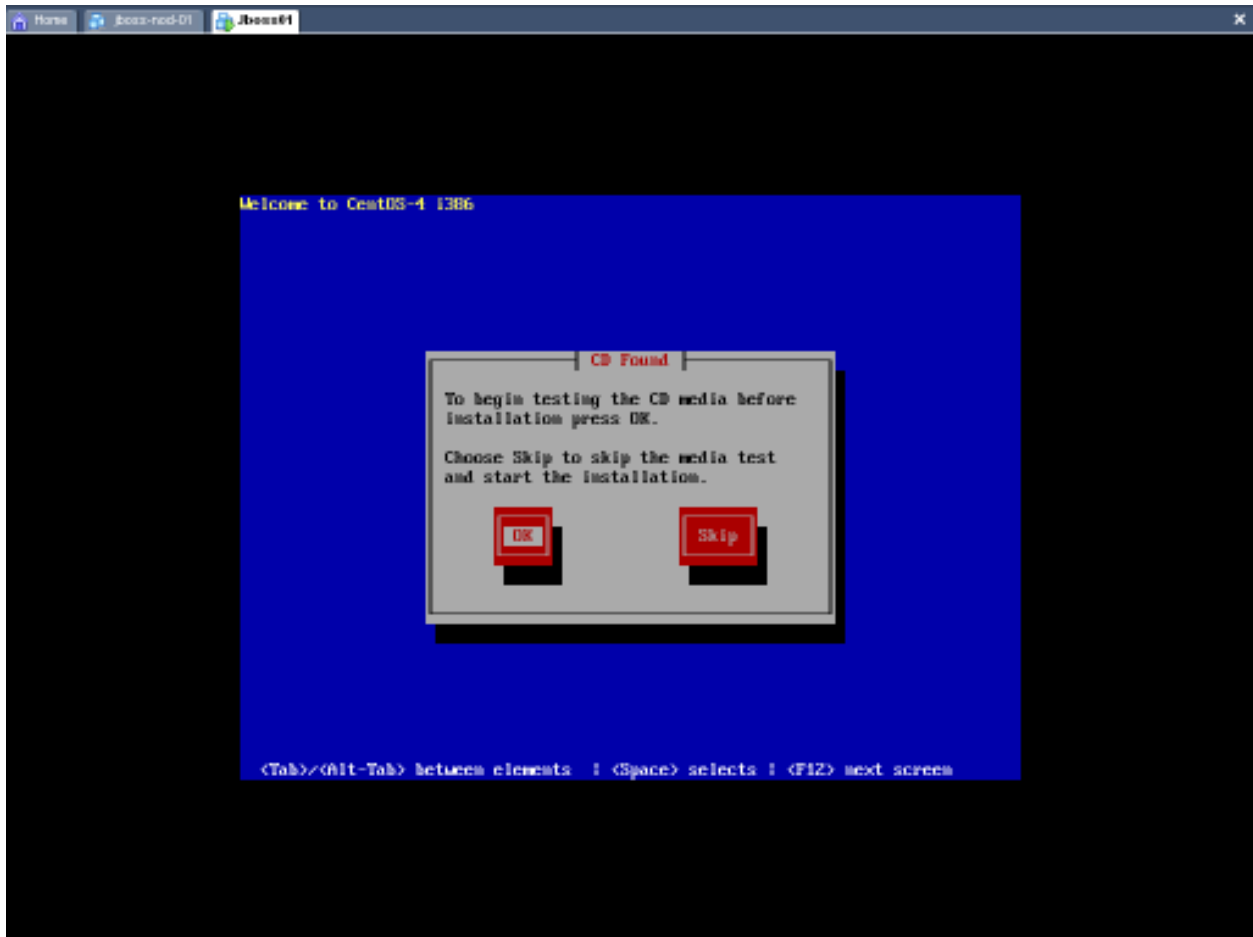
VMware now creating disk for virtual machine **Jboss01**



Place Centos 4.4 first Disk in CDROM and Click on **“Start the Virtual Machine”**.

Step No. 2:

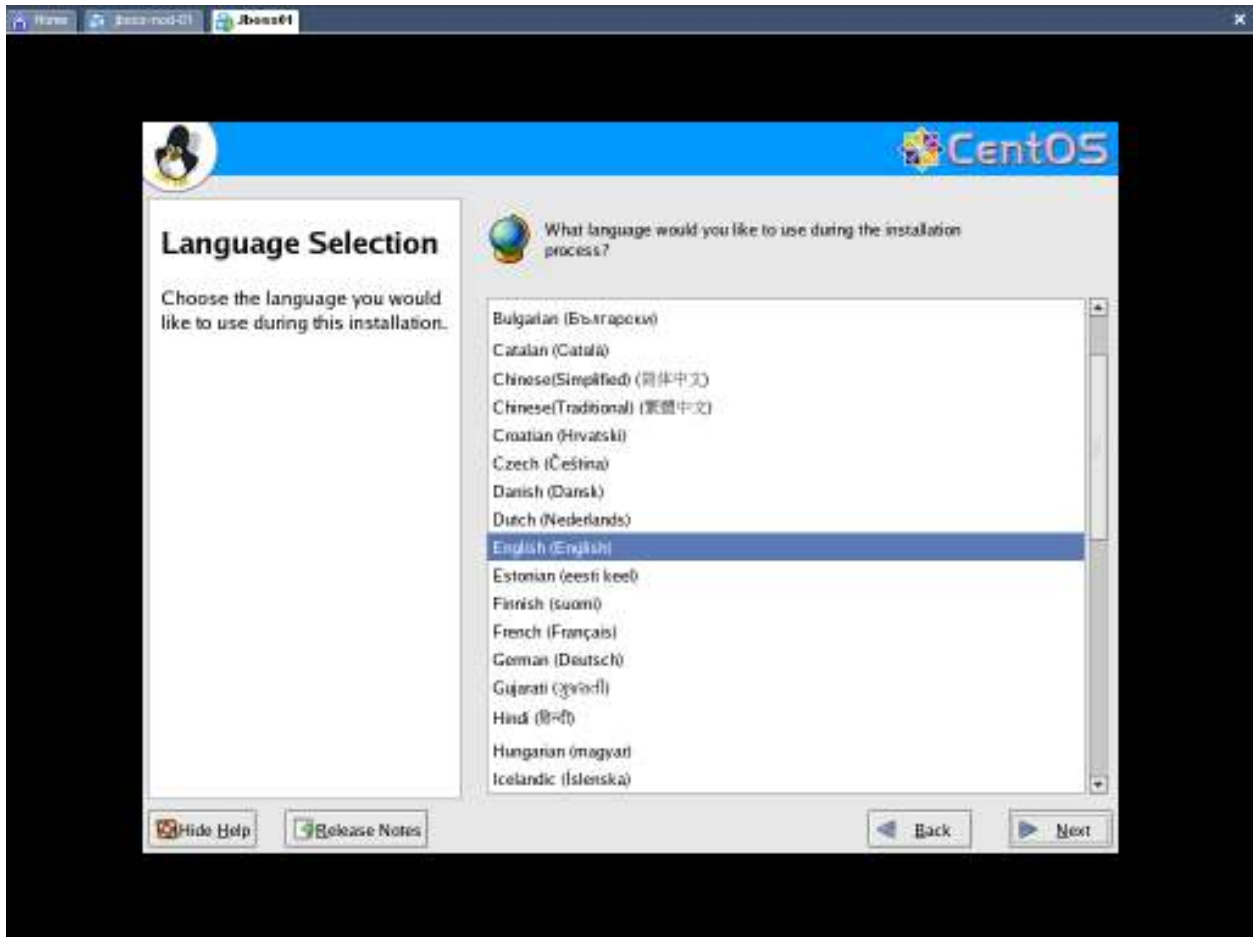
Press **return** on **boot:** prompt.



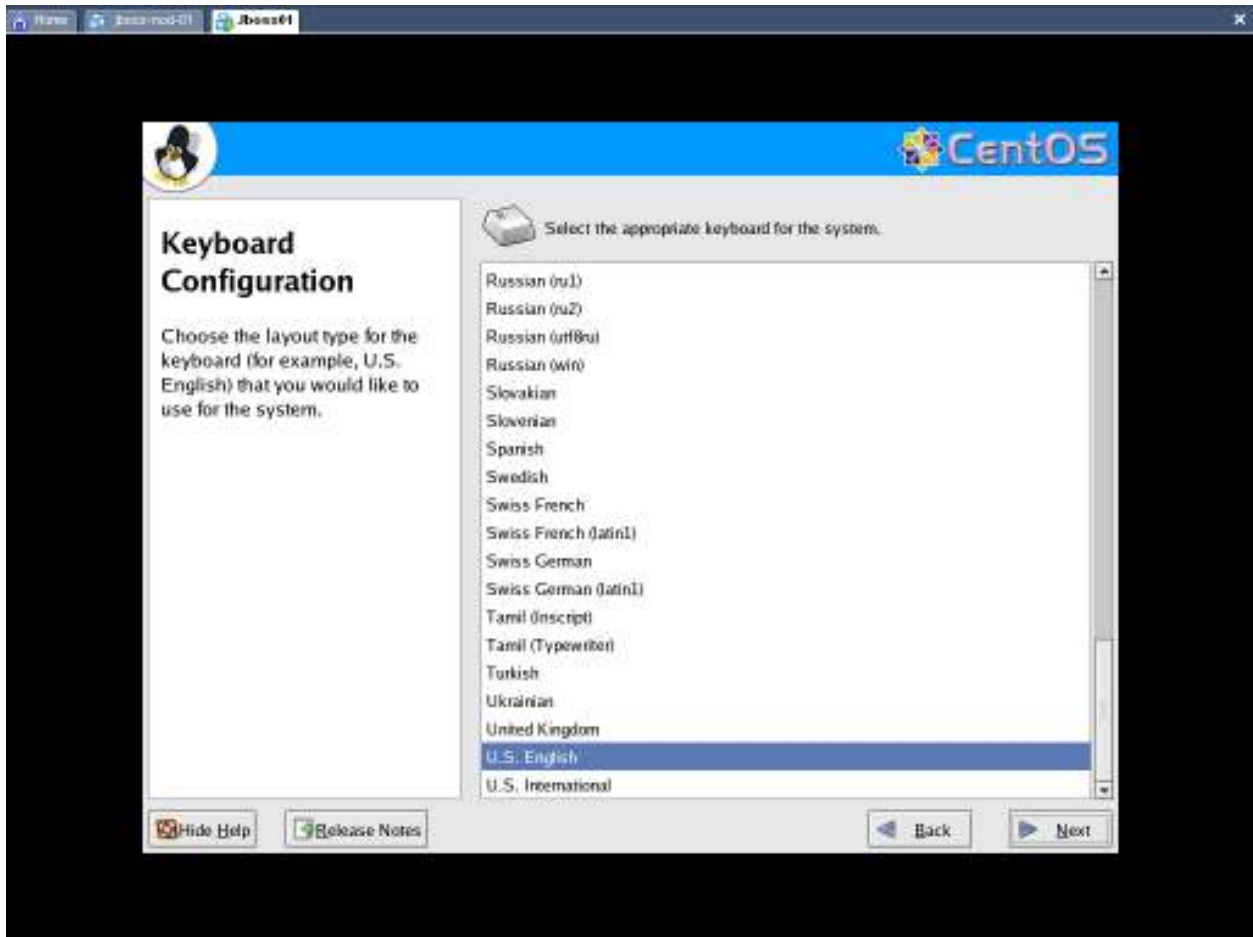
Select **Skip**.



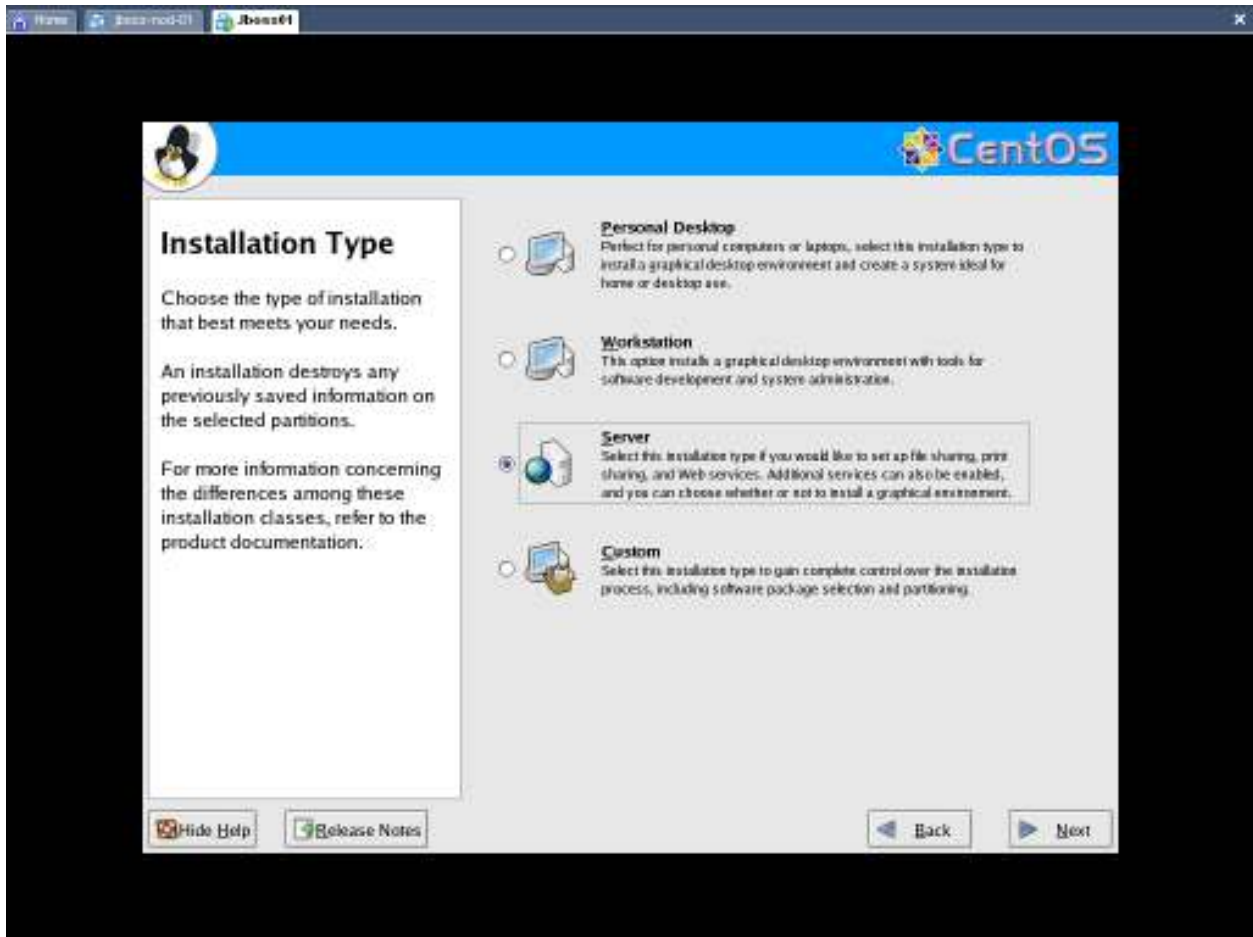
Select **Next**.



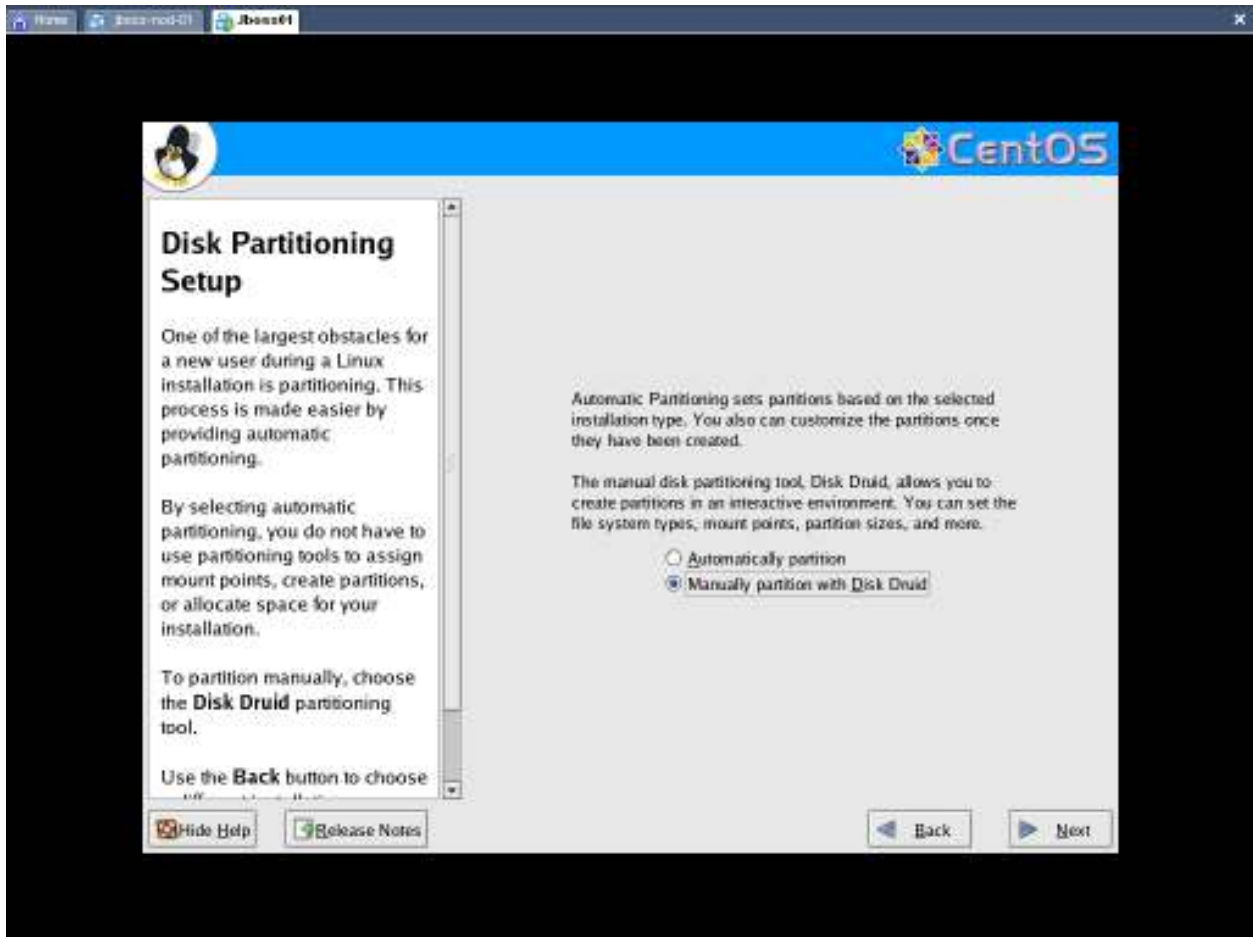
Click **Next**.



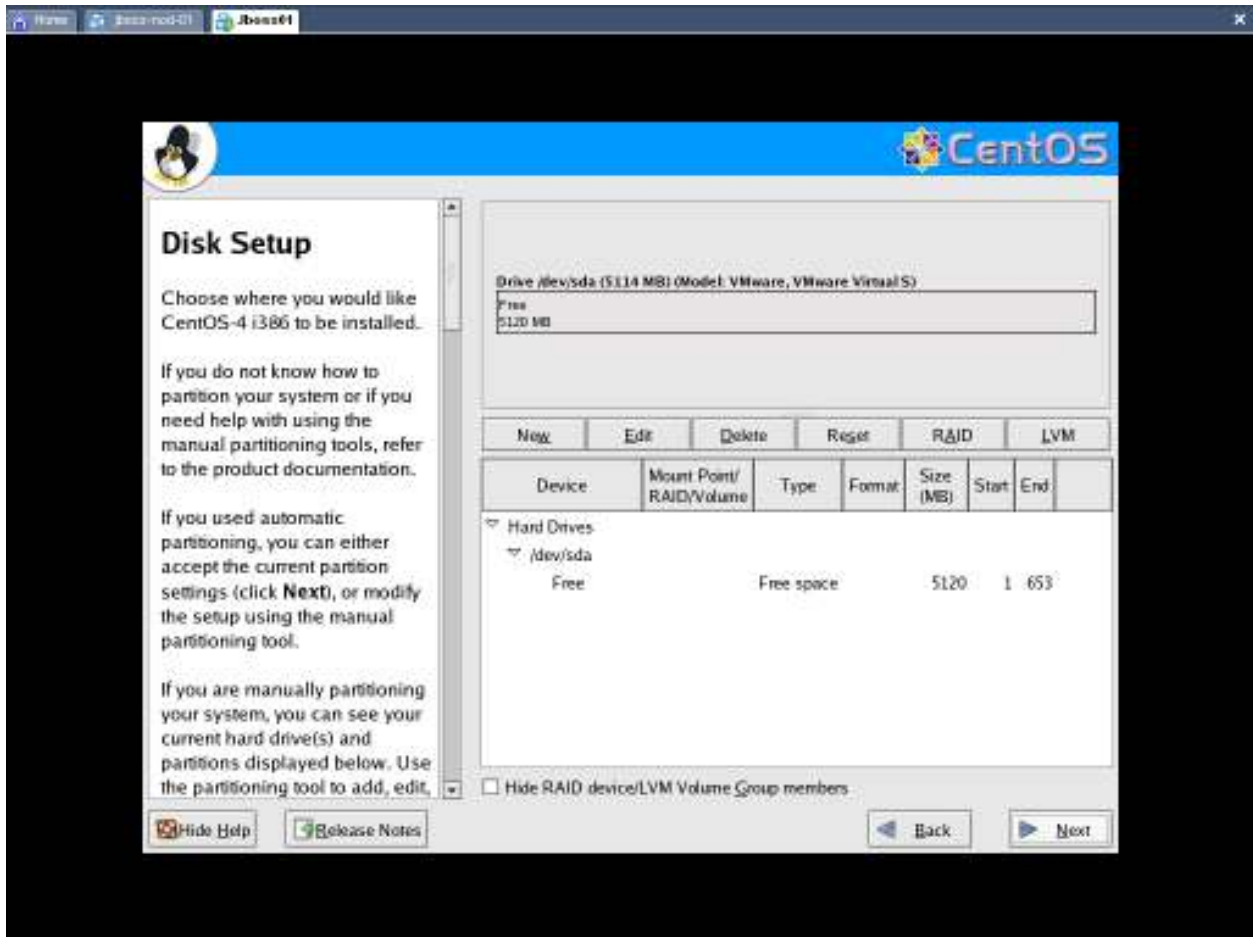
Click **Next**.



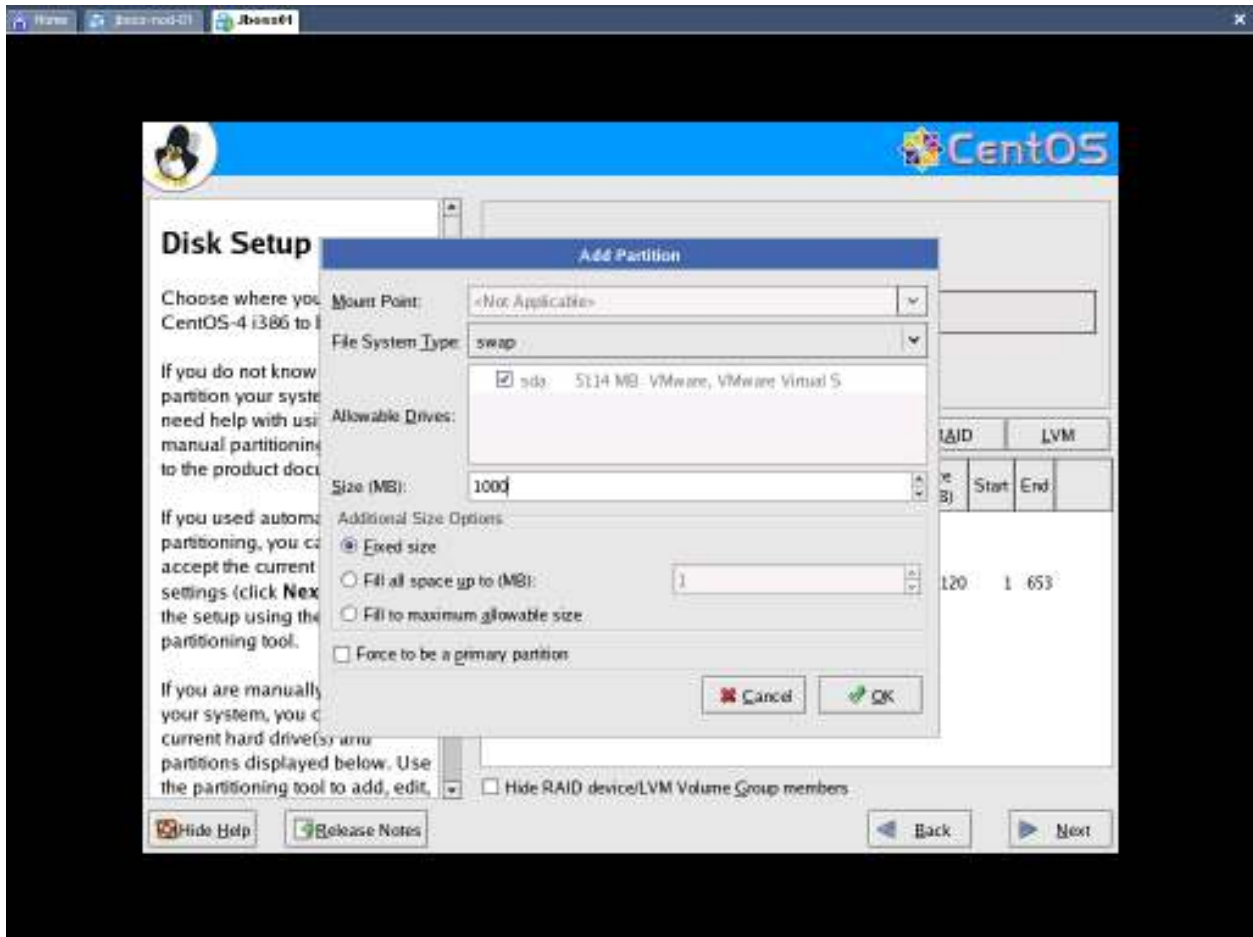
Select **Server**, click **Next**.



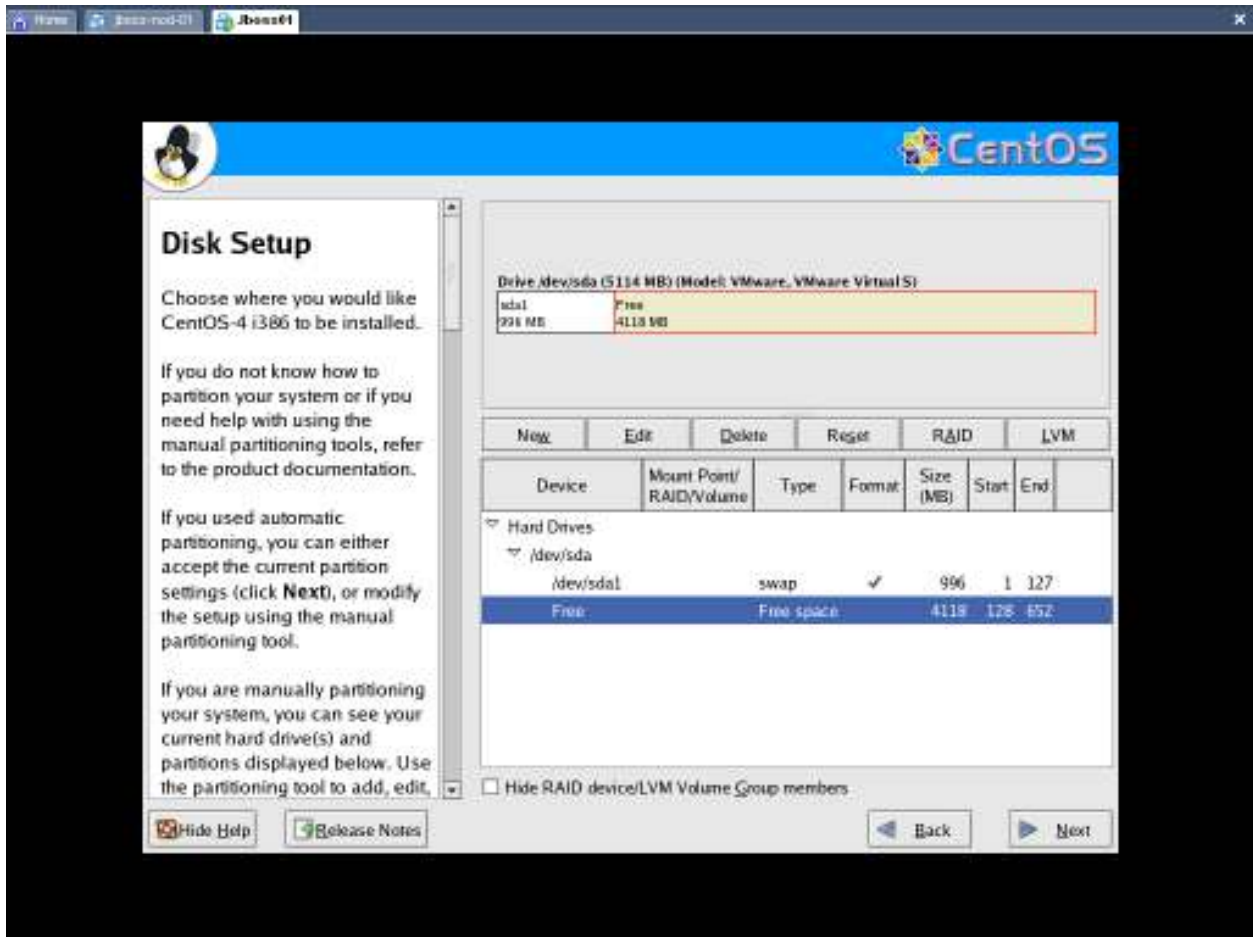
Select **manual partitioning with Disk Druid**, click **Next**.



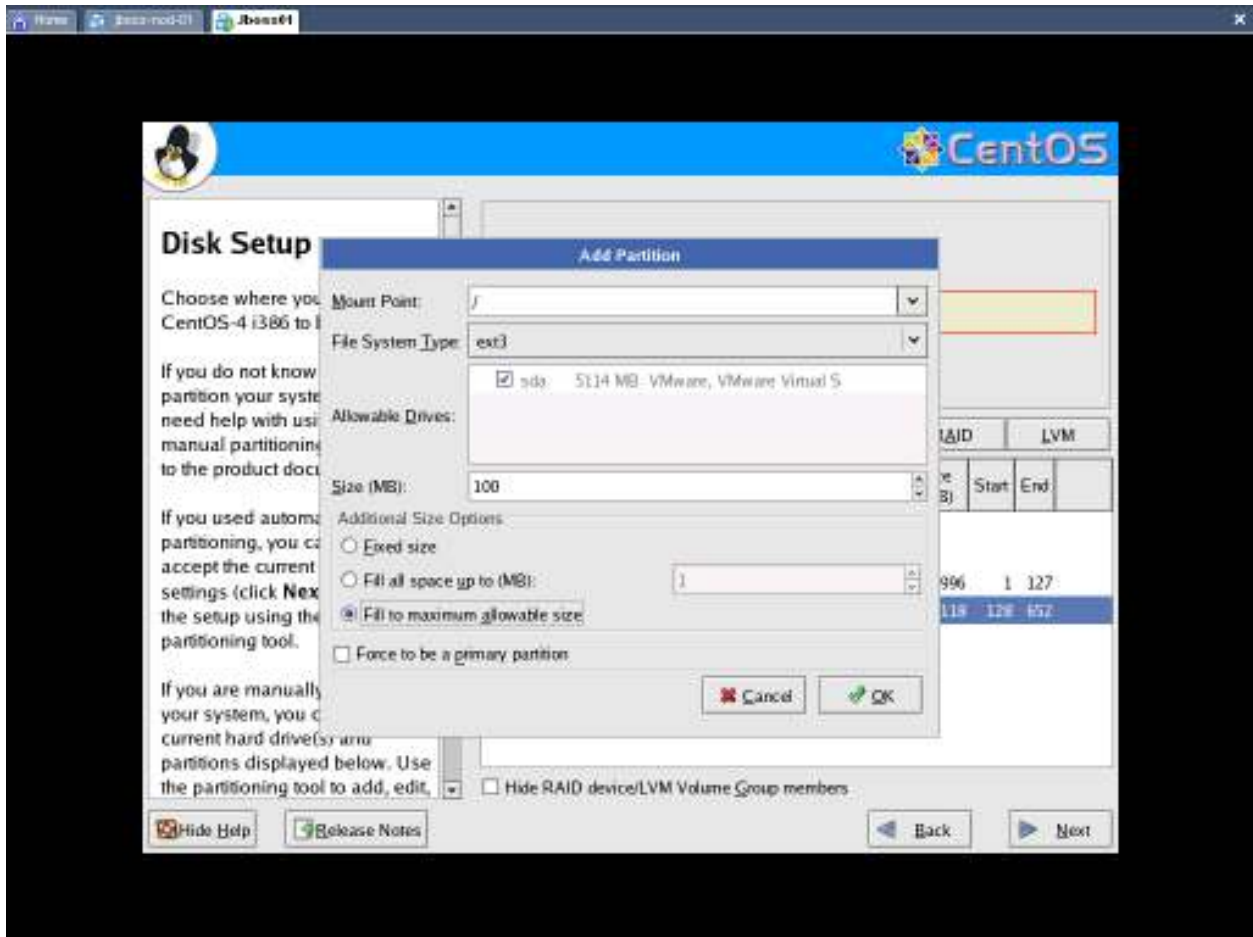
Click on **New**.



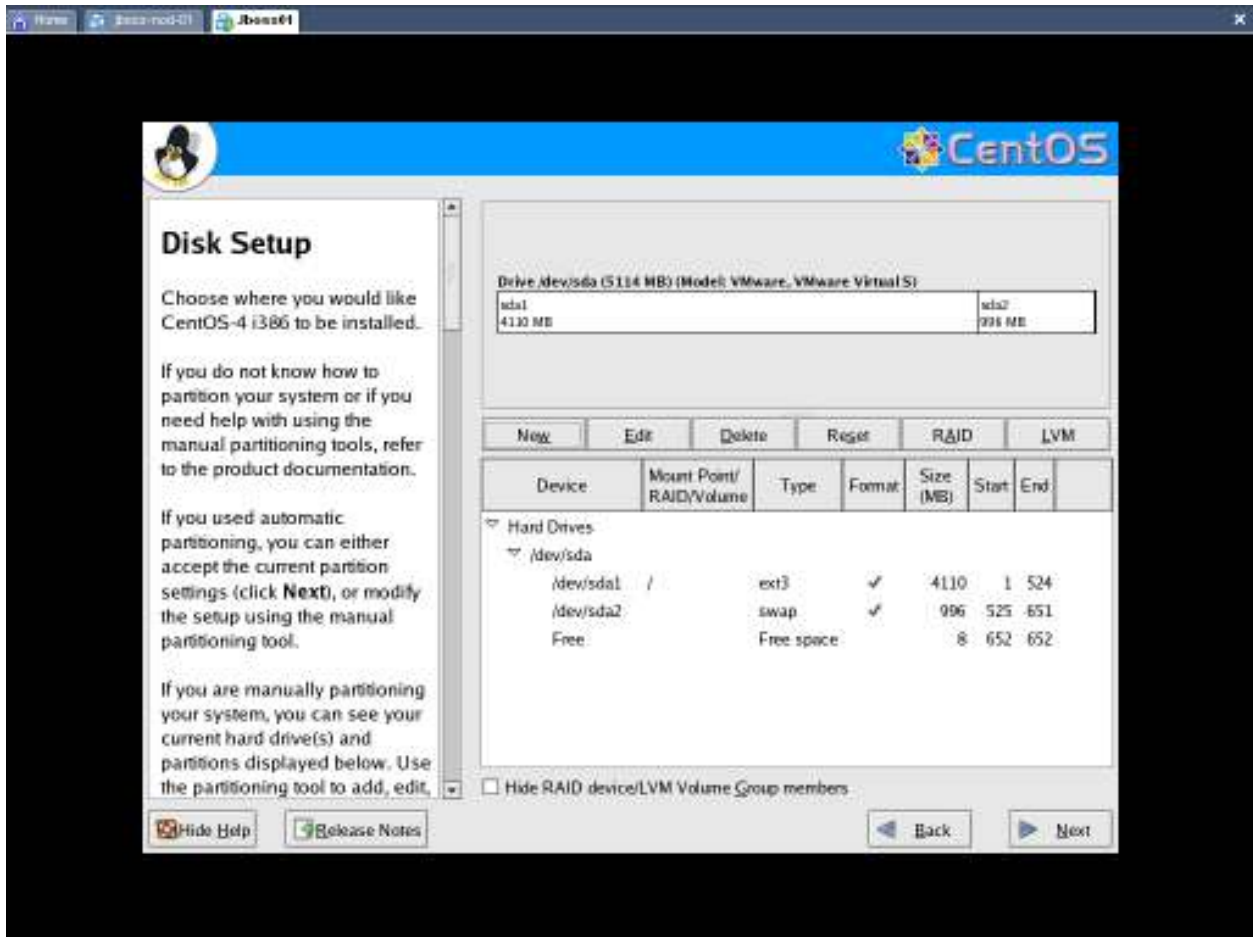
Make 1 GB Swap partition.



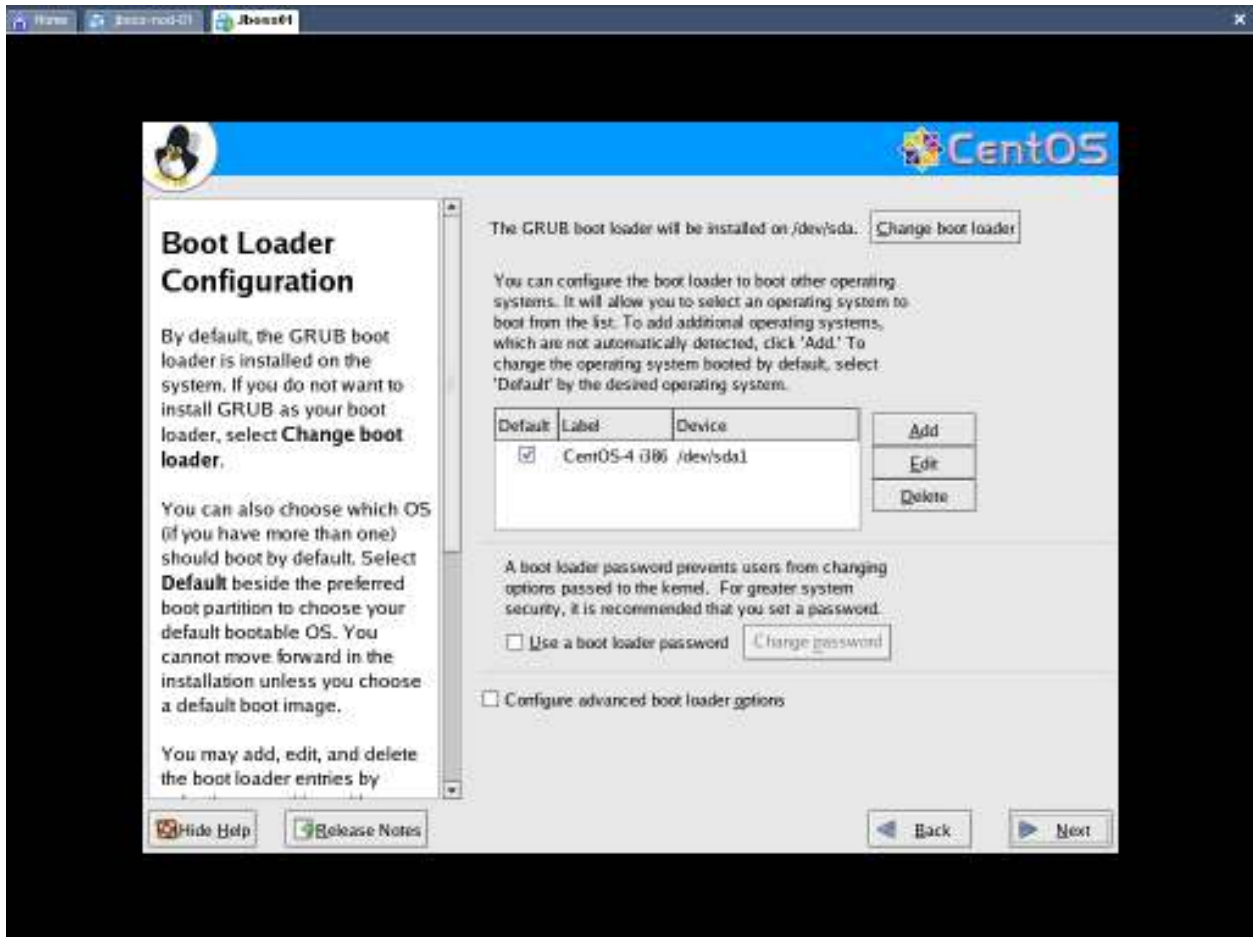
Click again on **New**.



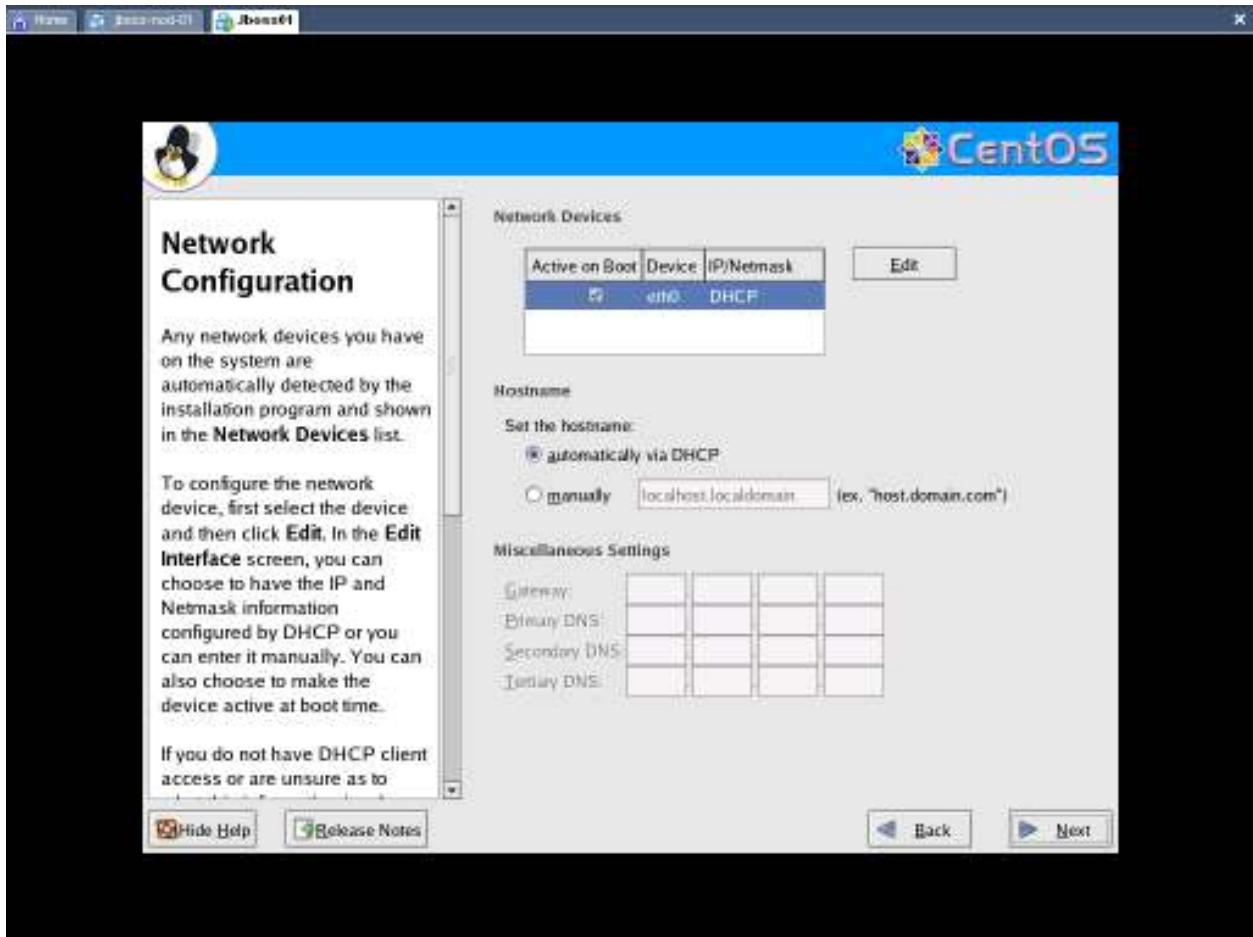
Allocate maximum allowable size to "/" partition.



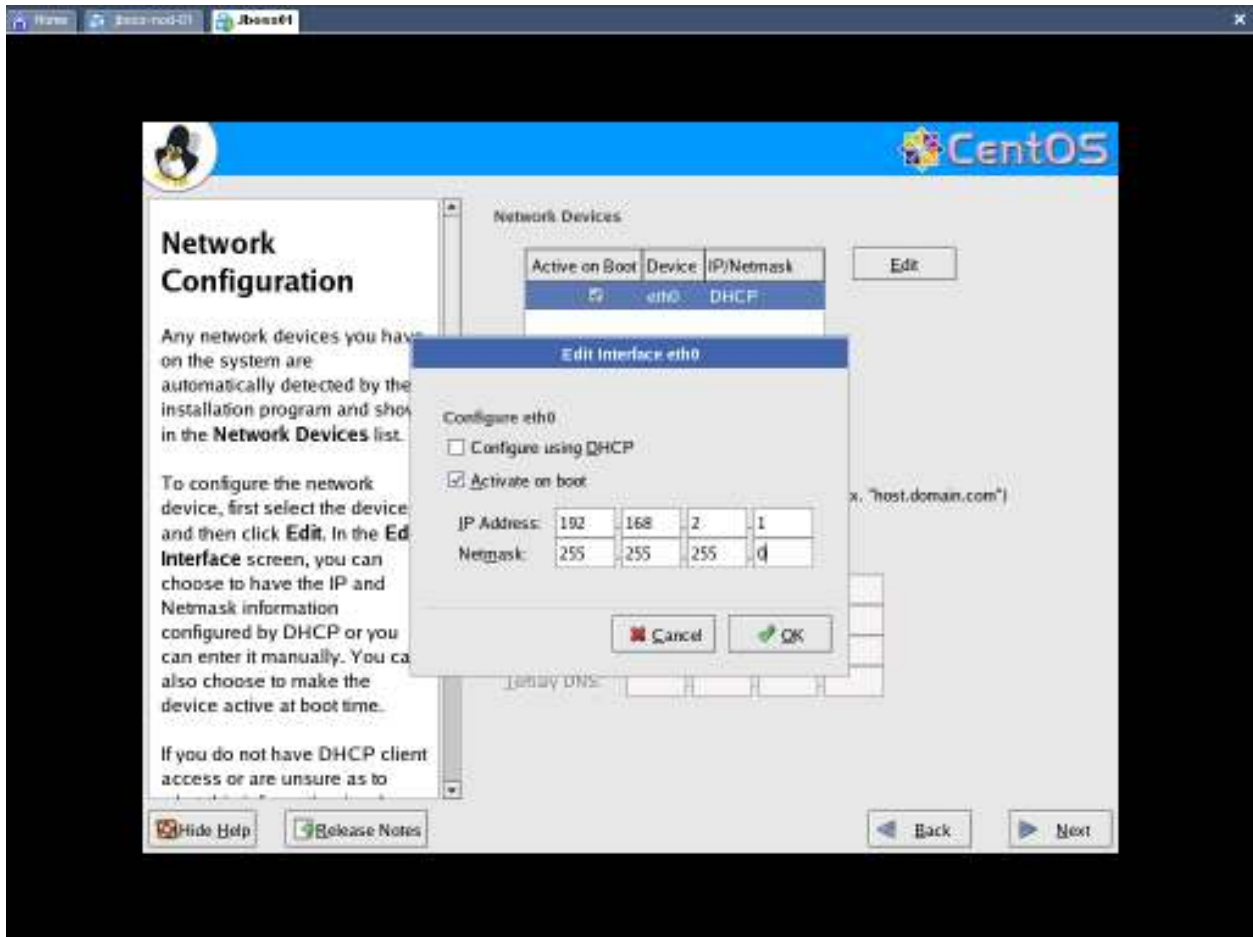
Click **Next**.



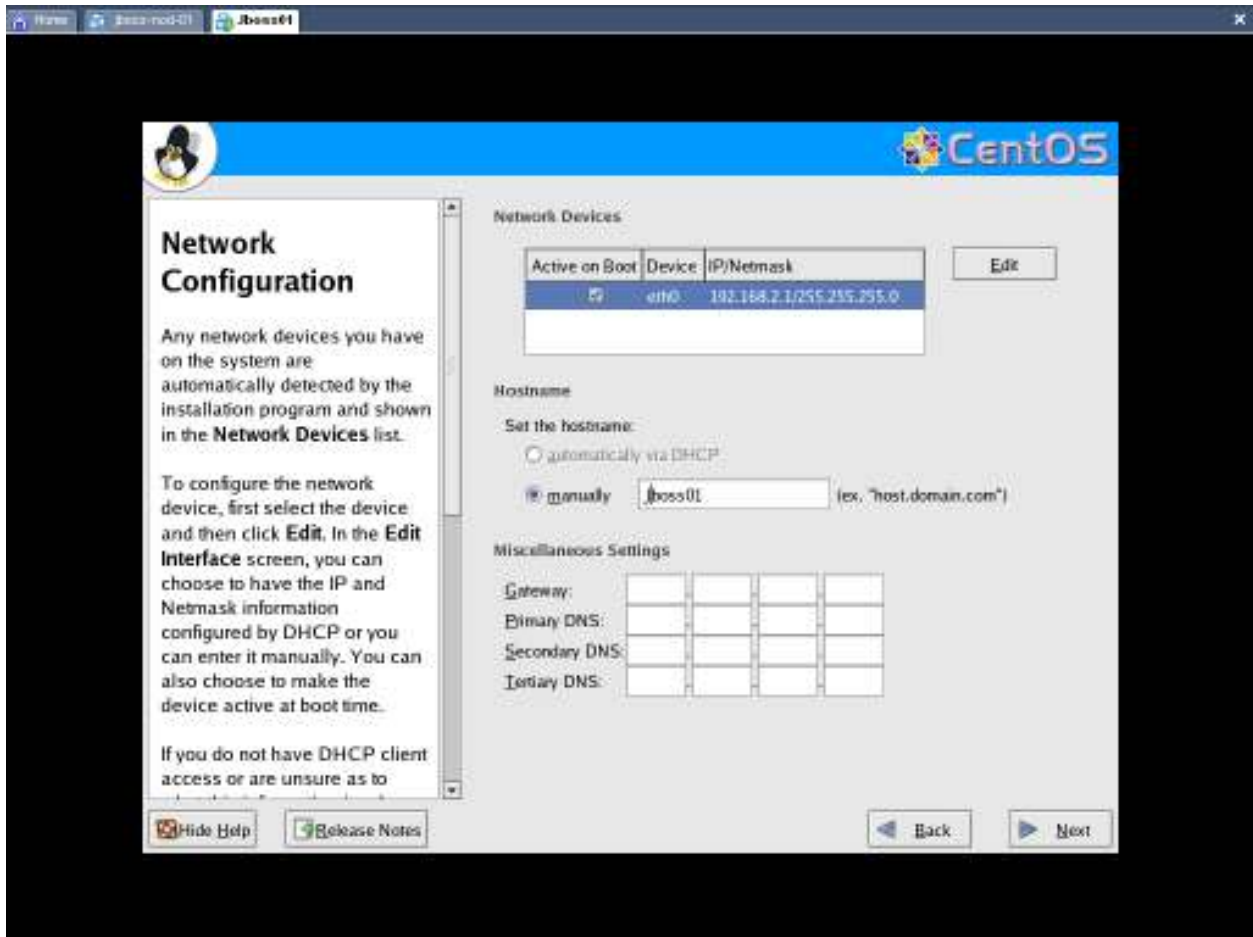
Click **Next**.

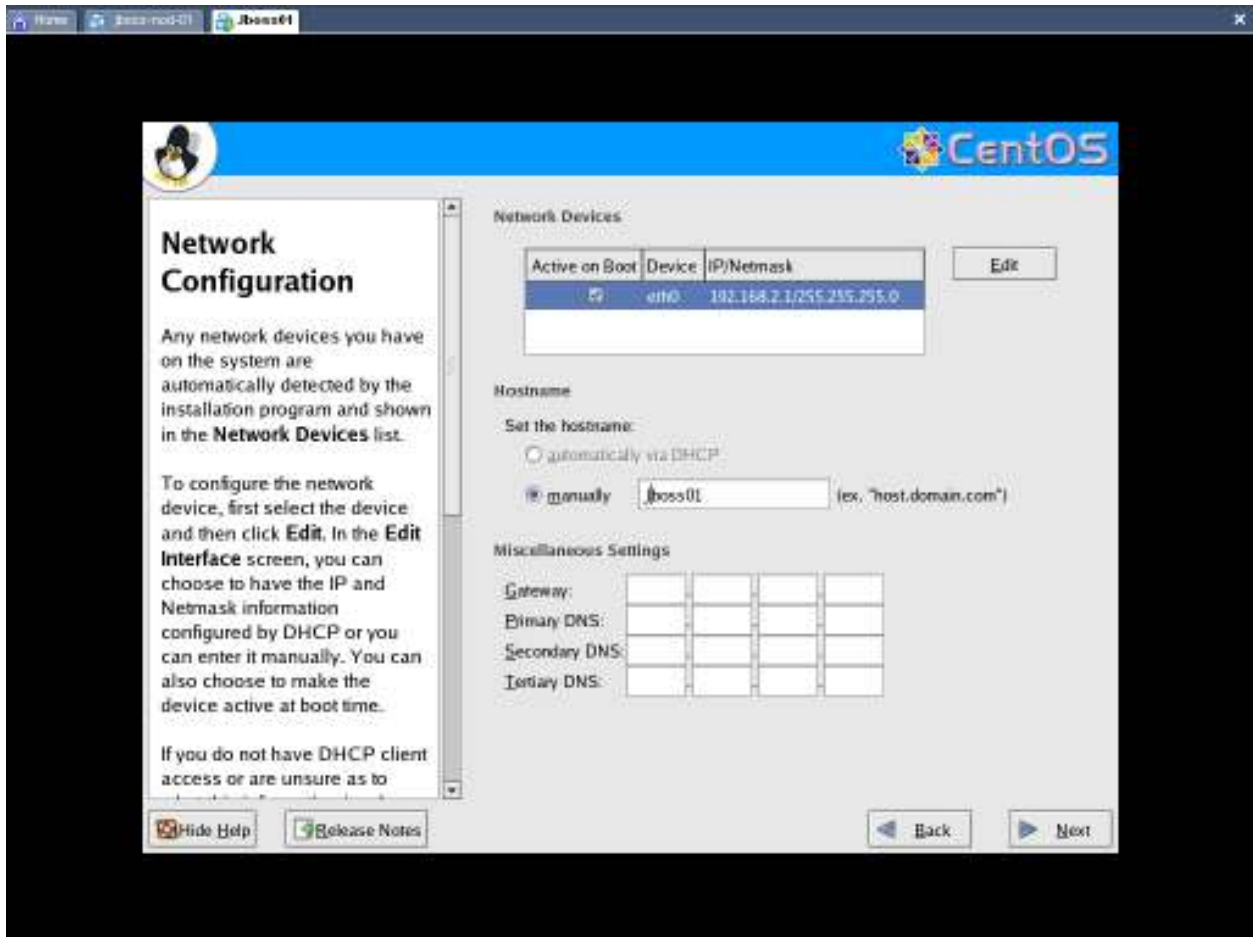


Click on **Edit**,



Give a static **IP Address**, click **Next**.

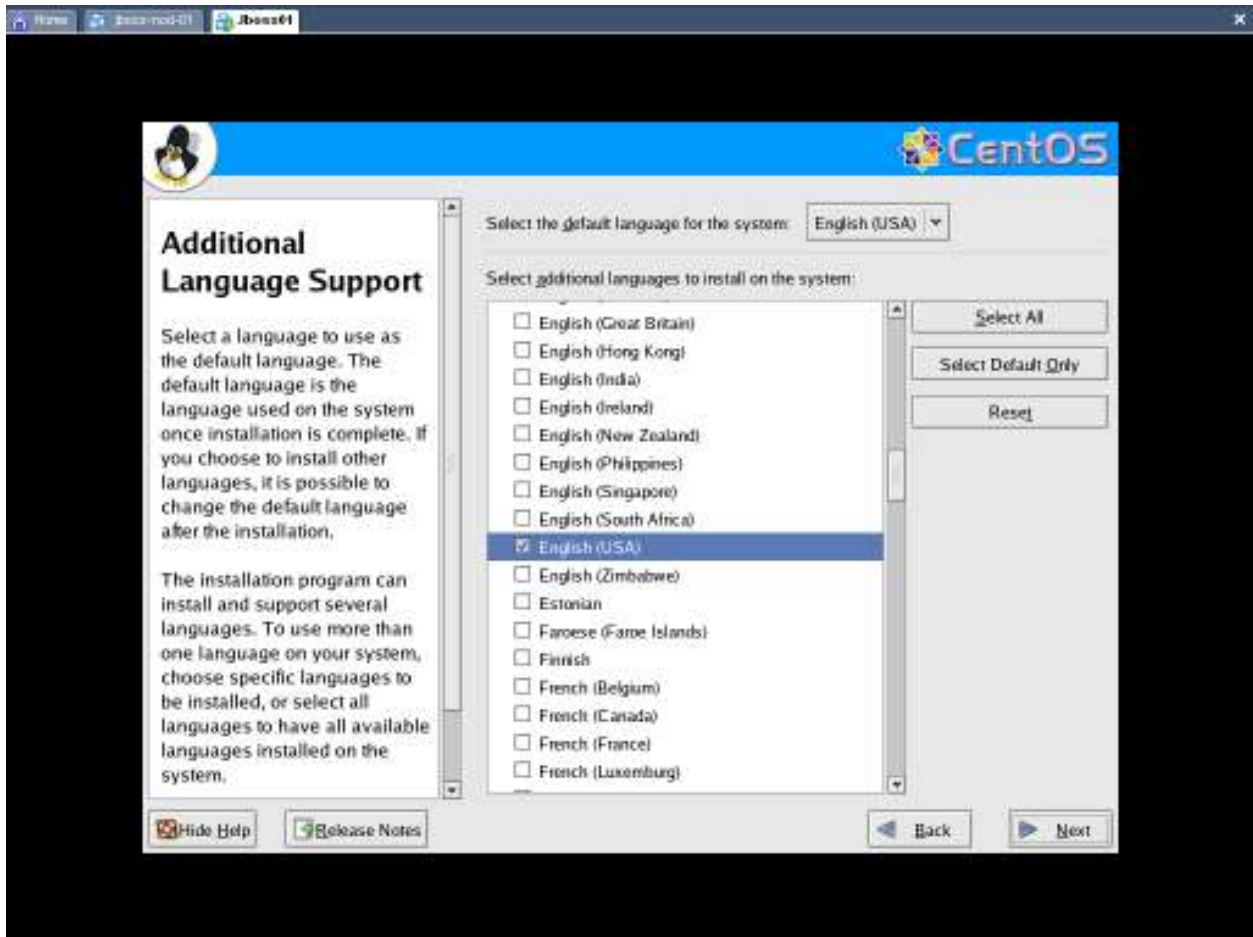




Write **Jboss01** in hostname; leave **Gateway** and **DNS** fields blank.



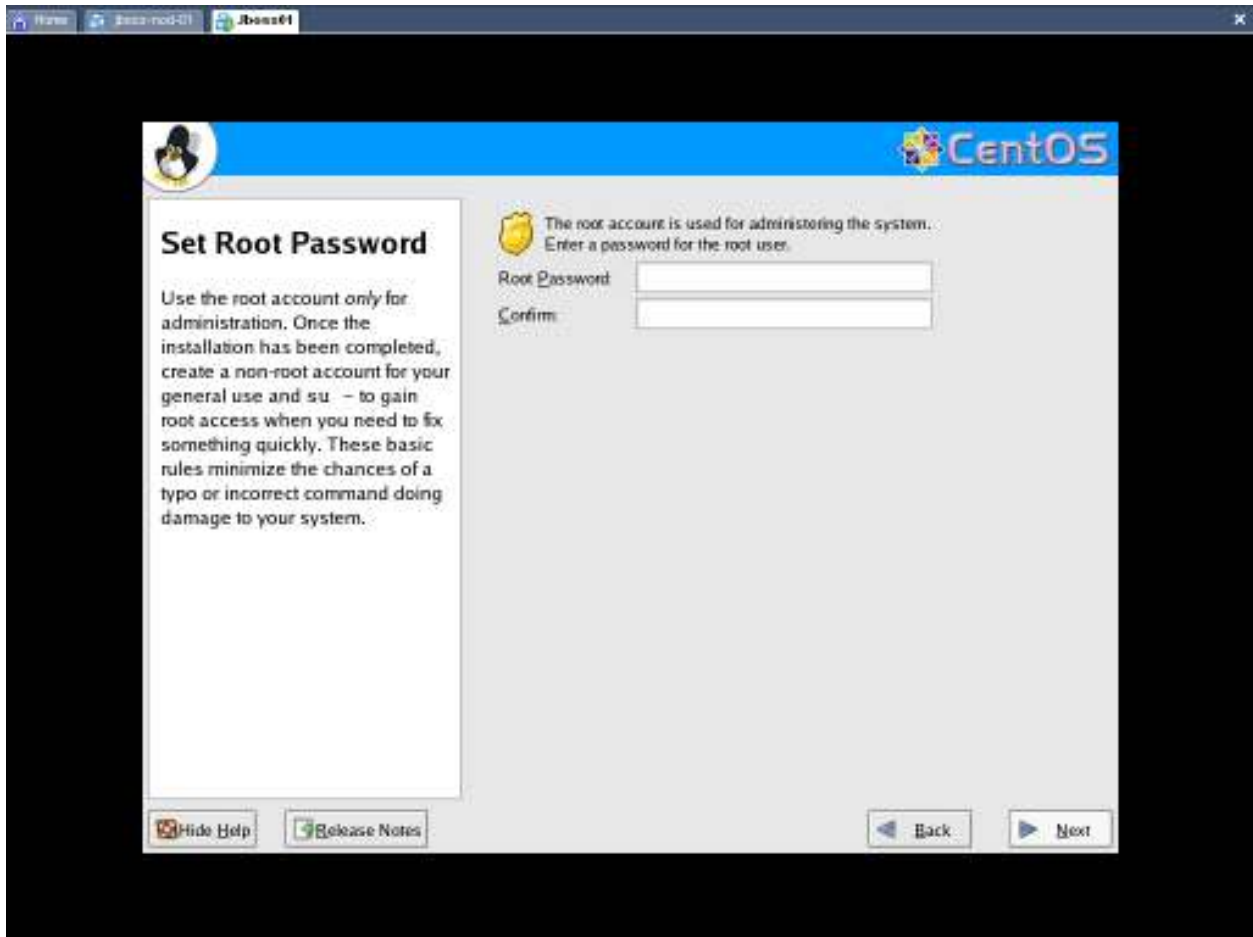
Select **No firewall**, **Disable SELinux**, click **Next**.



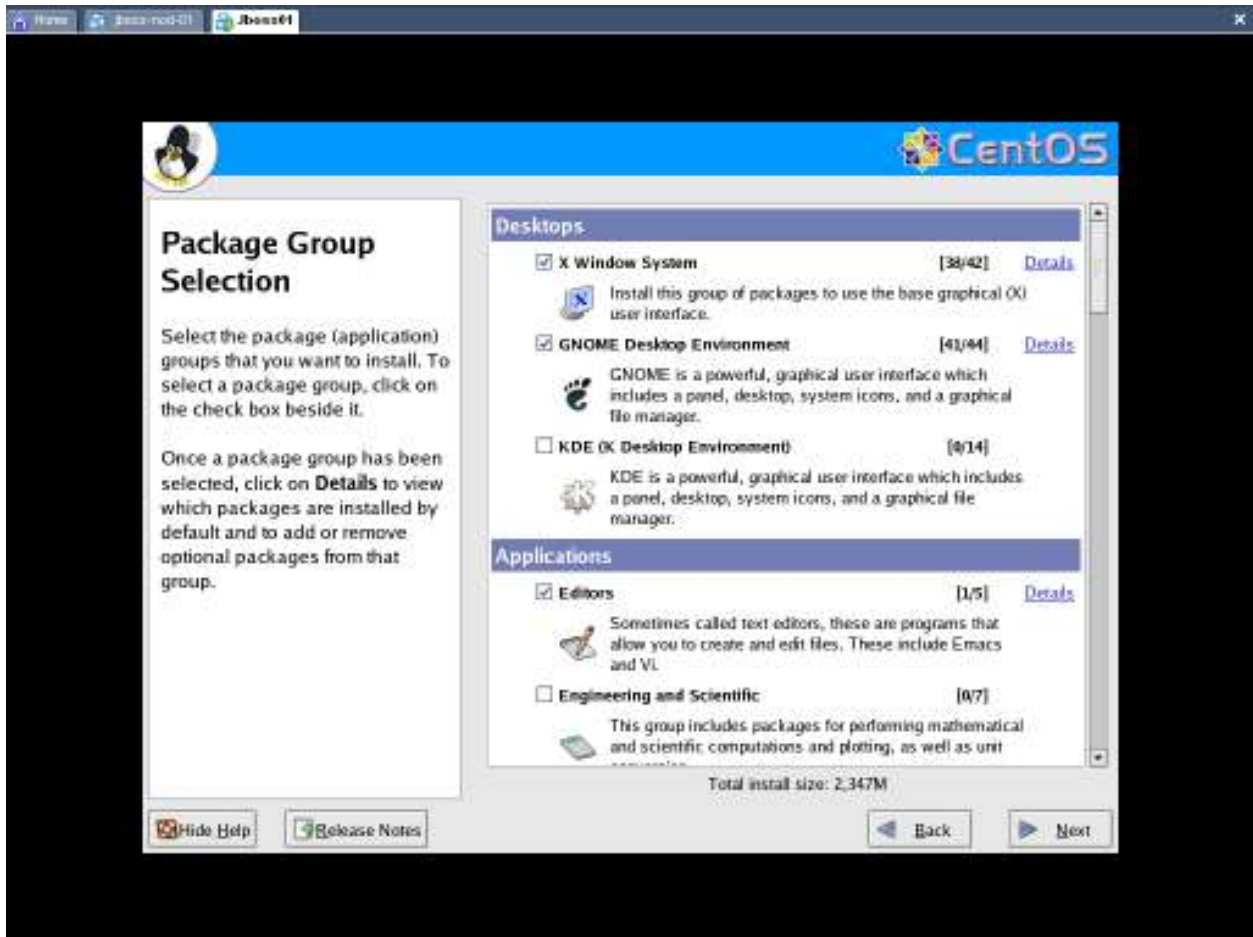
Click **Next**



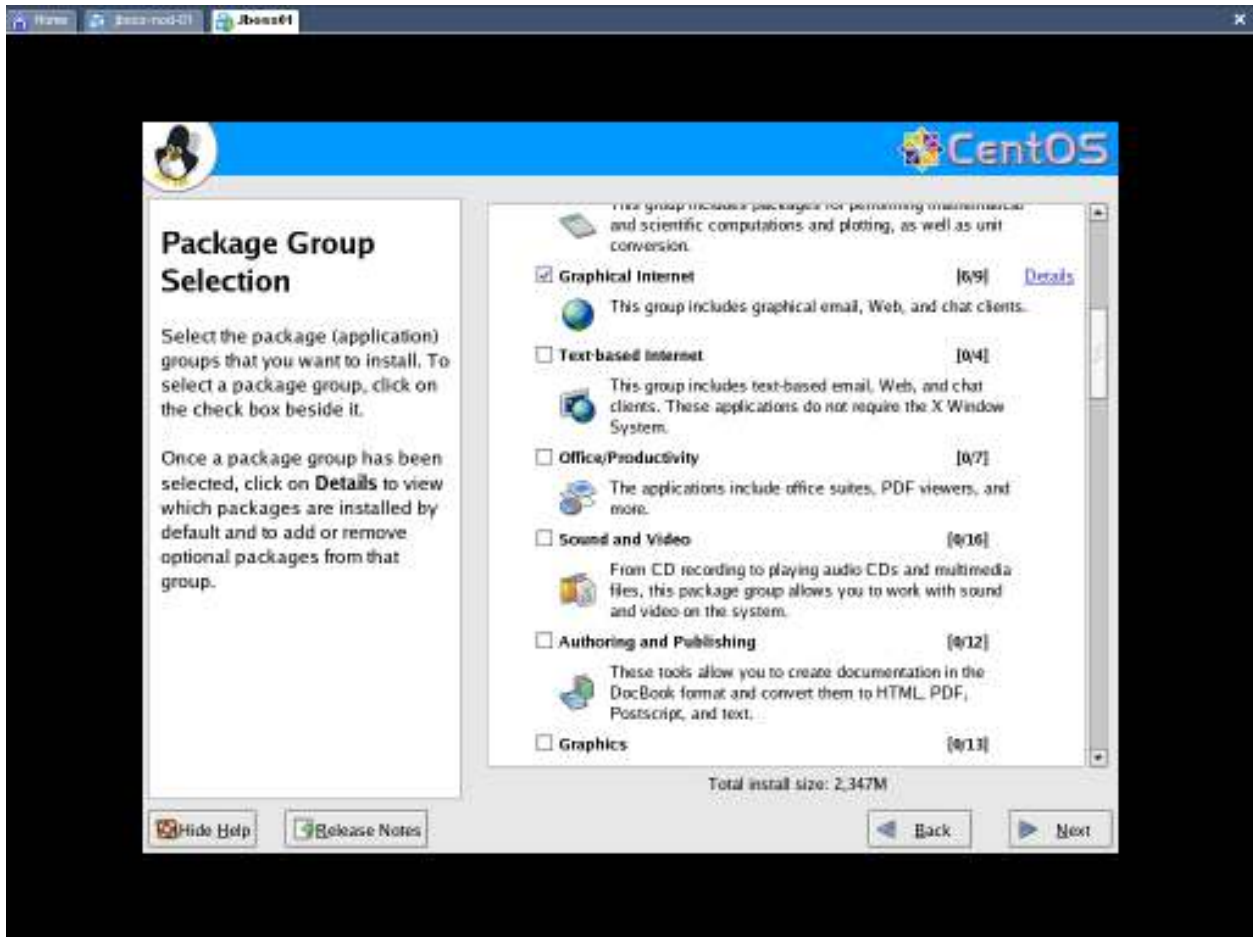
Select your **time zone**, click **Next**.

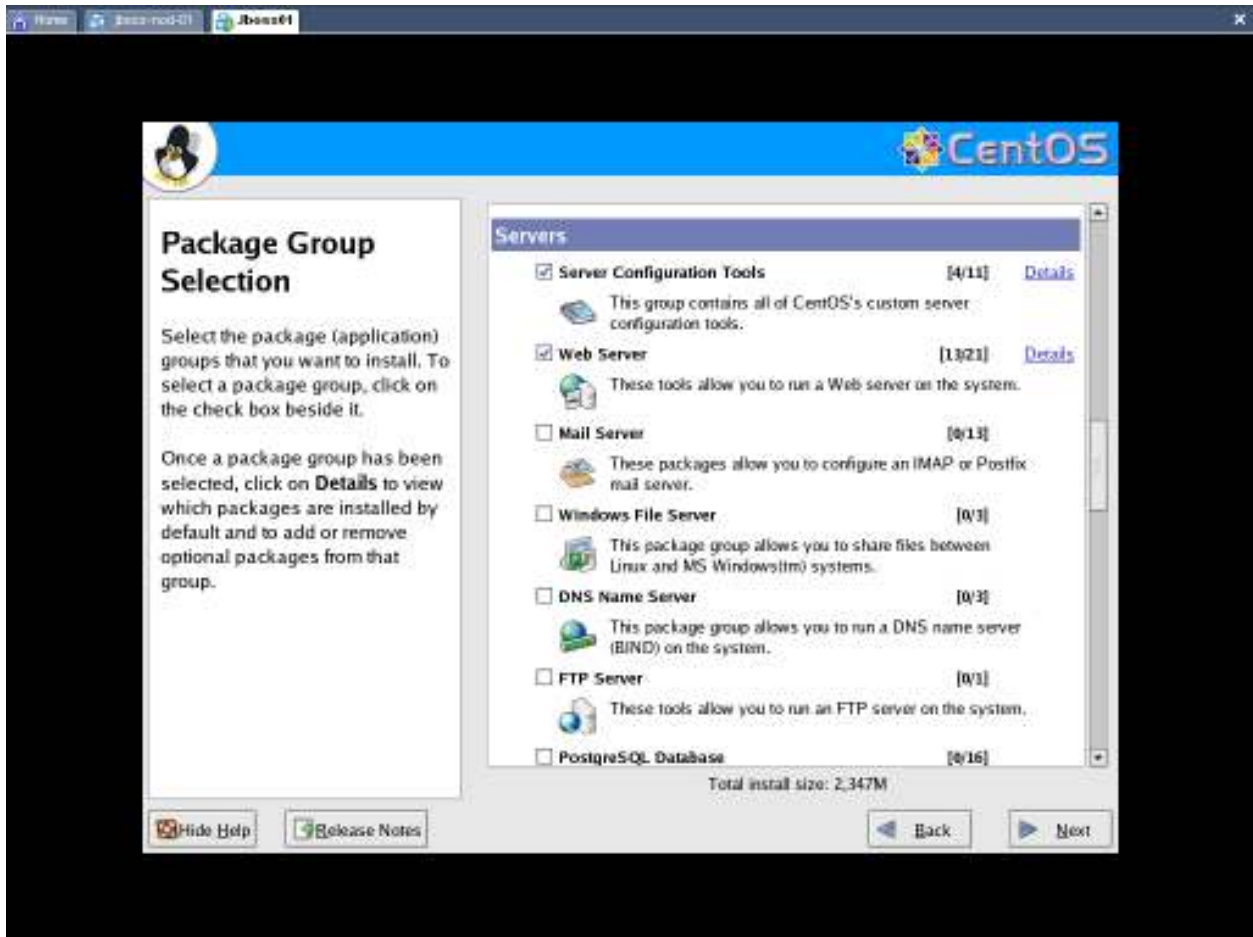


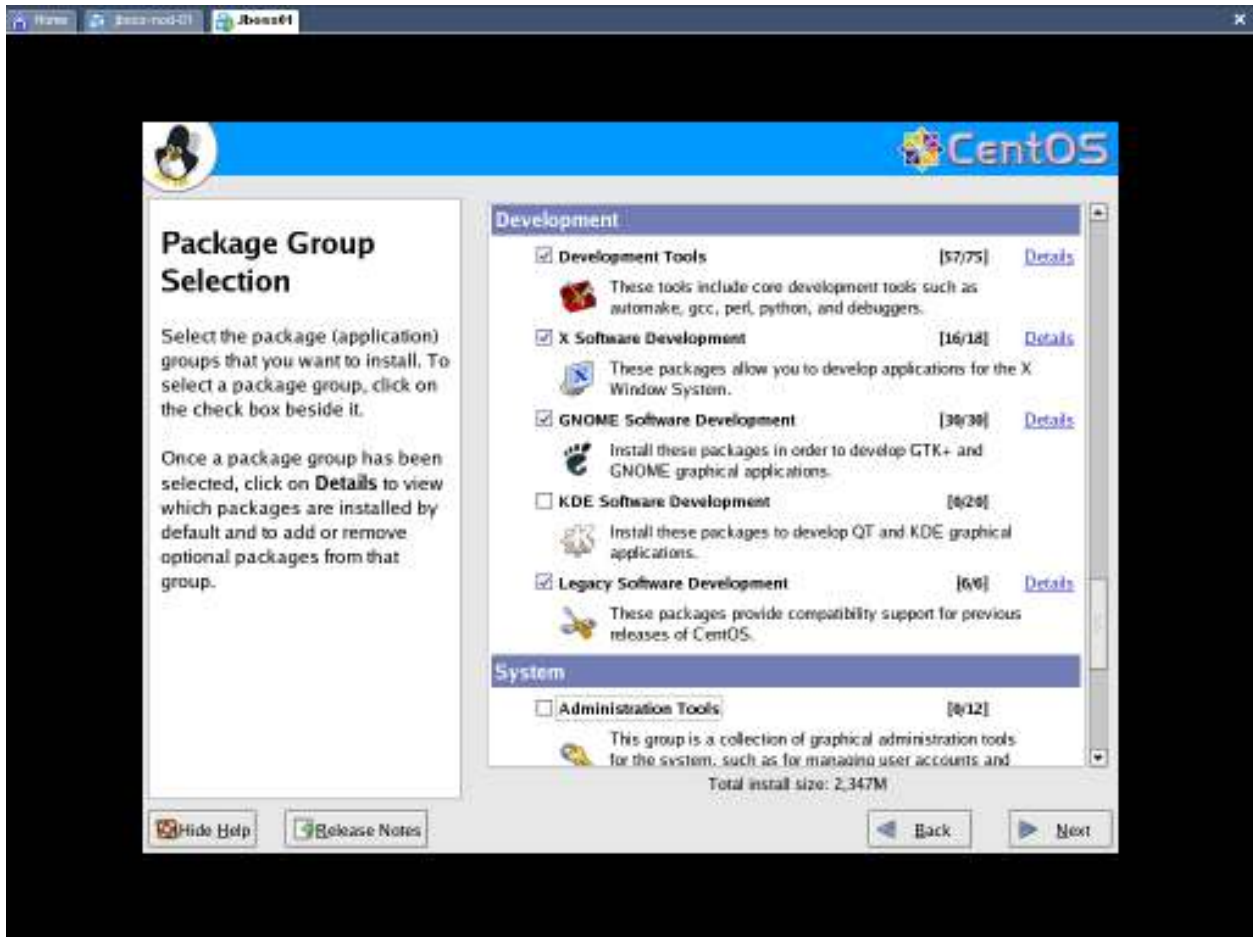
Set root user password, click **Next**.

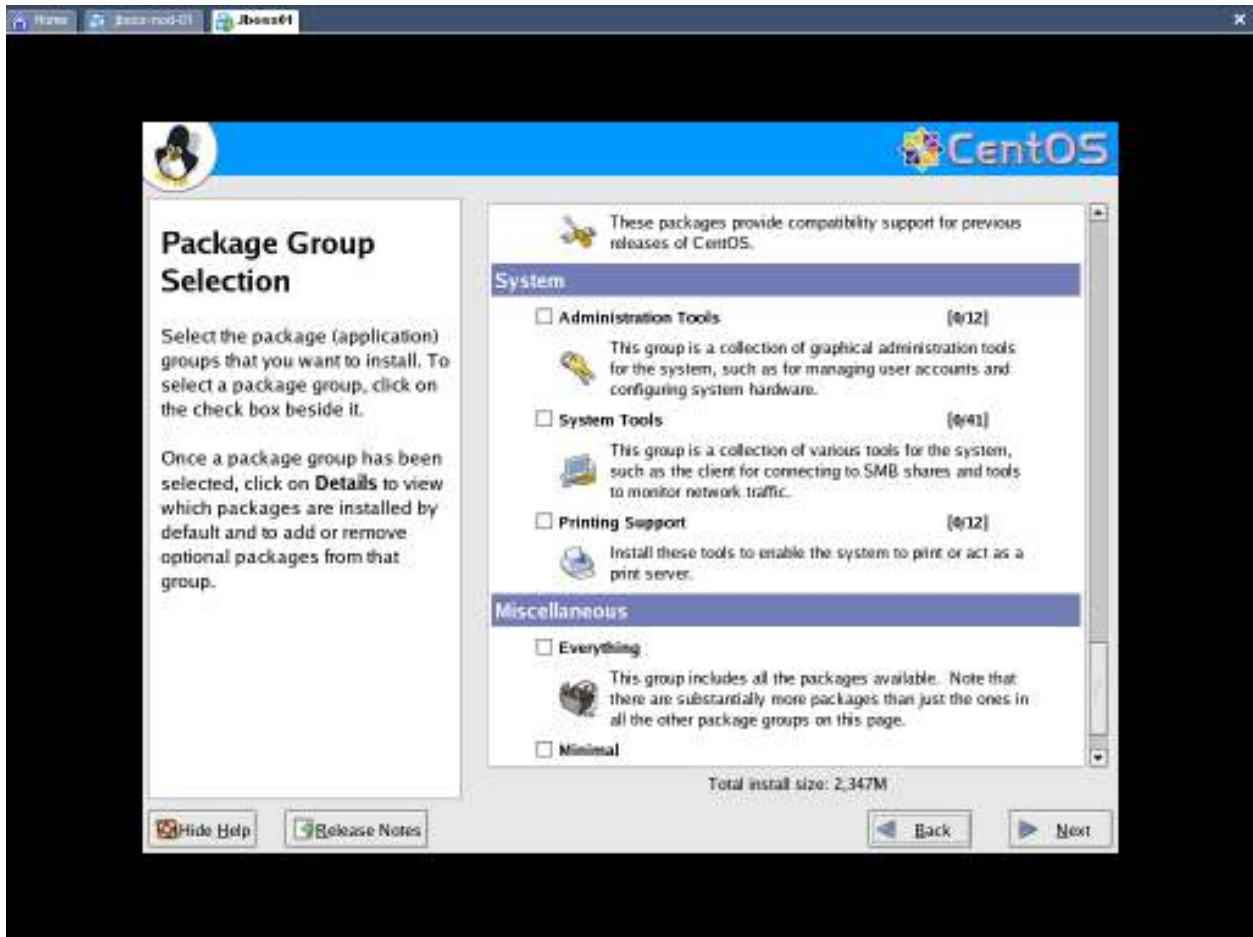


Select the Packages, as shown in this and coming screenshots.





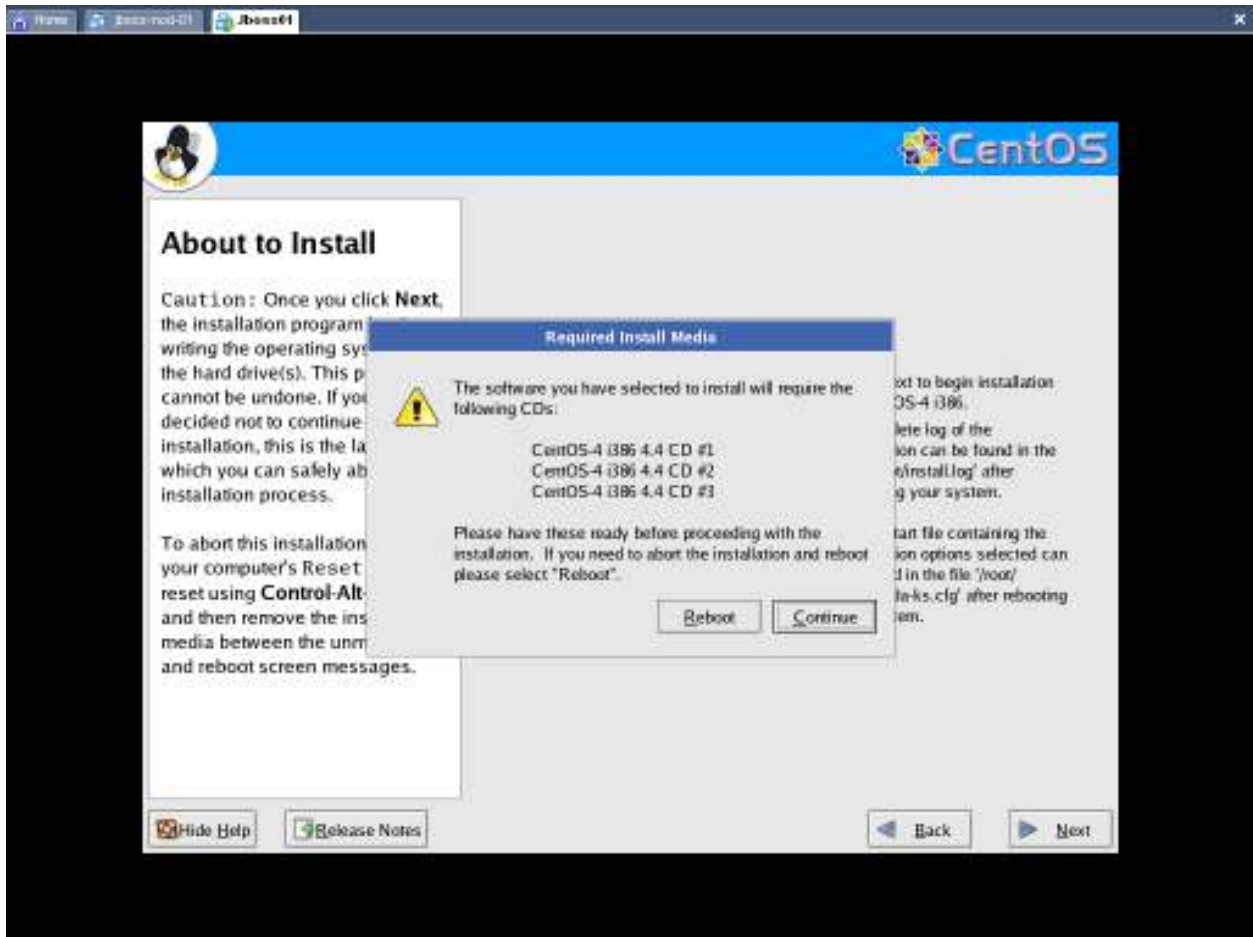




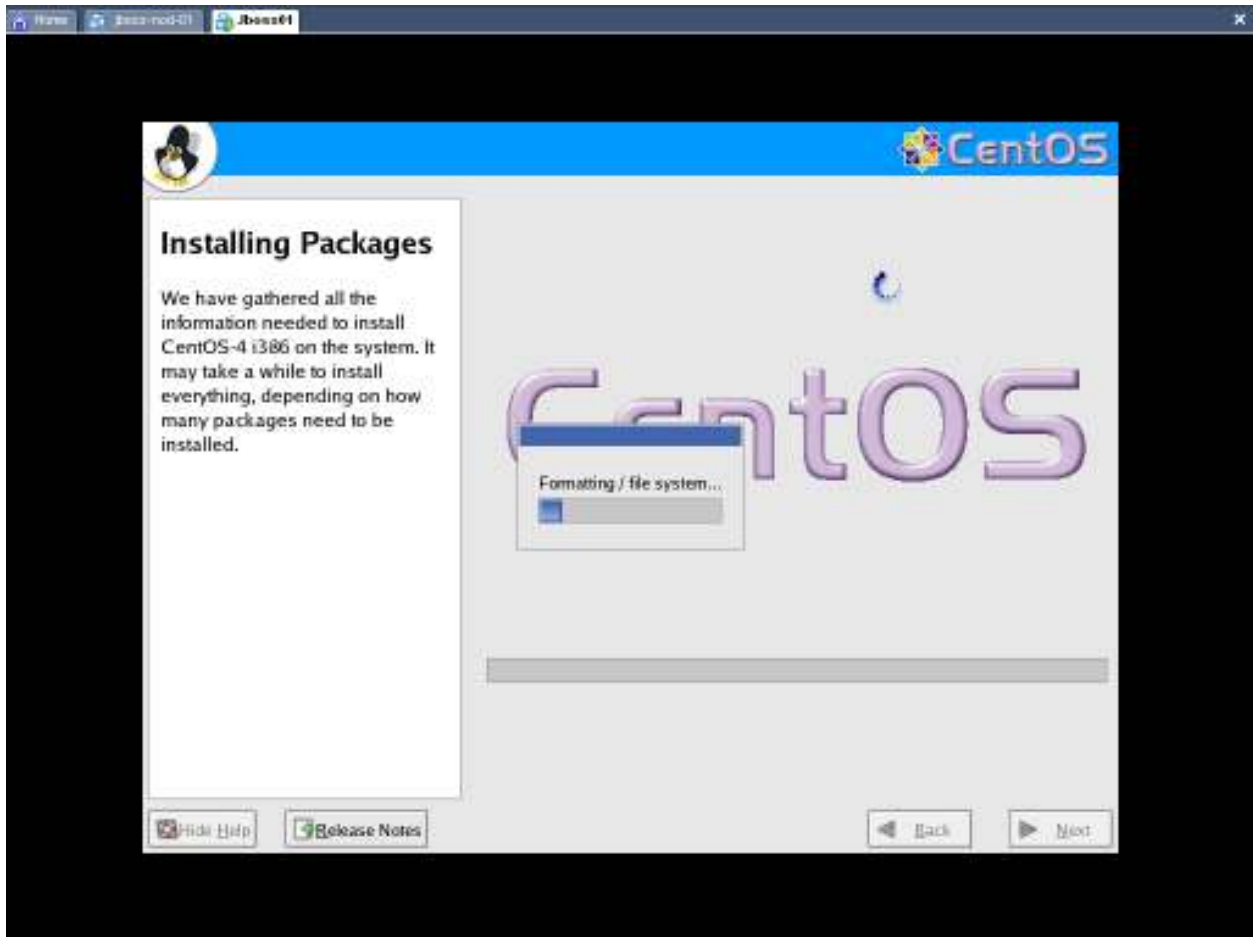
Click **Next**

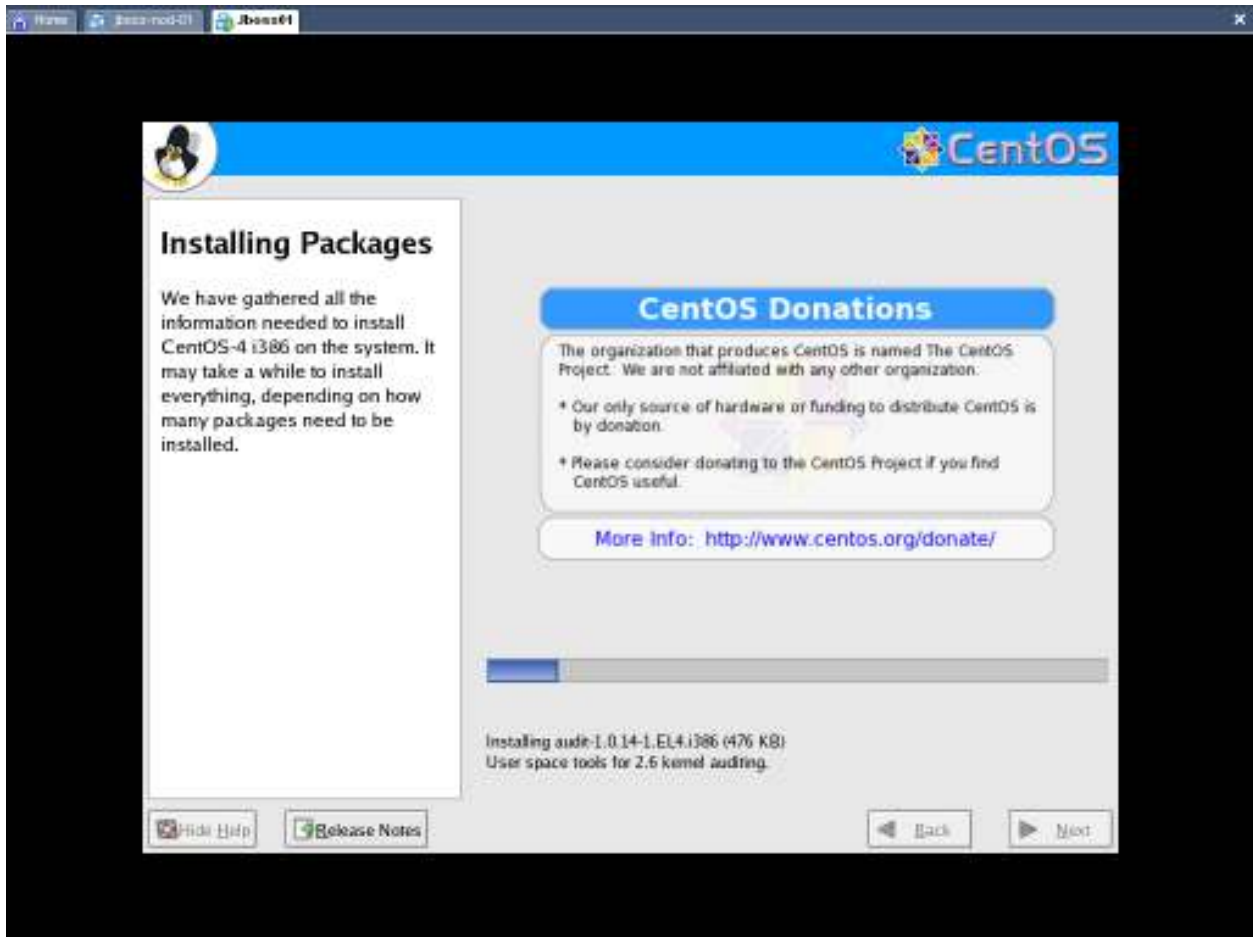


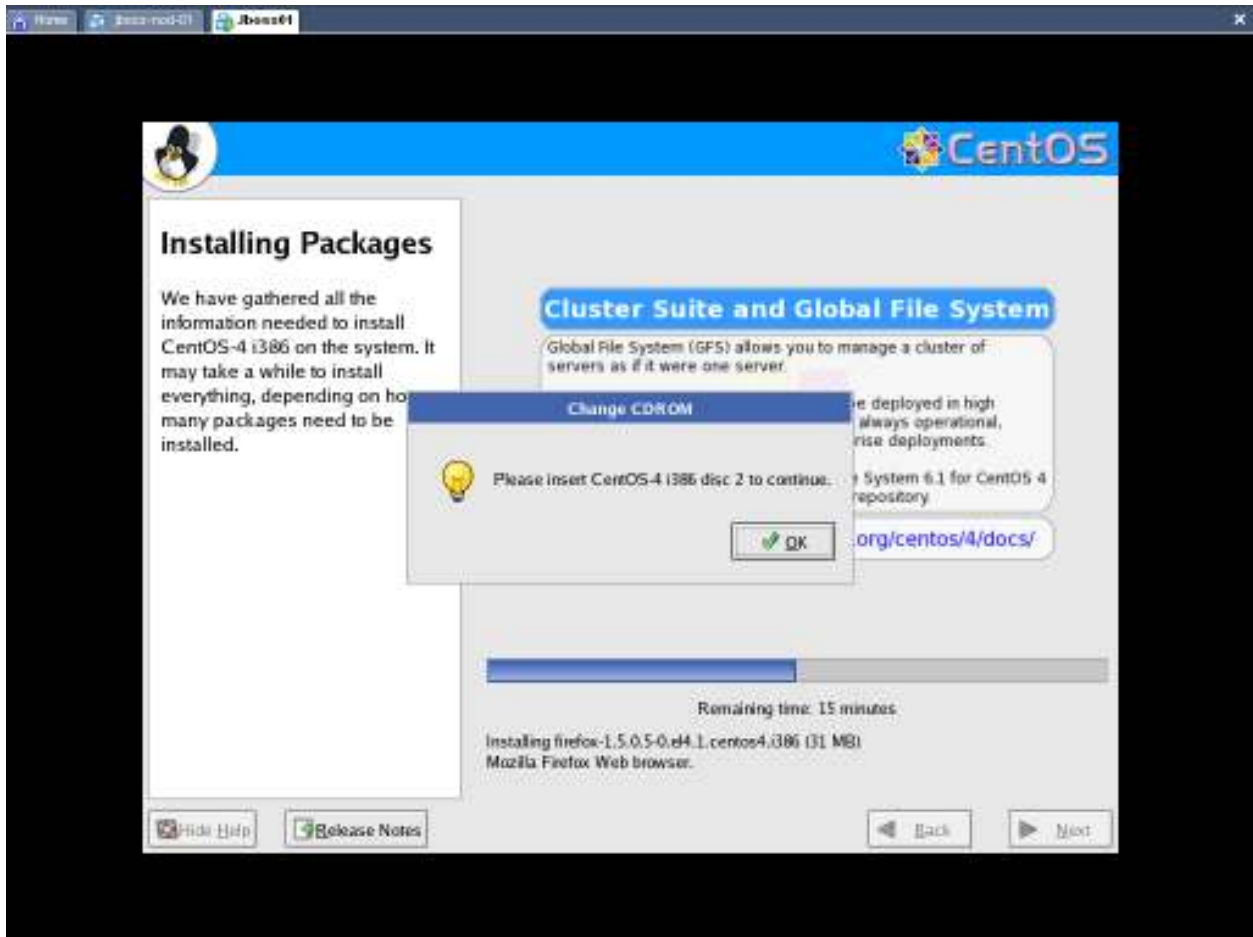
Click **Next**



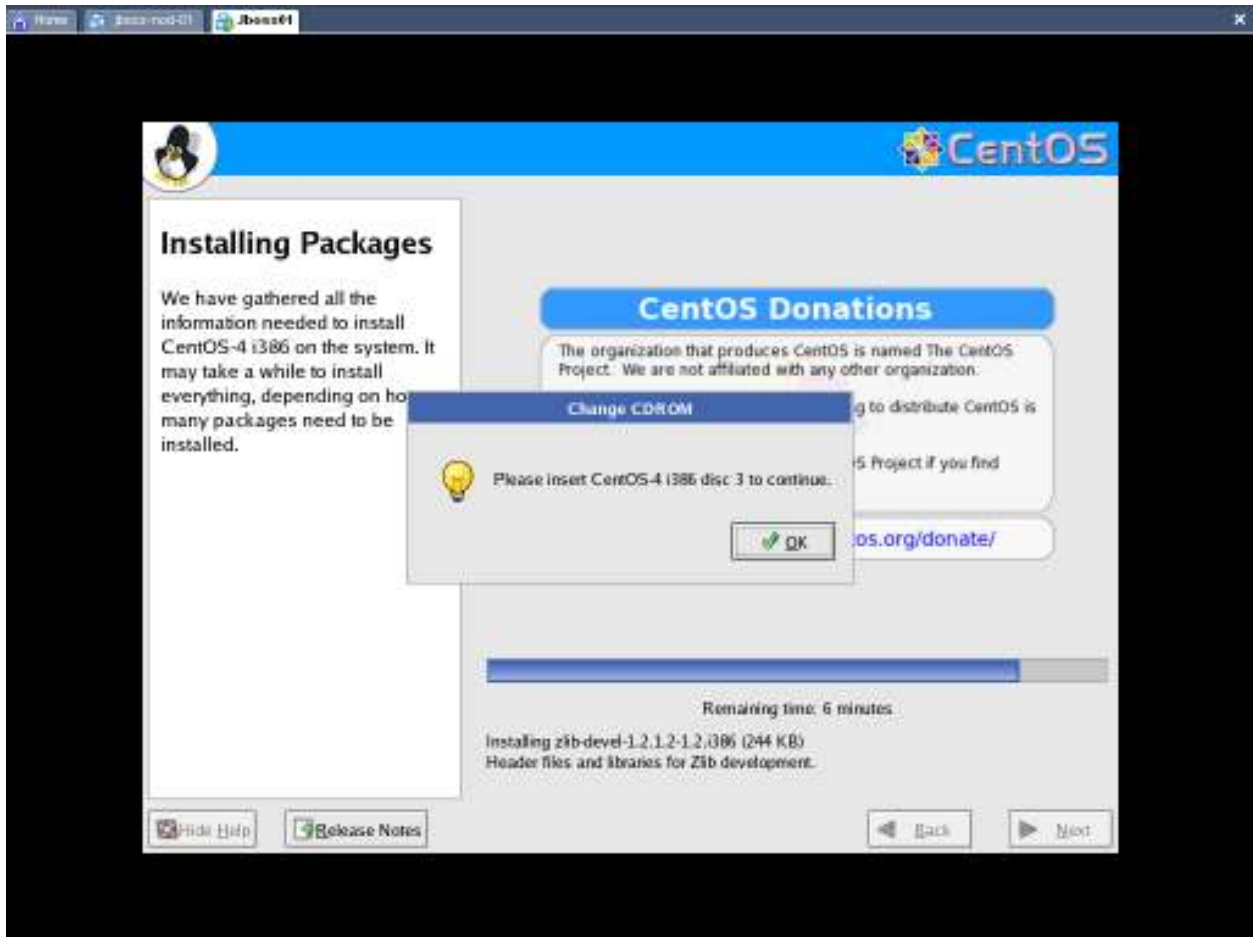
Click **Continue**.



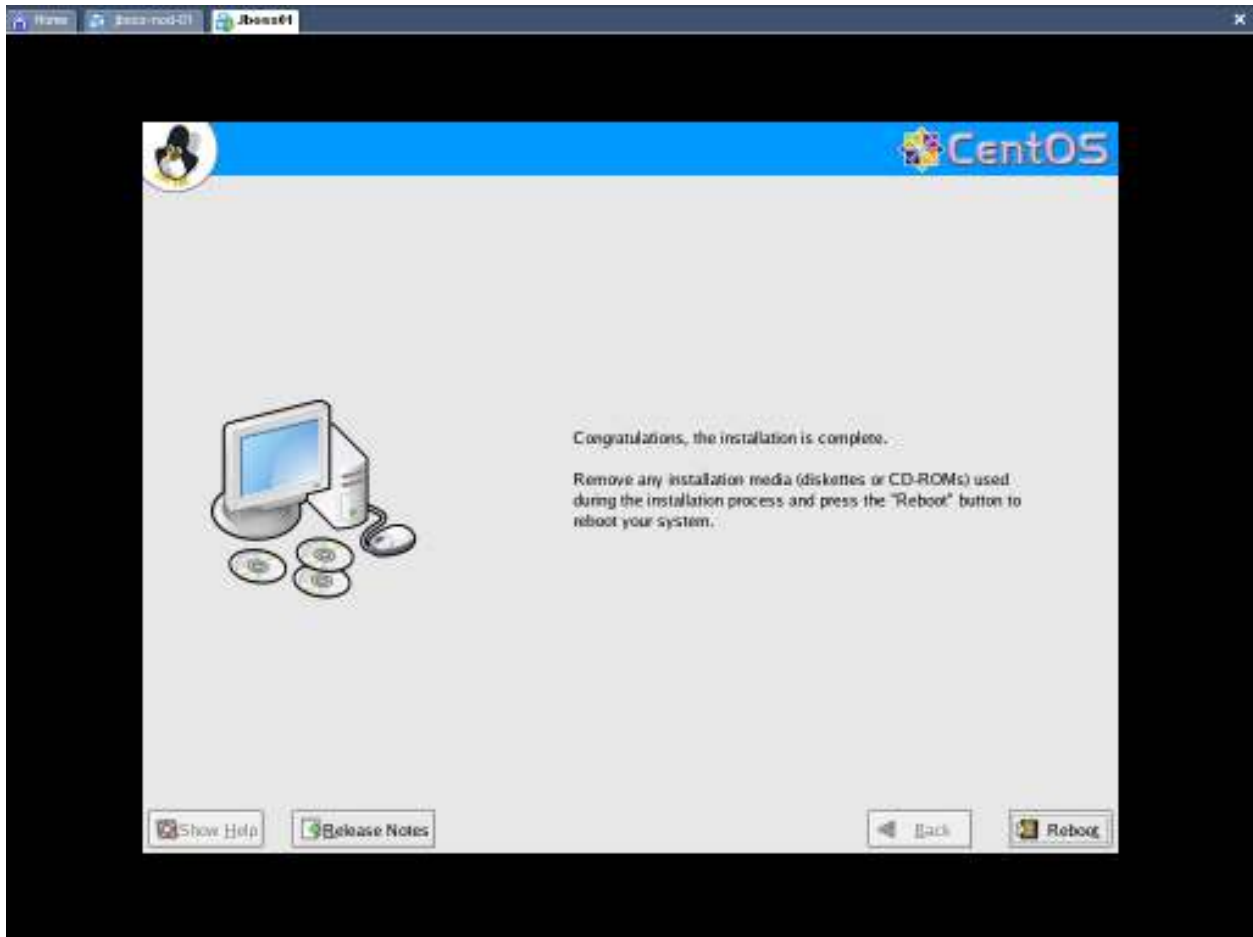




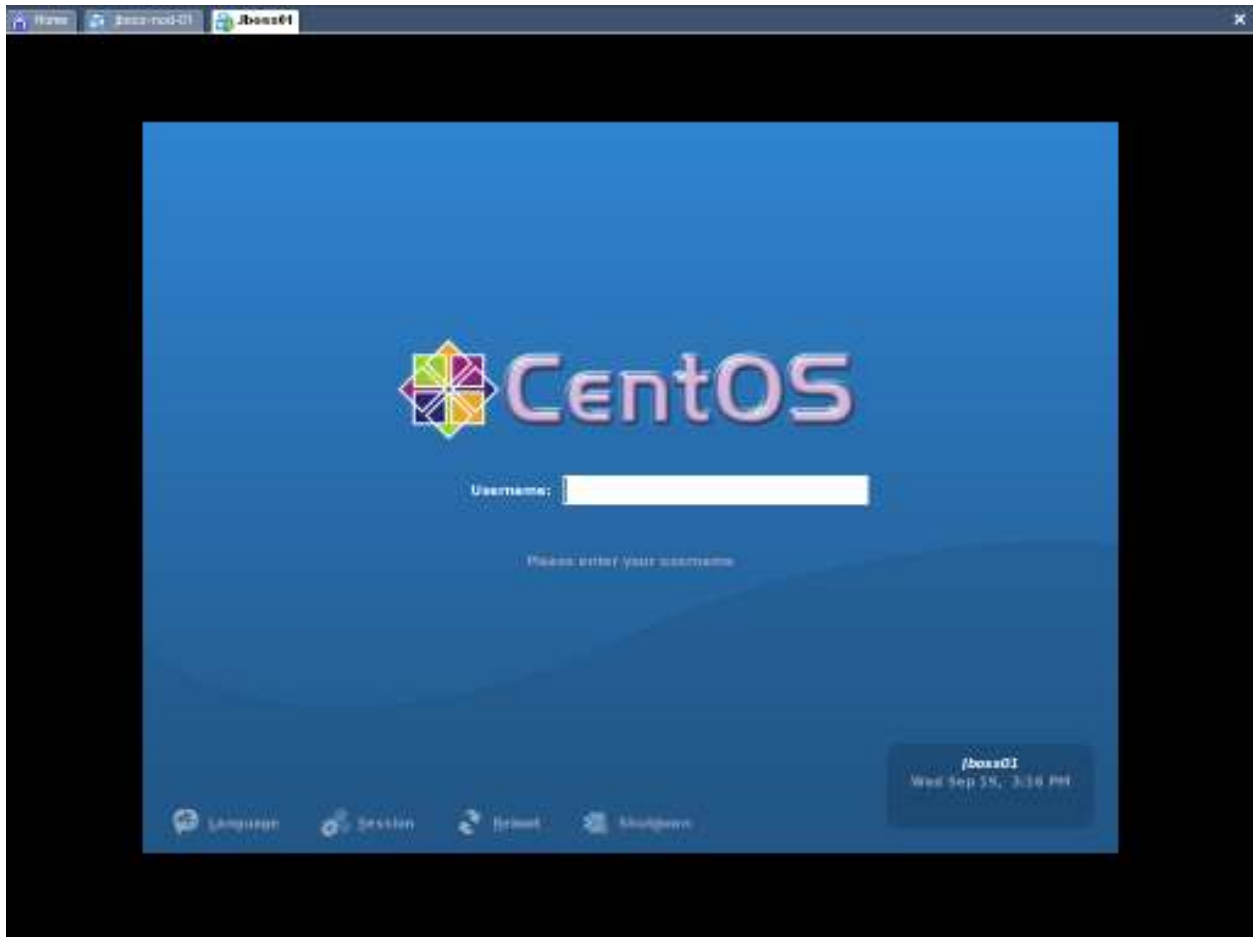
Insert second Disk and press **OK**.



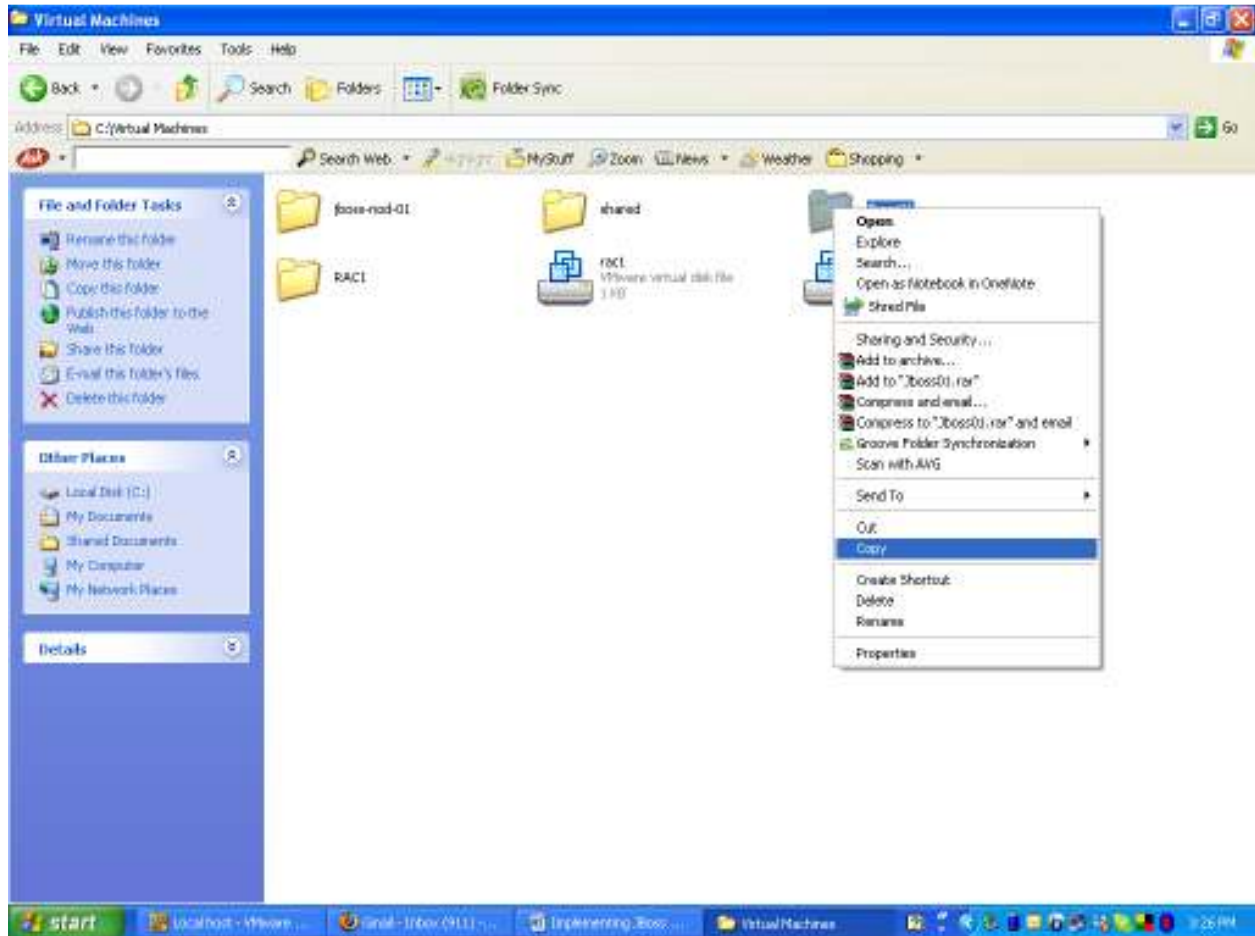
Insert Disk 3 and press **Ok**



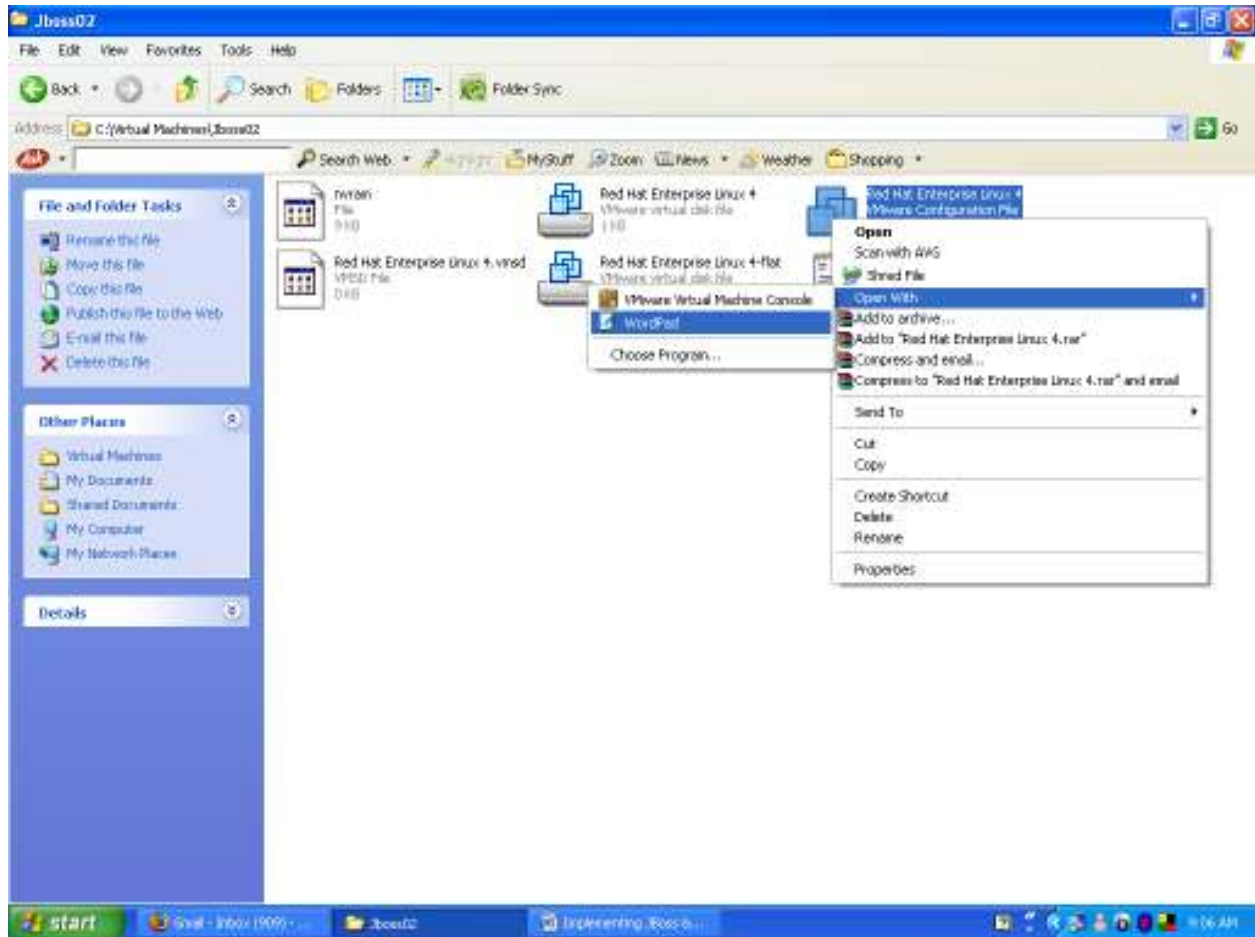
Click **Reboot**.



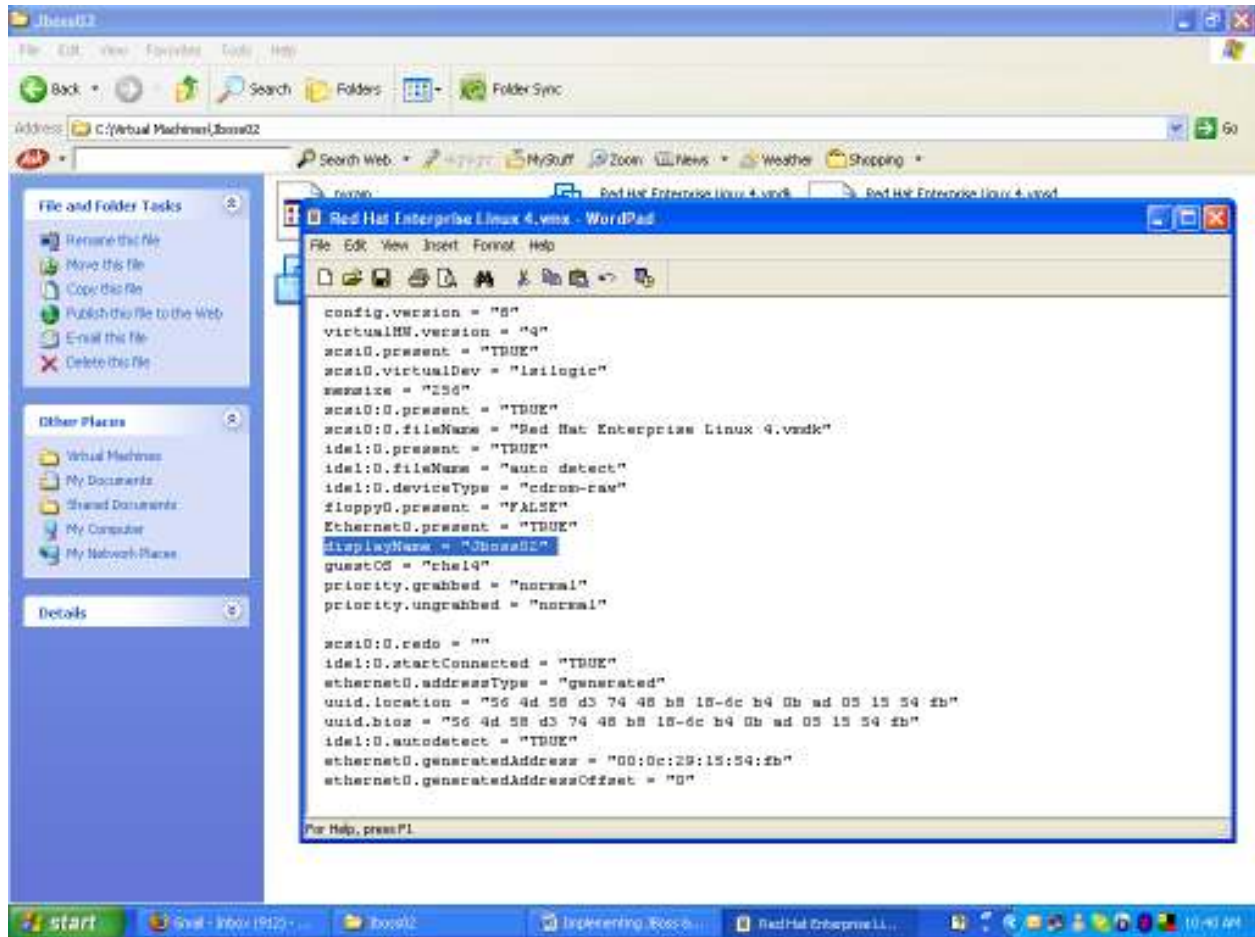
Jboss01 Virtual Machine is ready to use, now this is the time to clone Jboss01 Virtual Machine to Jboss02, for the reason first shutdown Jboss01, and do the following steps.

Step No. 3:

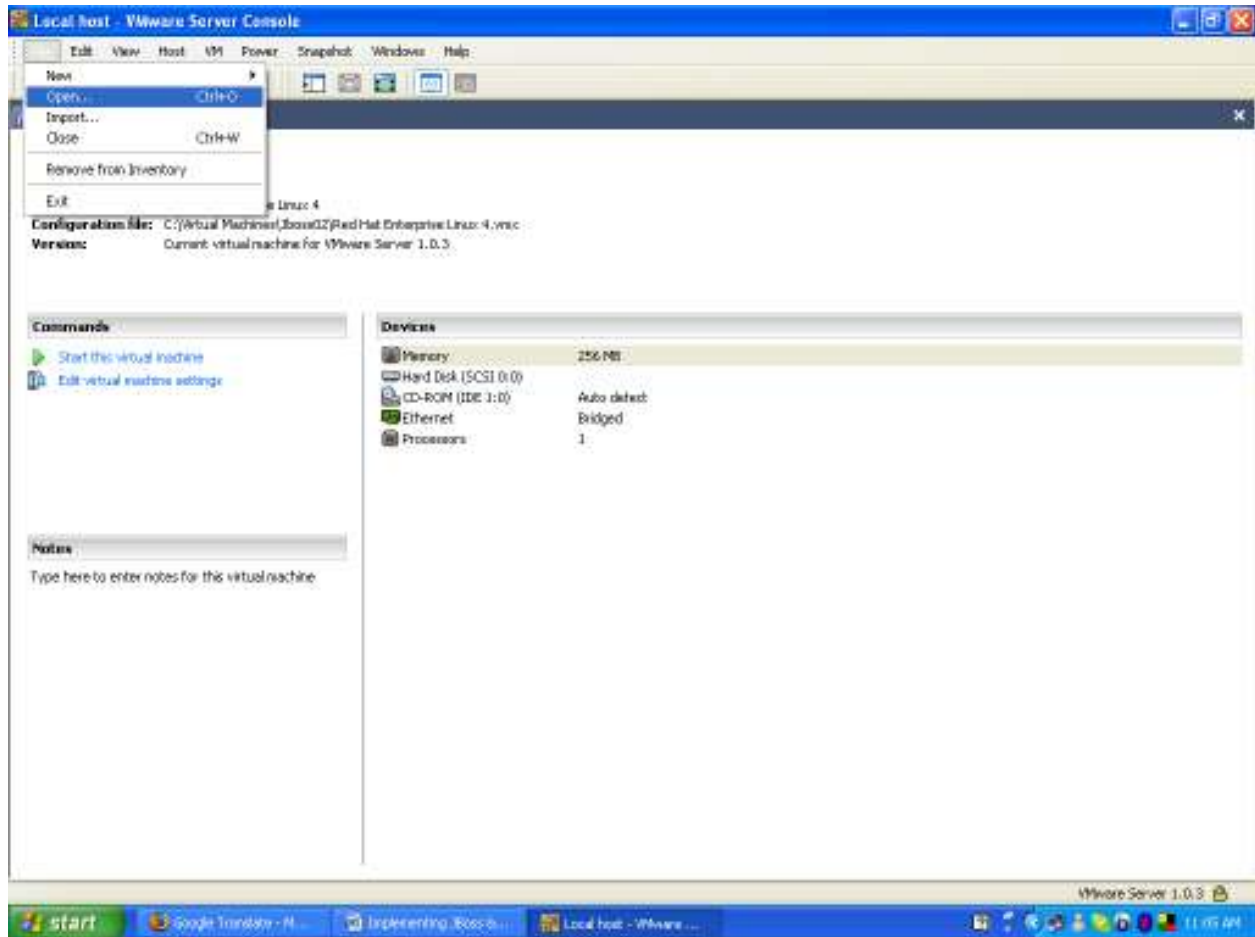
Copy Jboss01 folder to same “c:\virtual machine” location with Jboss02 name, for those using Linux just do the same with **“\$cp /path-to-virtual-machine/jboss01 /path-to-virtual-machine/jb0ss02”**.



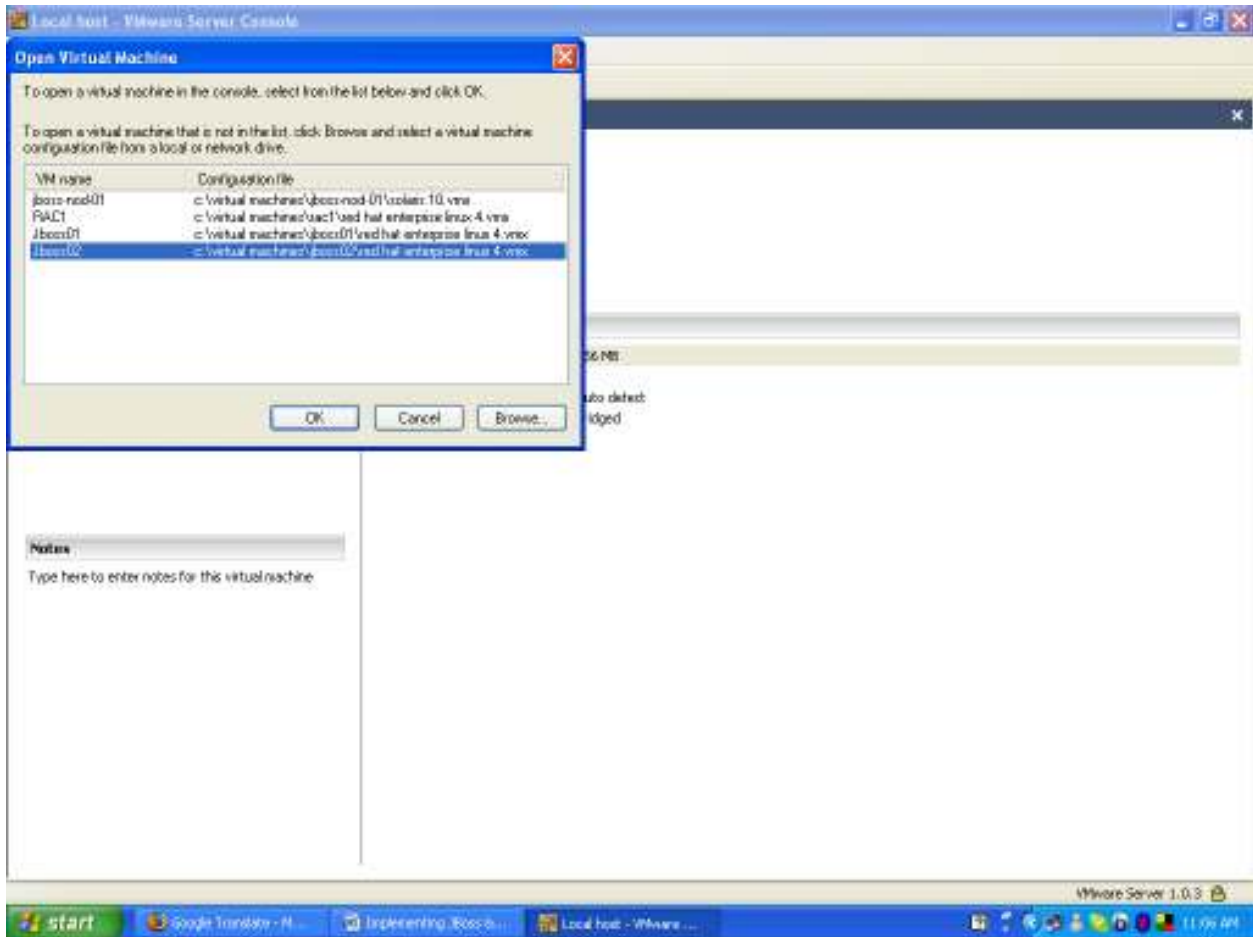
Edit Red Hat Enterprise Linux 4.vmx and change `displayName = "Jboss01"` to `displayName = "Jboss02"` as following, **Linux users can open in vi editor.**



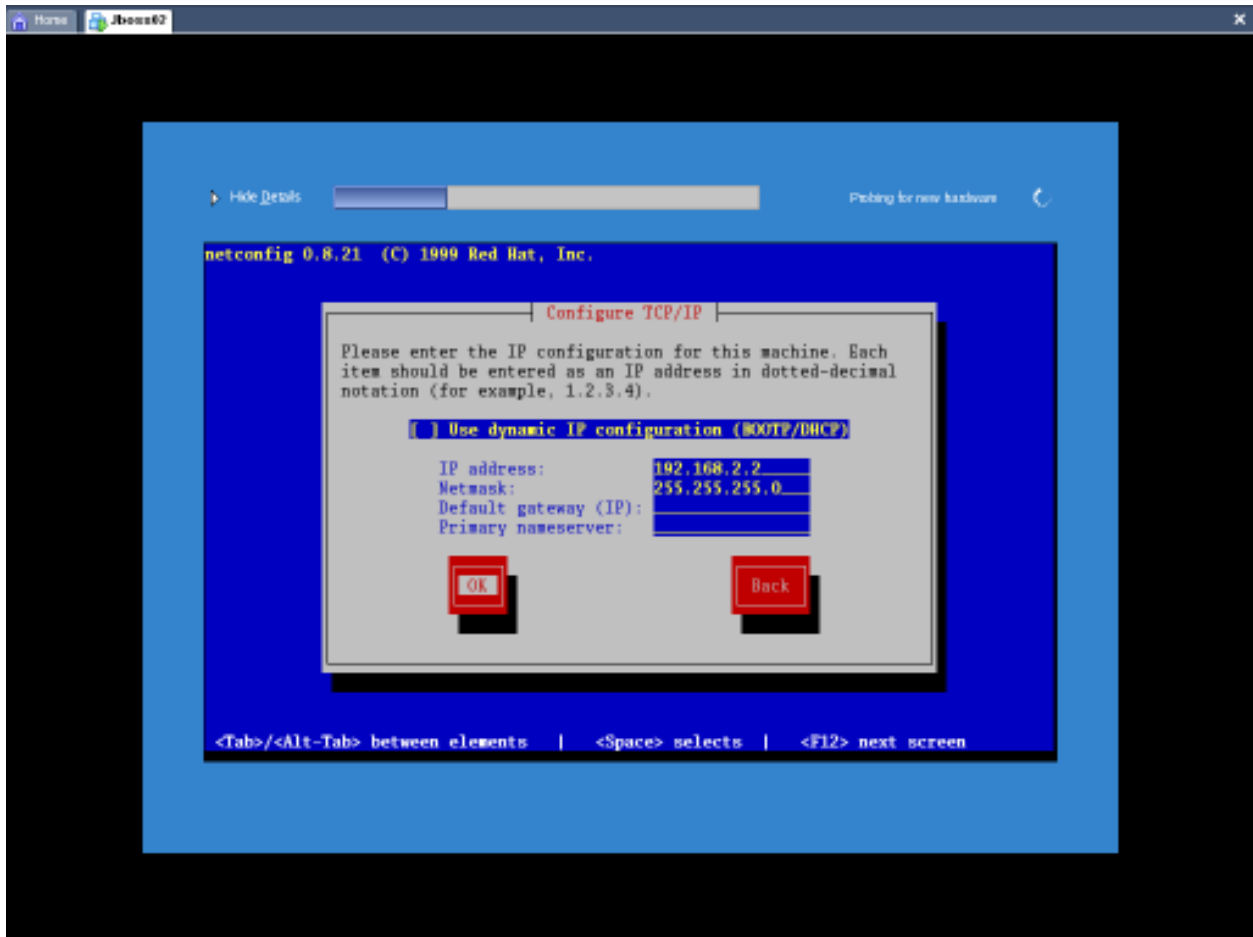
Now open VMware console and open Jboss02 Virtual machine.



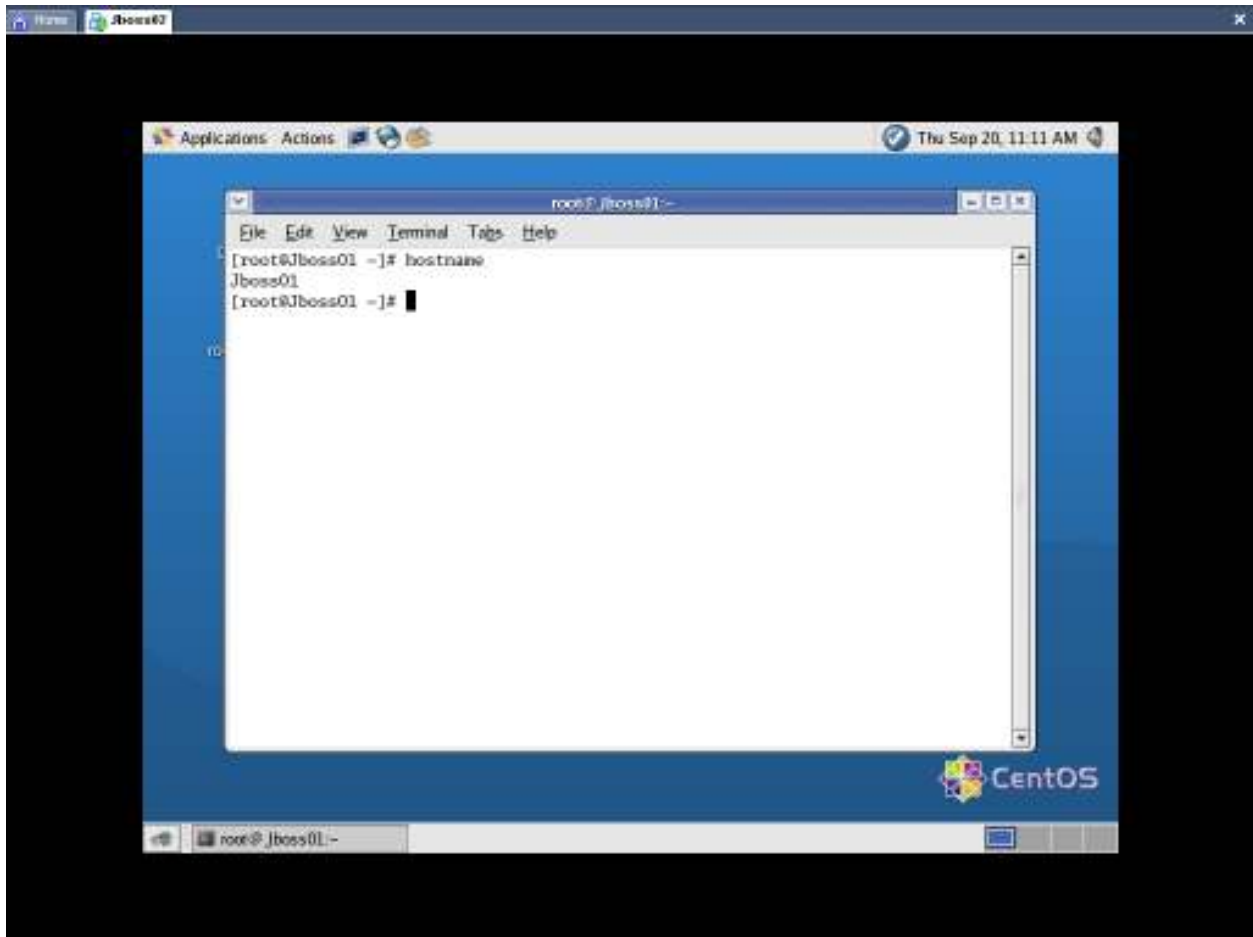
Select Jboss02 in the list



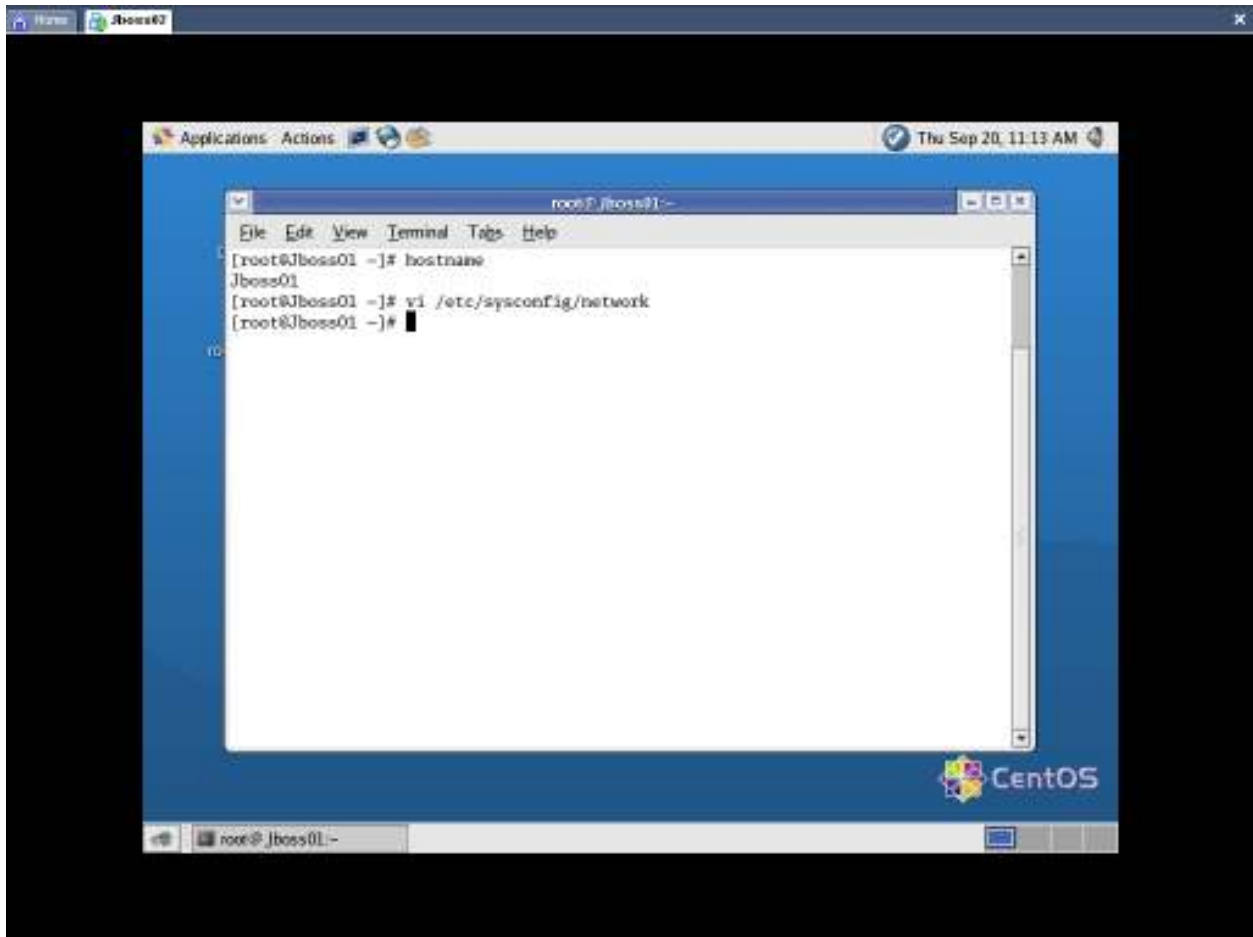
Now start the virtual machine **Jboss02**,



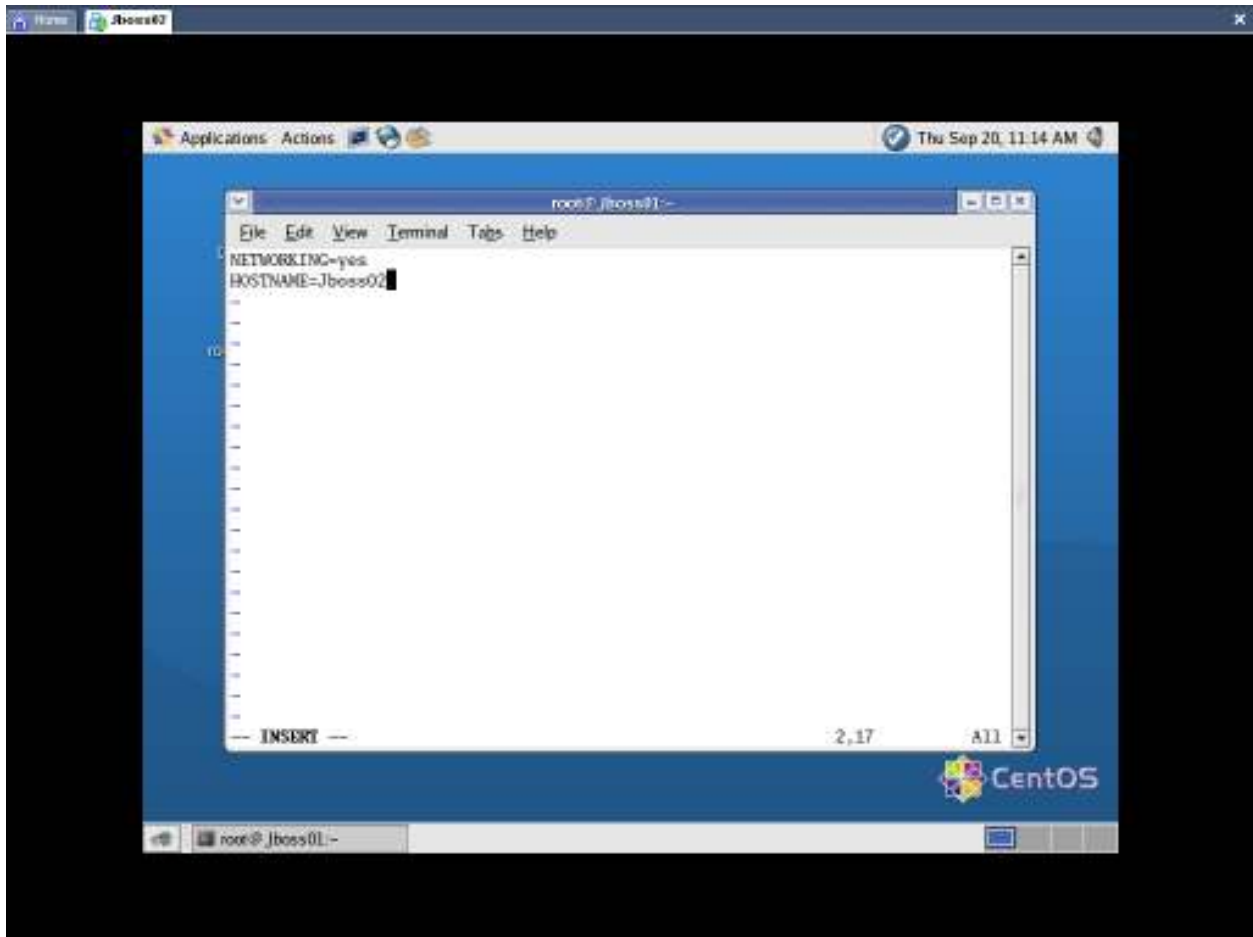
Setup the IP Address for Jboss02 Machine. i.e. 192.168.2.2/255.255.255.0



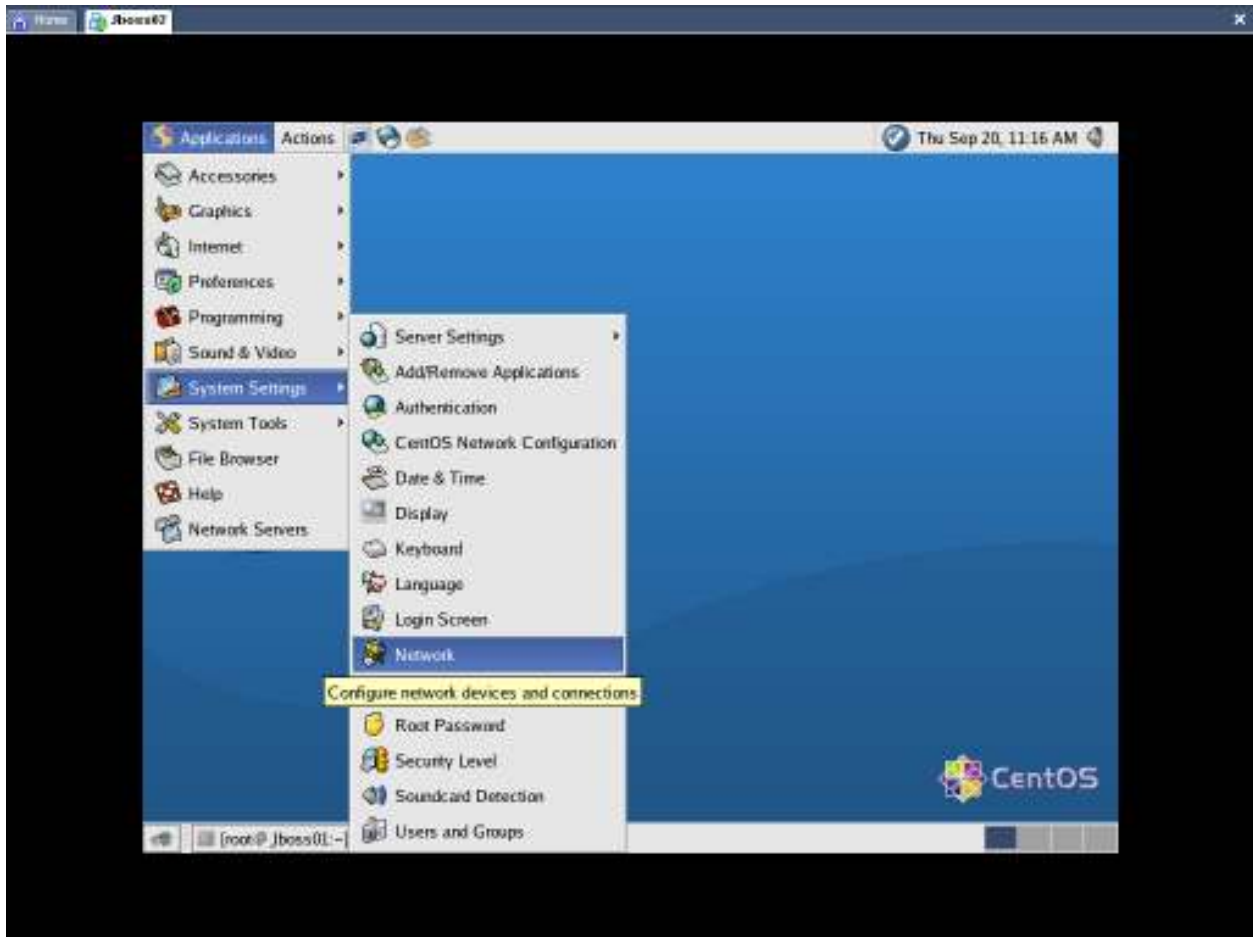
Now we have to change the hostname, from Jboss01 to Jboss02.



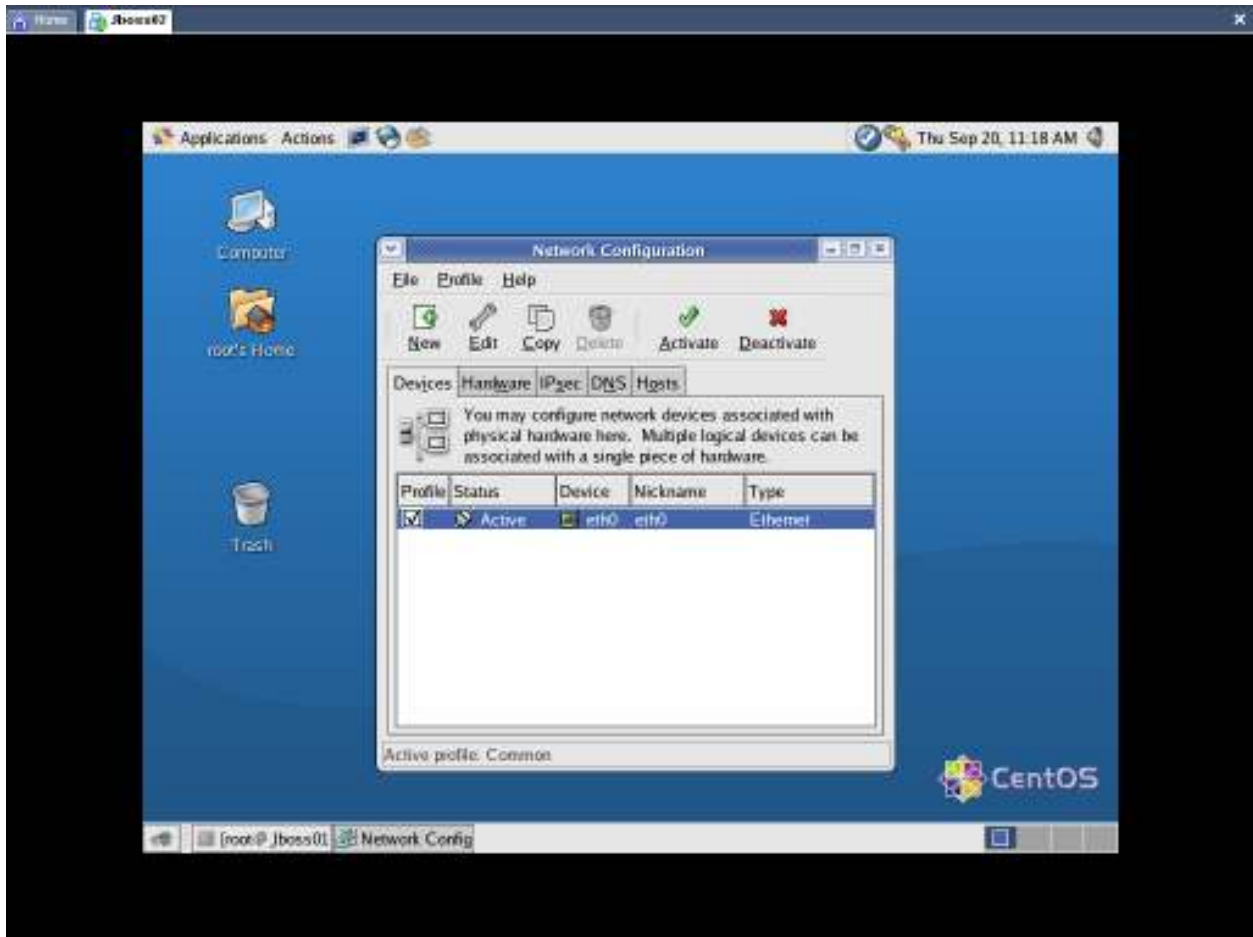
Edit `$vi /etc/sysconfig/network` file and change `HOSTNAME=Jboss01` to `HOSTNAME=Jboss02`.



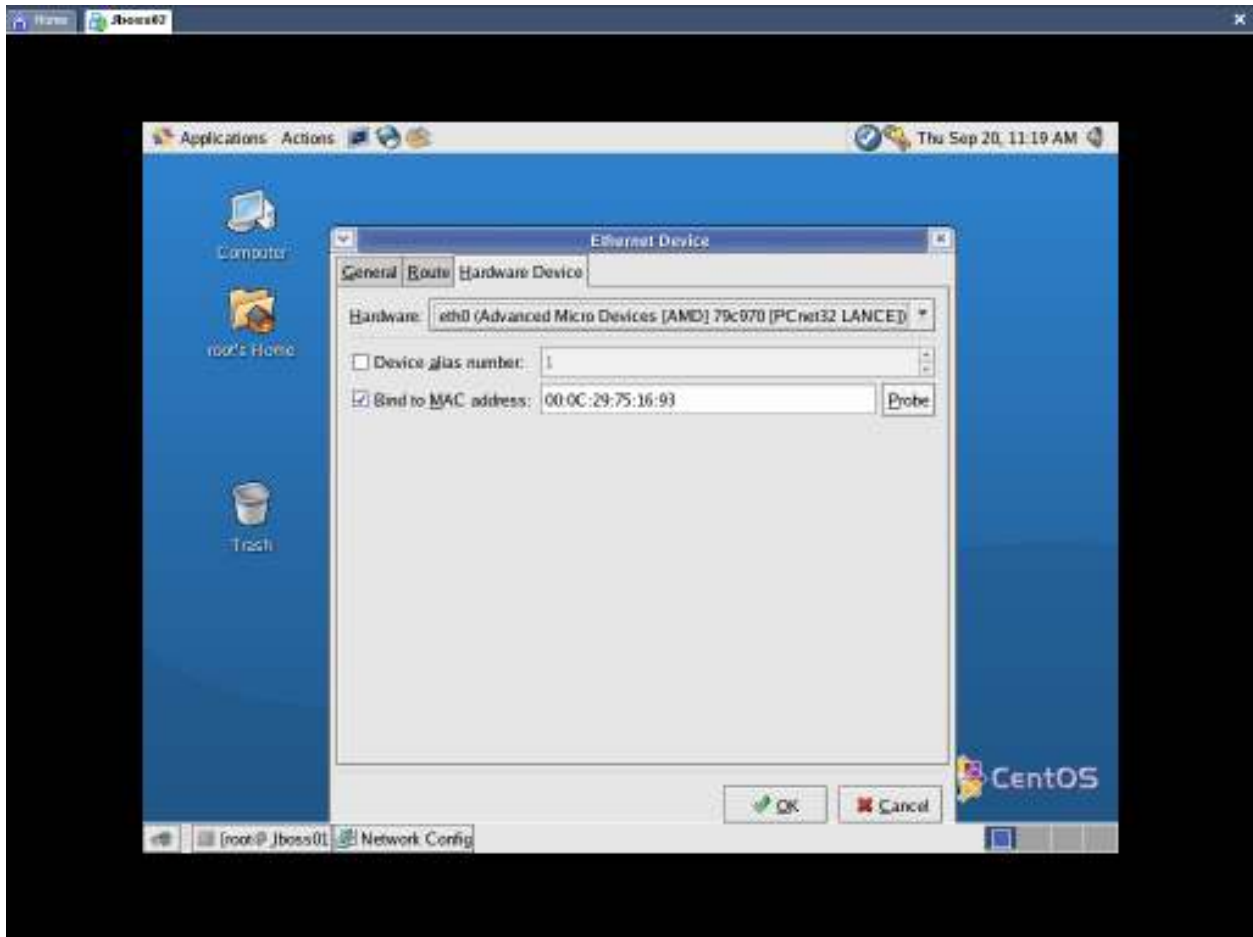
Now we have to probe for new MAC Address of Ethernet card,



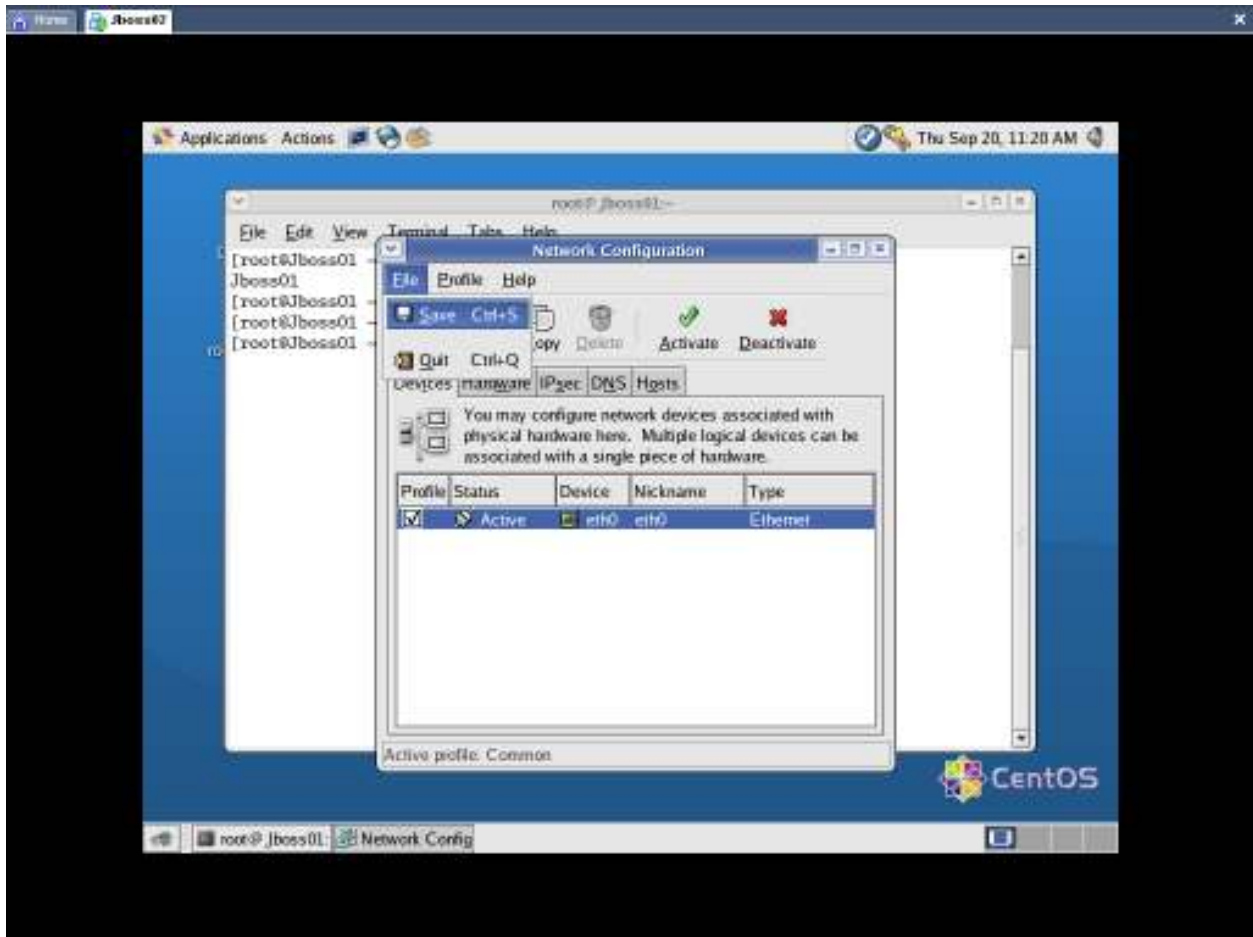
Click on **Application** -> **System Setting** -> **Network**



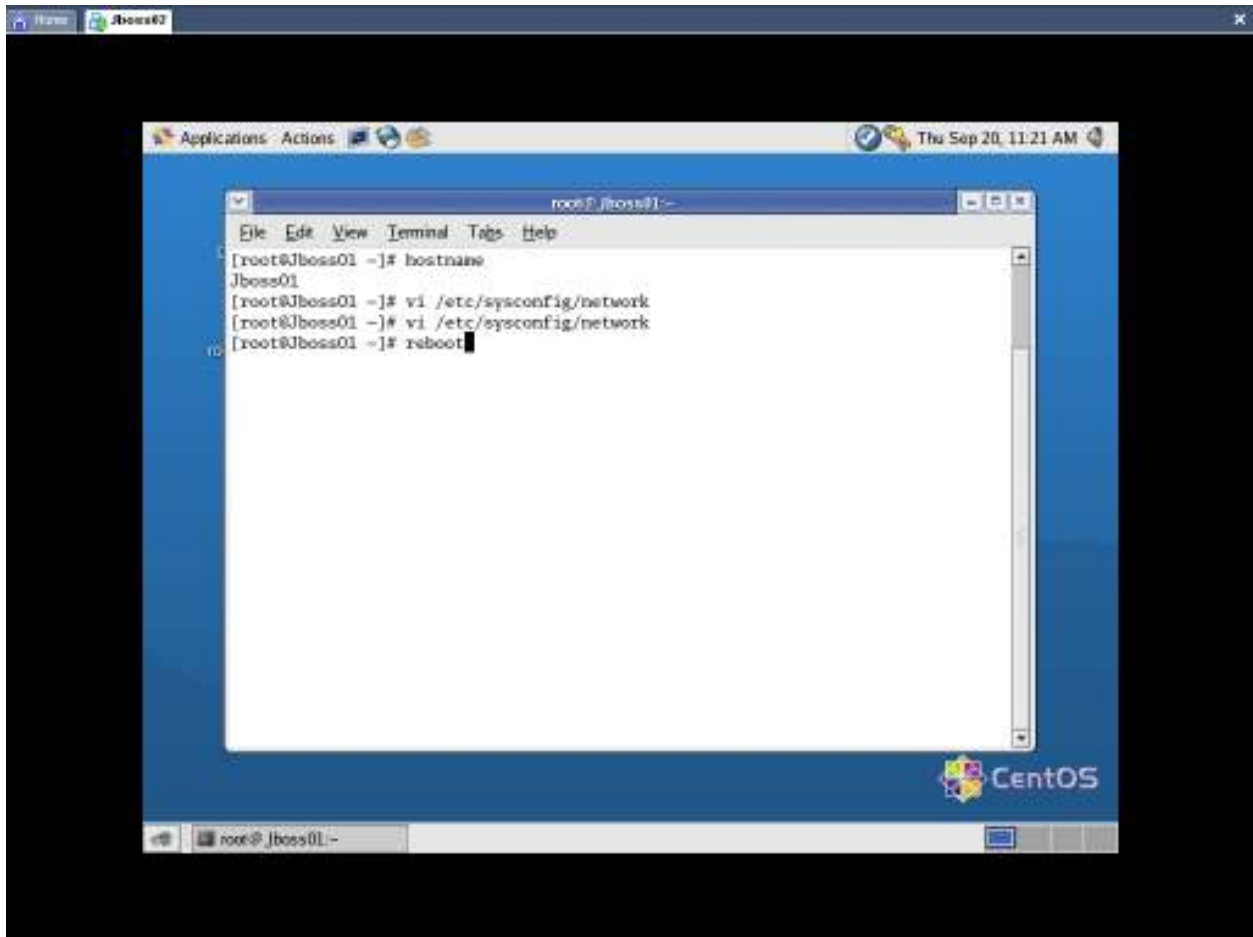
Click on **Edit** button and then **Hardware Device**,



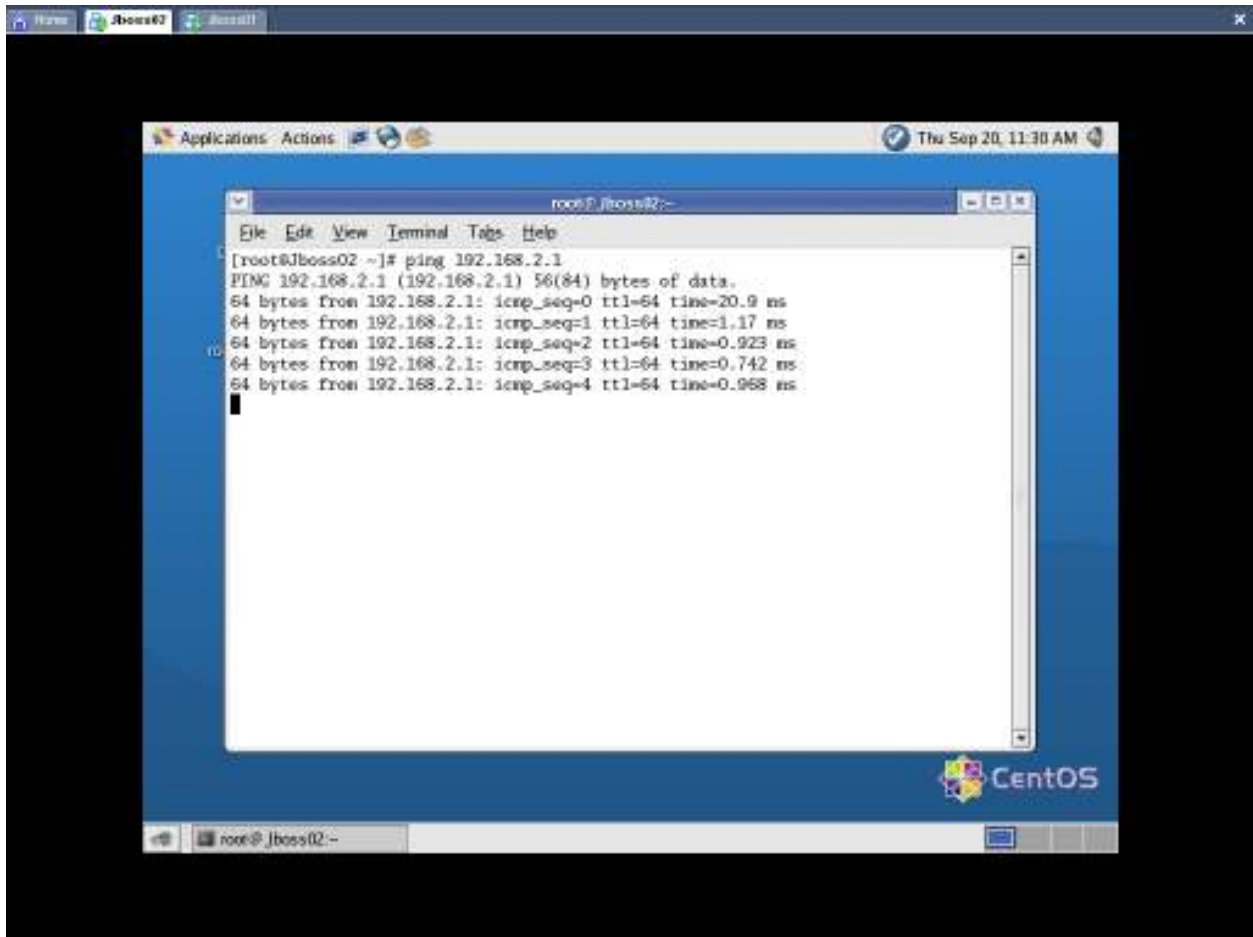
Click on **Probe** button, and press **Ok**.



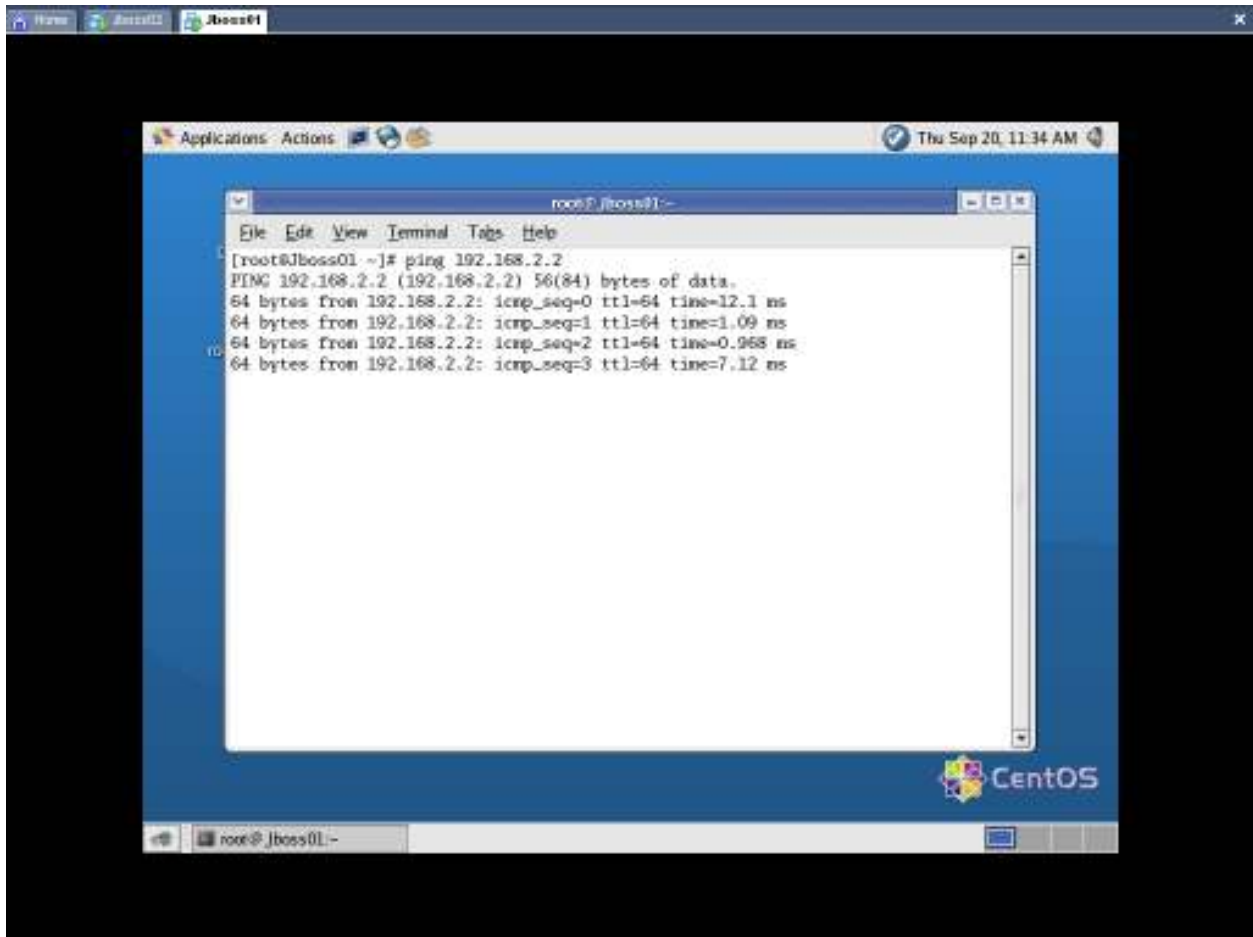
Now **Save** and **Quit**.



Reboot your machine Jboss02. After rebooting Turn On both Jboss01 and Jboss02 machine to check the connectivity.

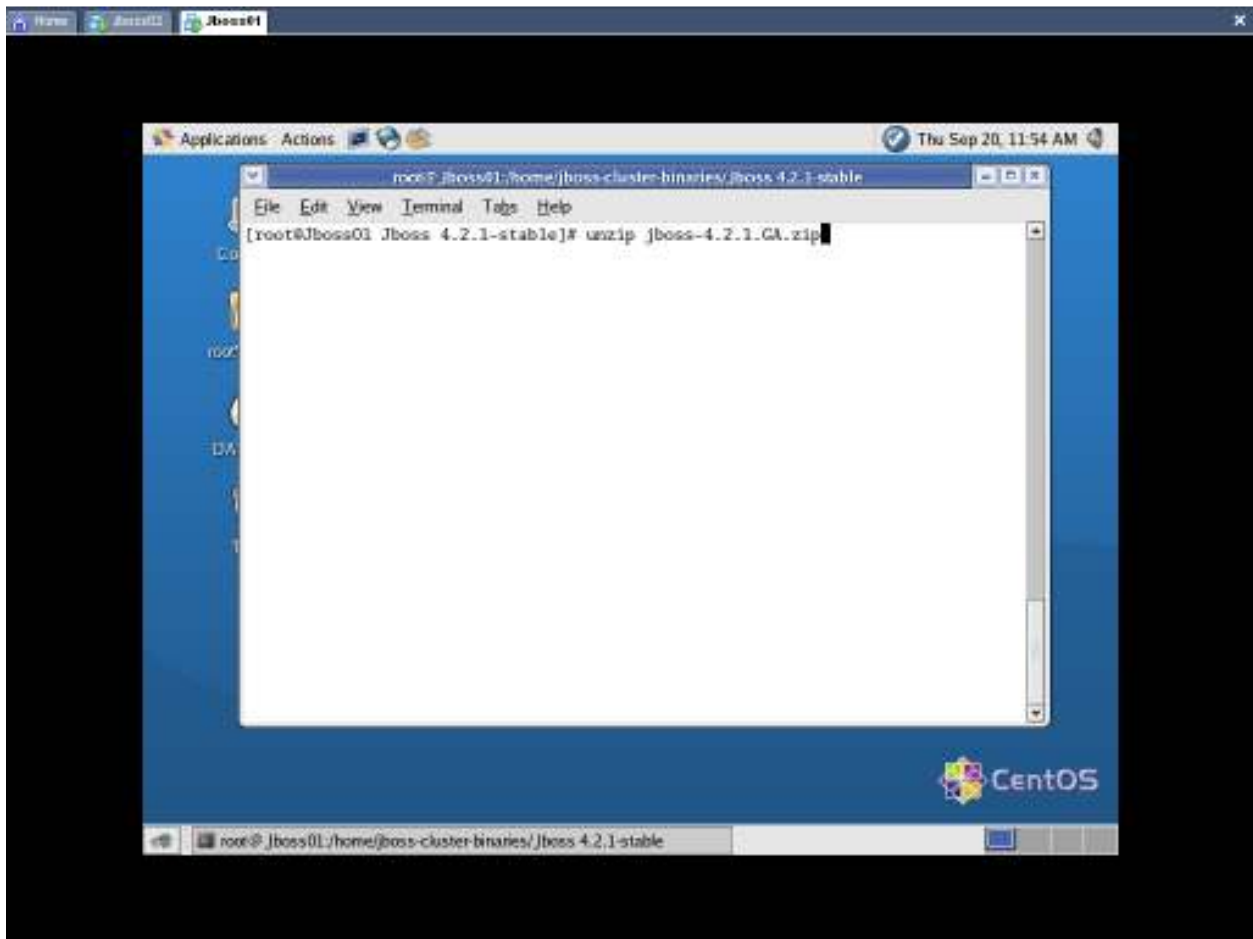


Now **\$ping** from Jboss02 to Jboss01



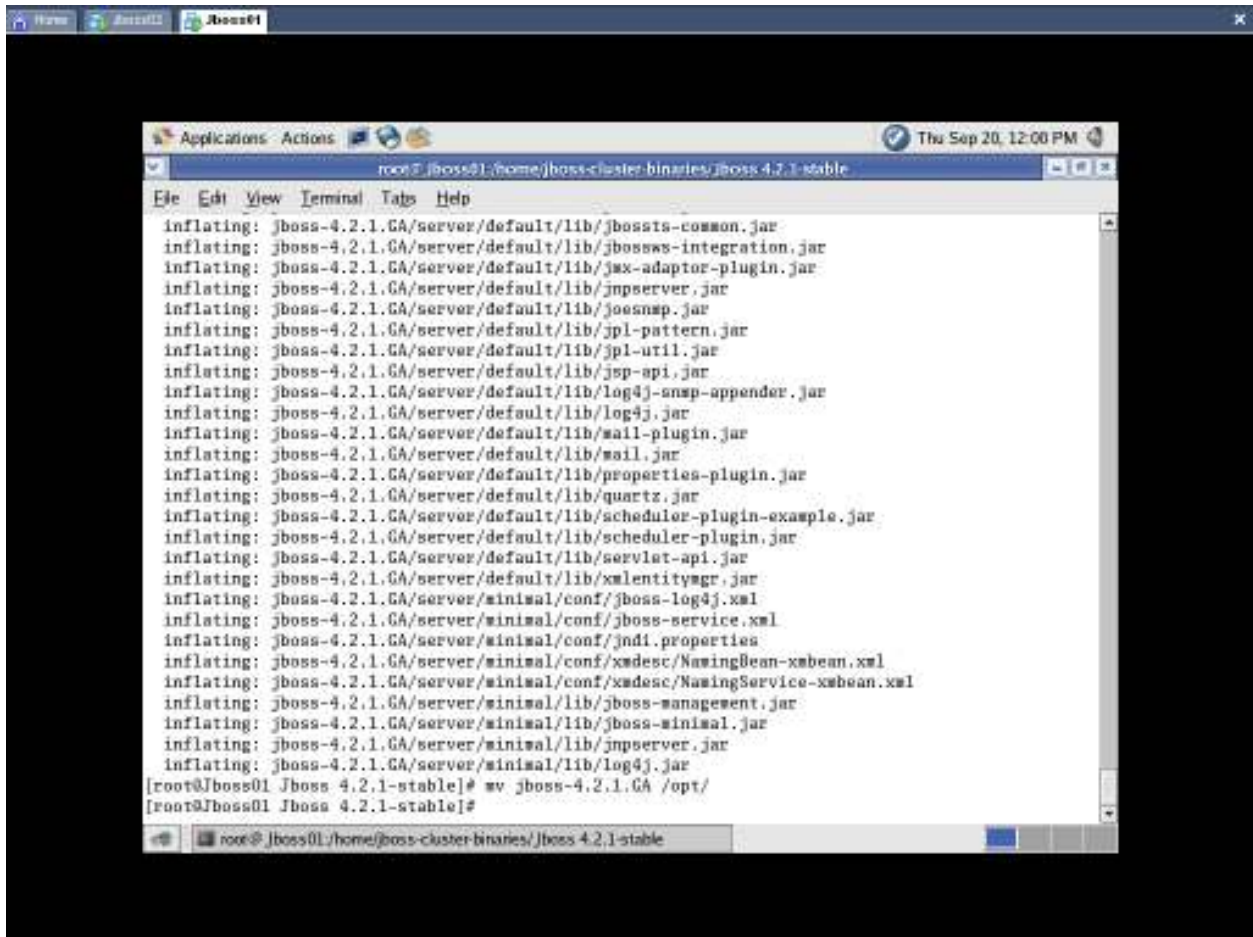
\$ping from Jboss01 to Jboss02.

Step No. 4

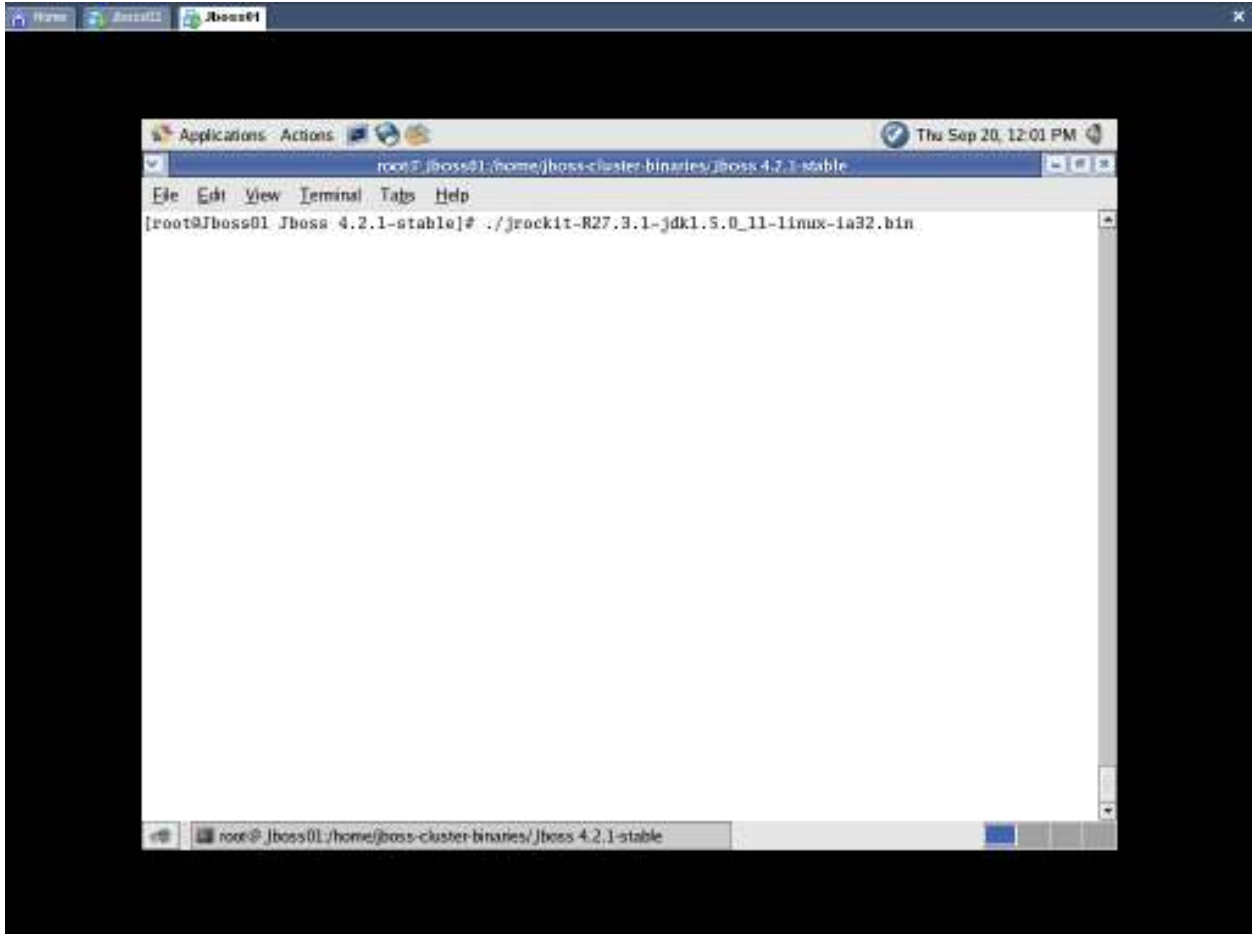


login in Jboss01 and unzip Jboss-4.2.1 zip file.

Then move unzipped folder to **/opt** directory.

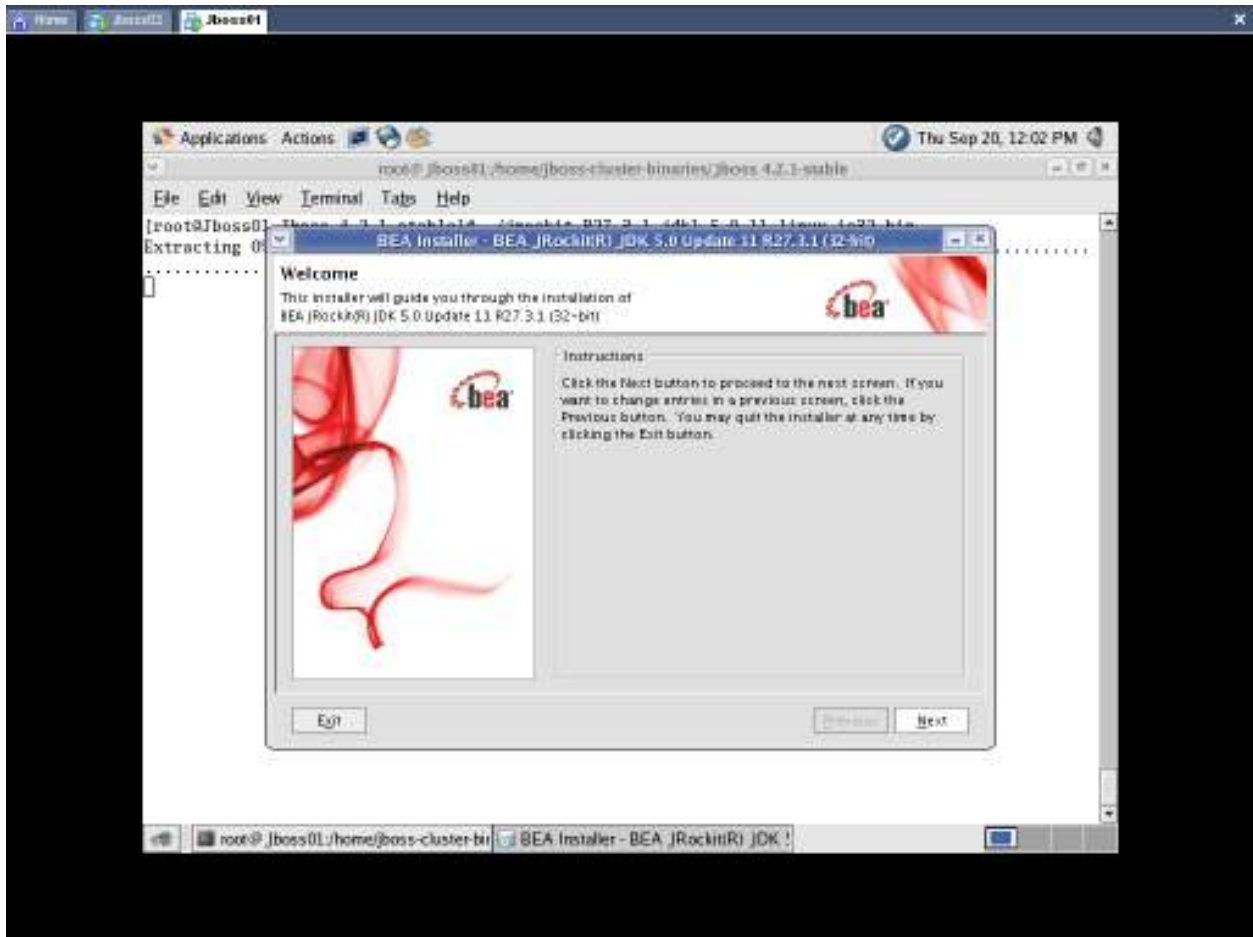


Now is the time to install **JRockit JDK & JRE**.

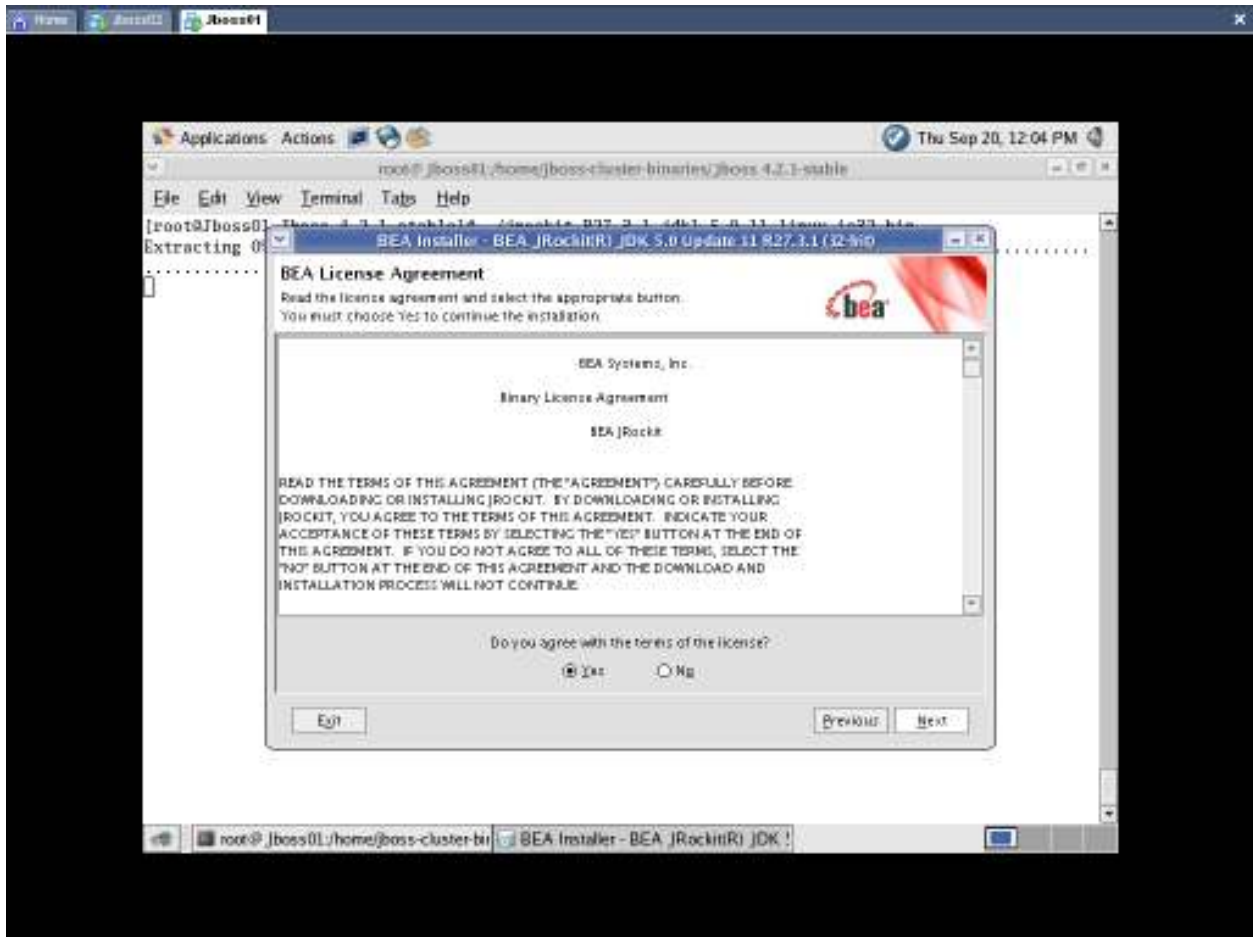


Run the **JRockit JDK** installer which is downloaded earlier from www.bea.com

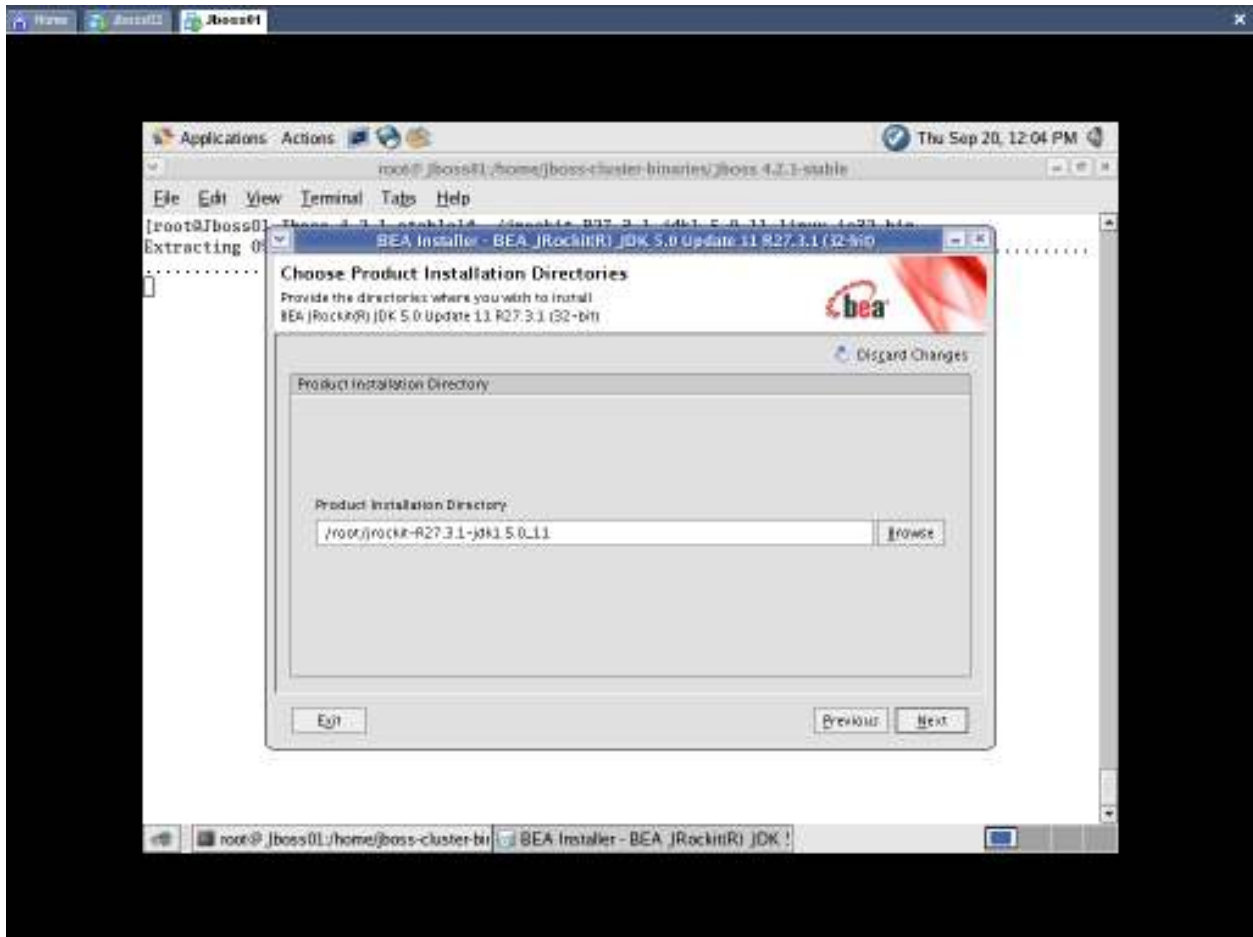




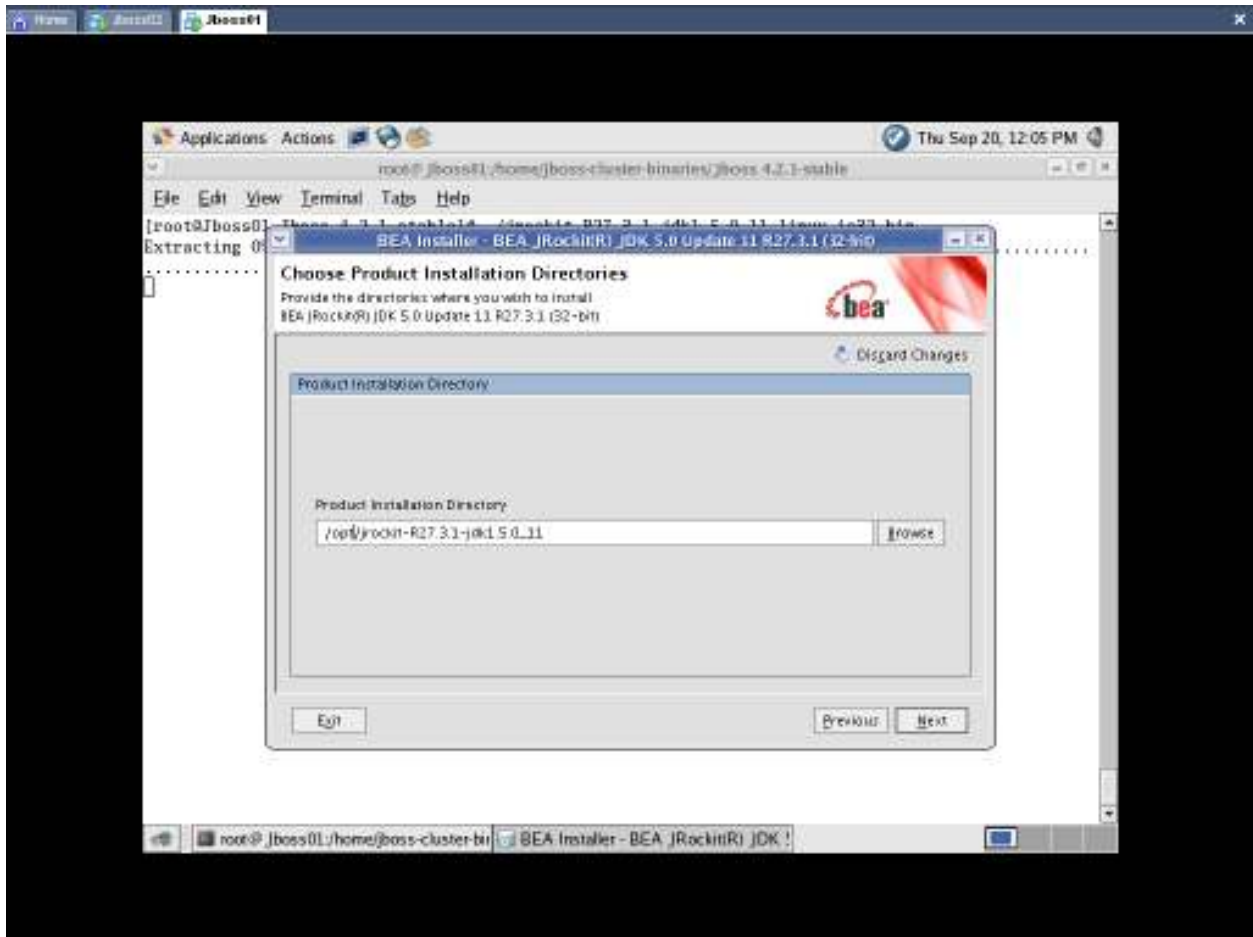
Now press **Next**



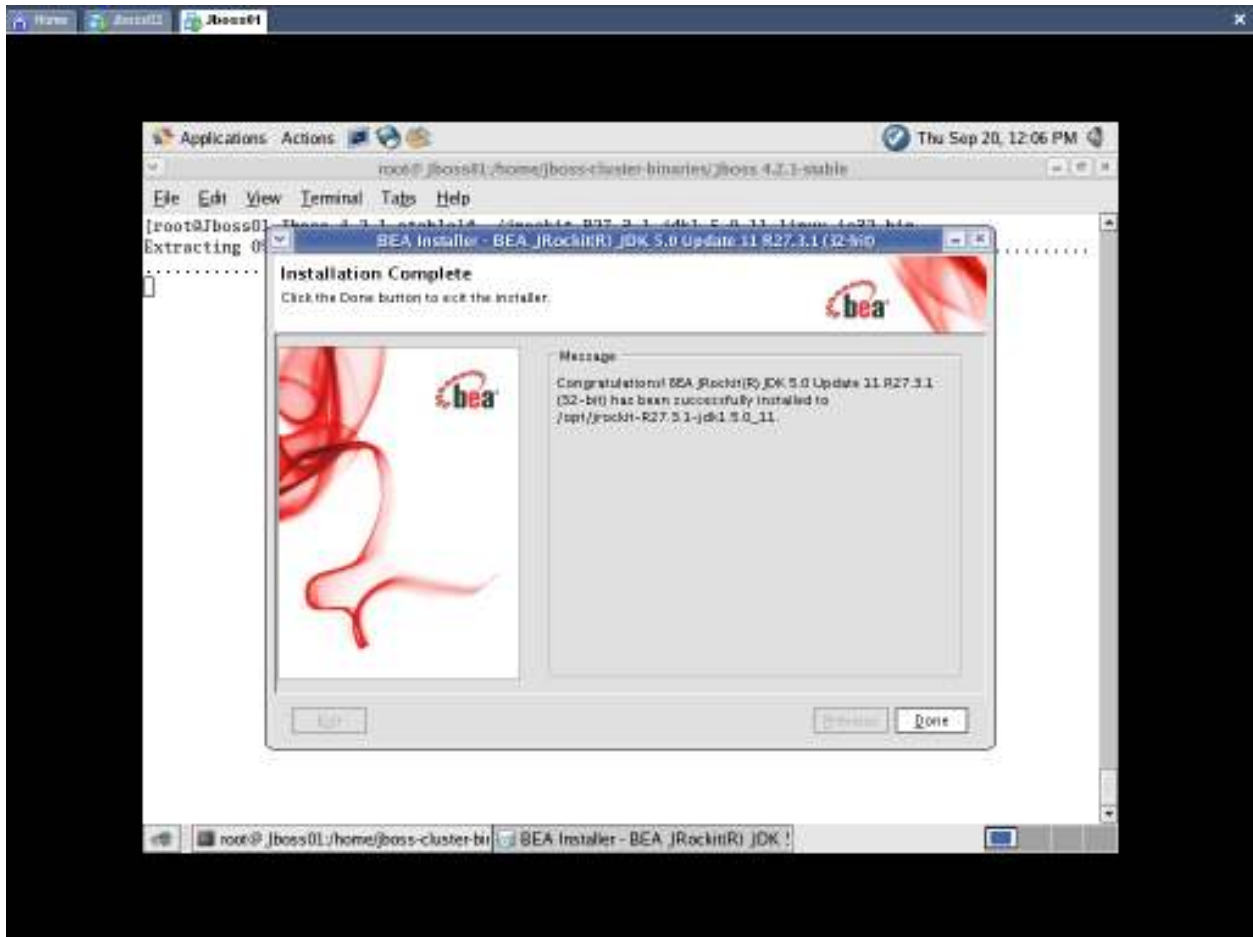
Accept the license and press **Next**.



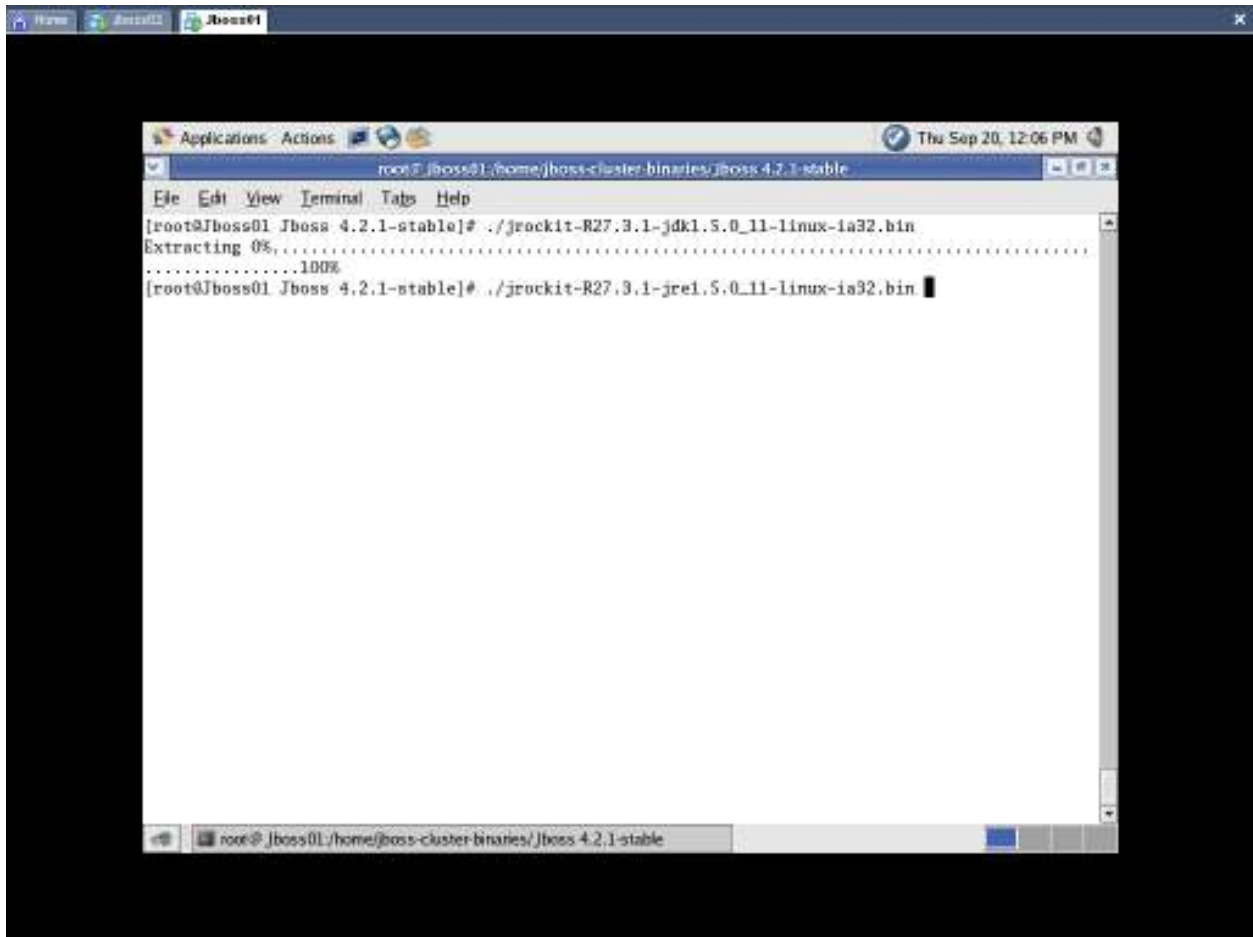
Click on **brows** and select **/opt** directory for installation.





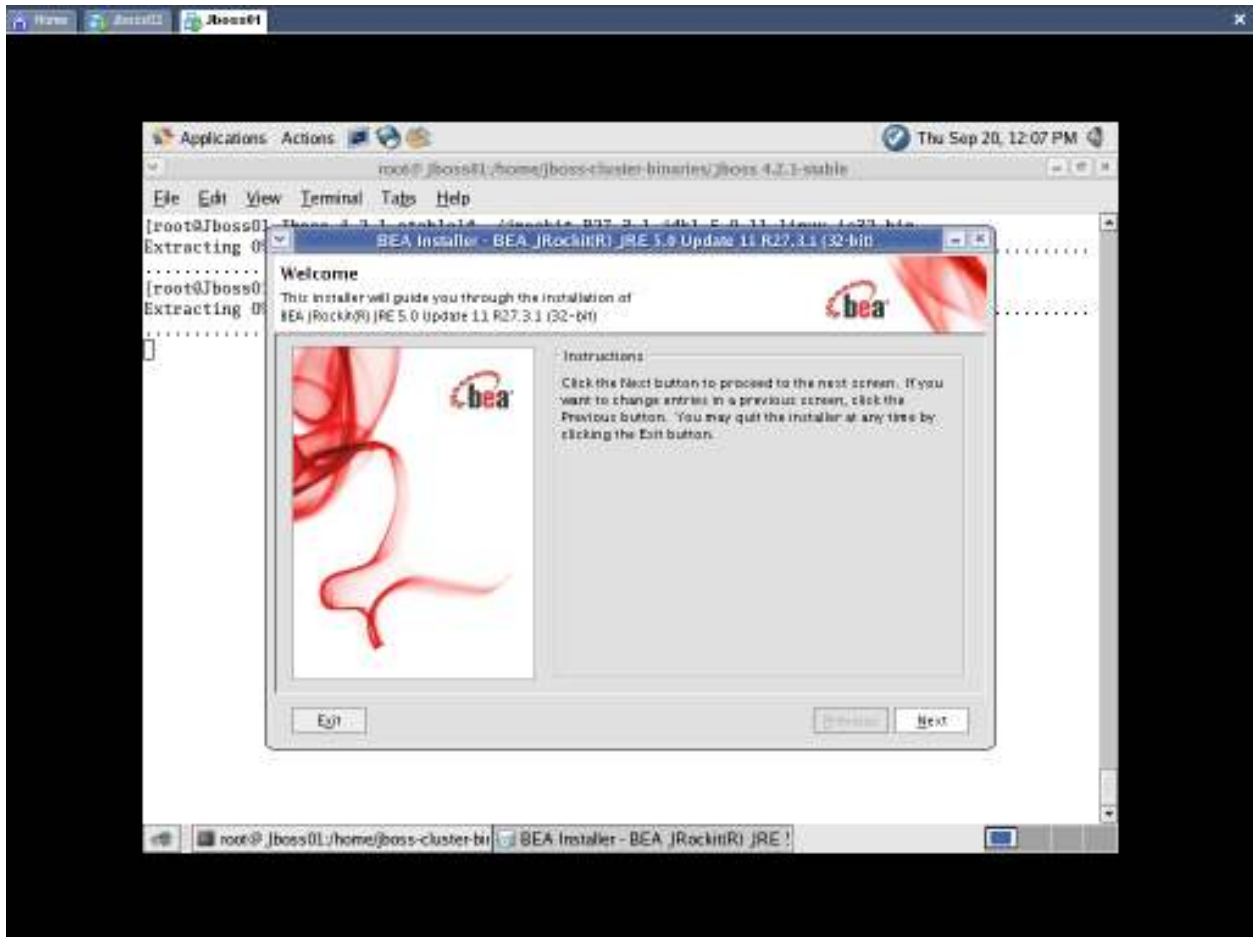


Now click on **Done**.

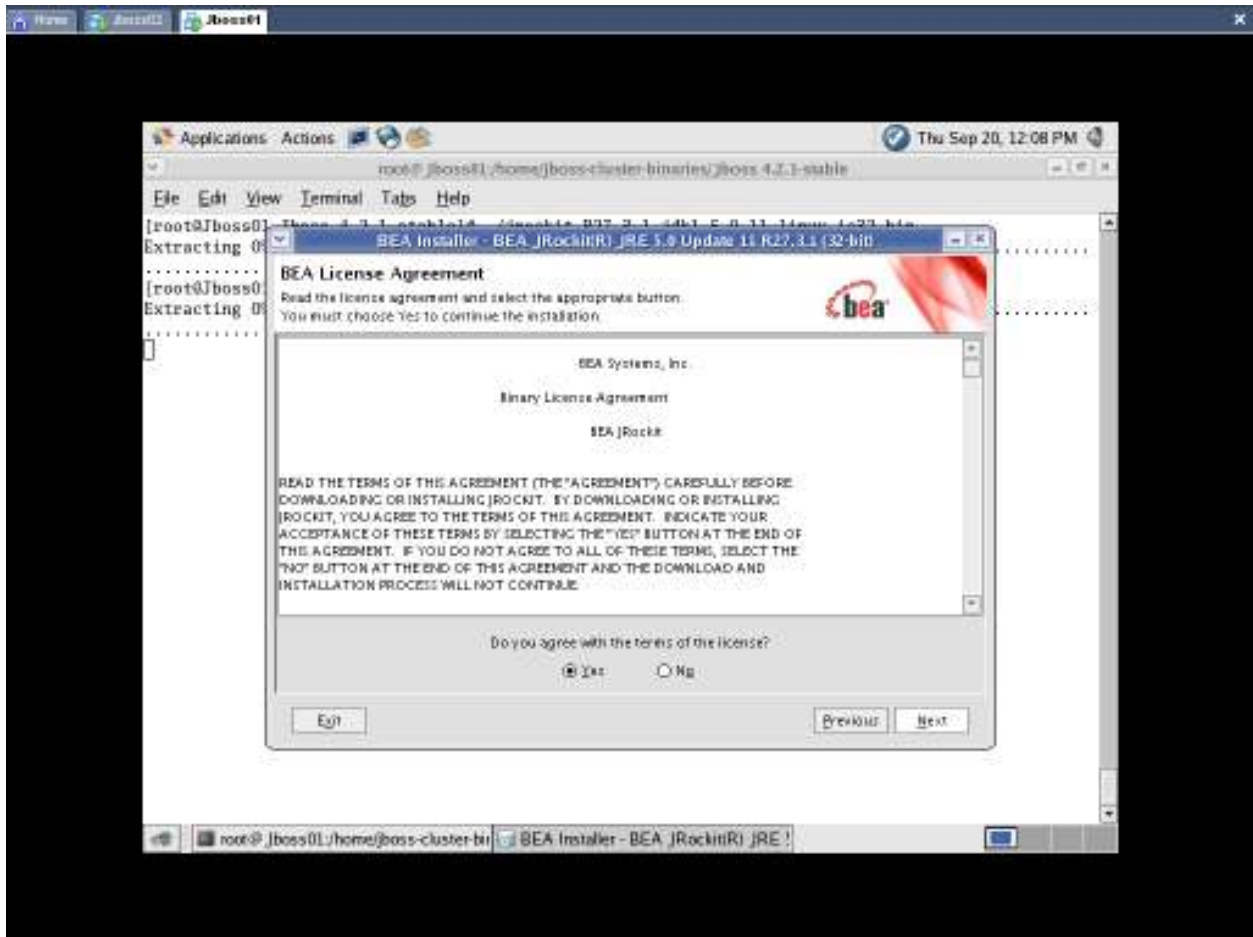


Run the JRockit JRE installer which is downloaded earlier from www.bea.com

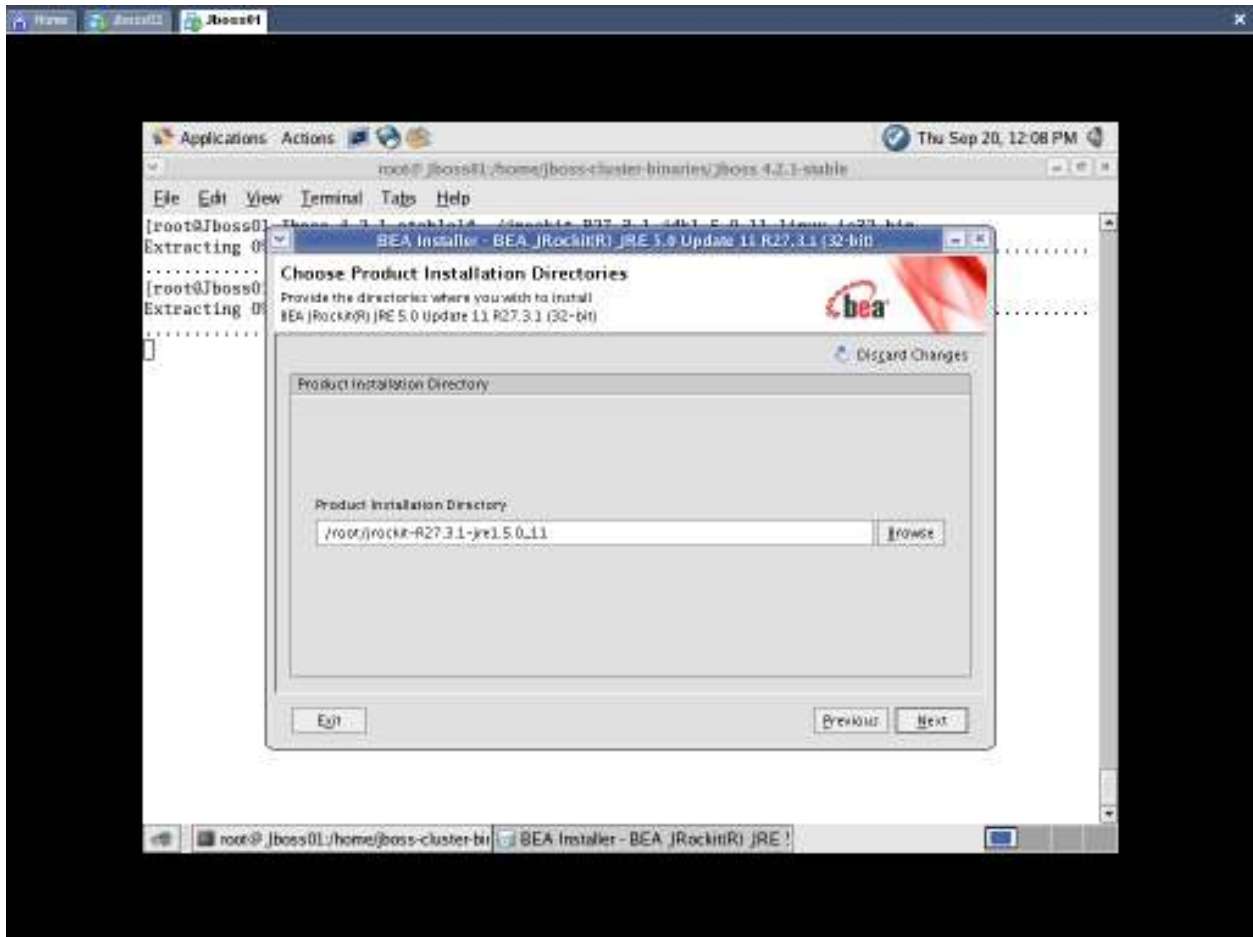




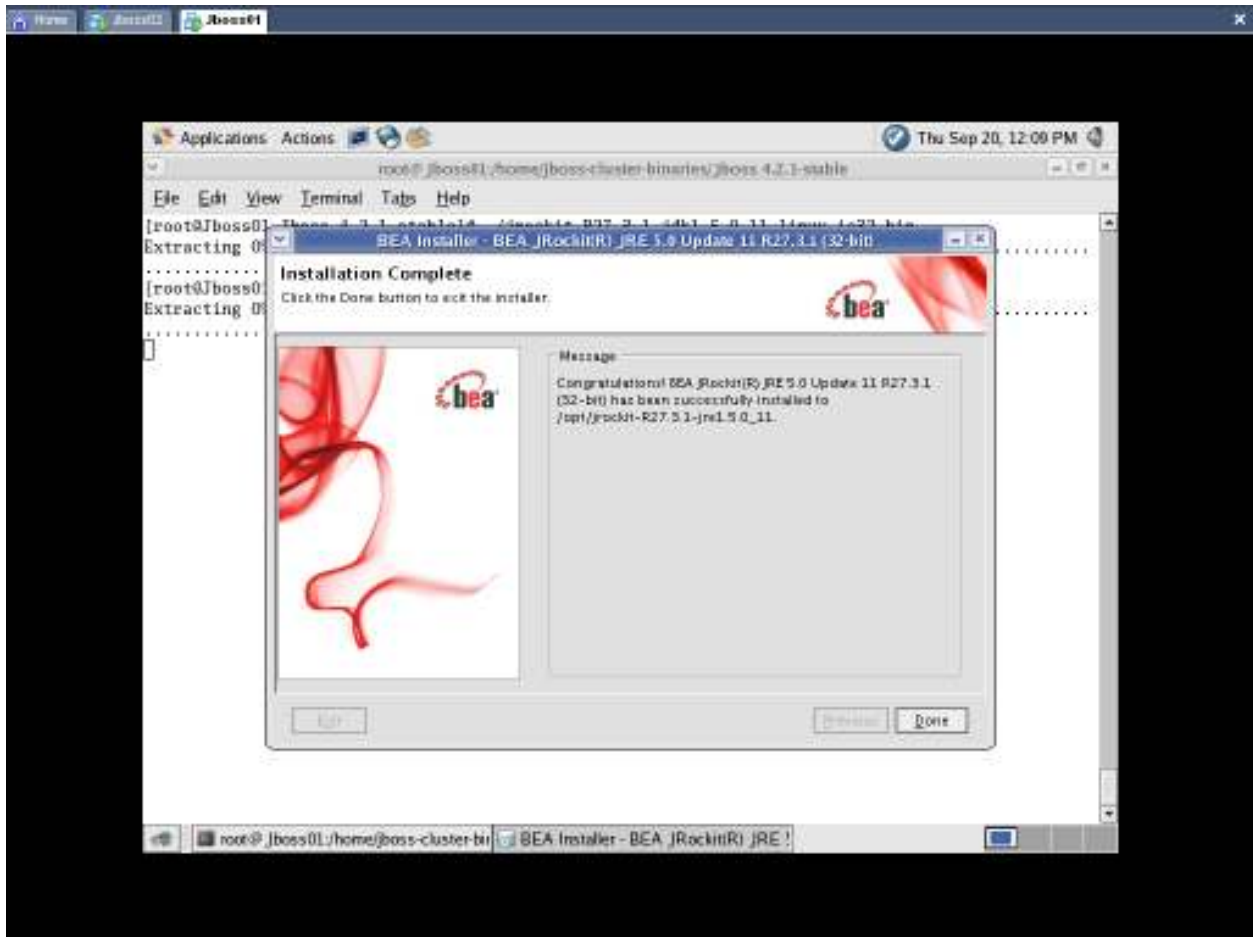
Click on **Next**.



Accept license and press **Next**.

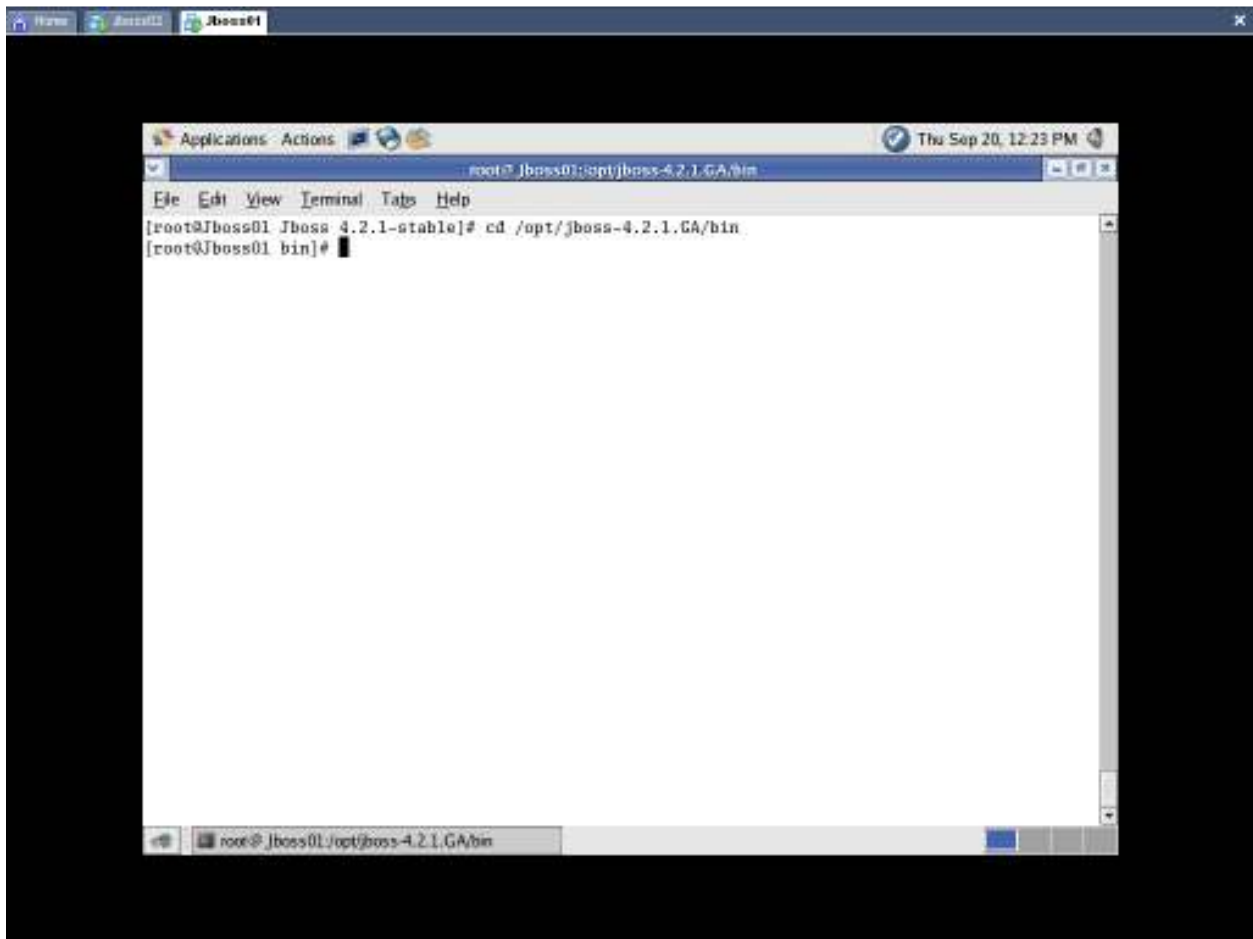


Click on **Browse** and change installation directory to **/opt**

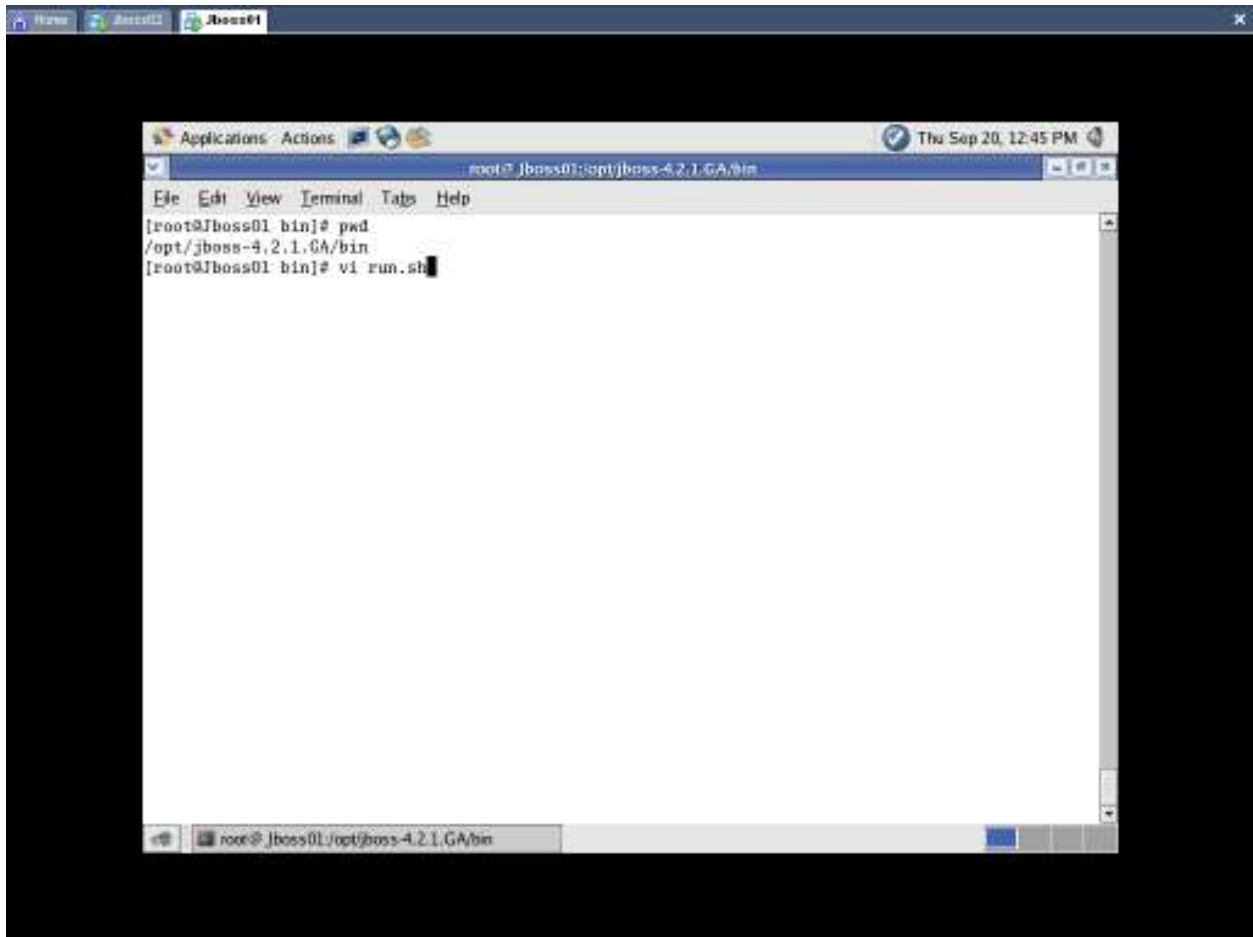


Click on **Done**.

Step No. 5:



Now is the time to customize JBoss according to our setup.
First **\$cd /opt/jboss-4.2.1.GA/bin**



```
Applications - Actions Thu Sep 20, 12:45 PM
root@jboss01:/opt/jboss-4.2.1.GA/bin
File Edit View Terminal Tabs Help
[root@jboss01 bin]# pwd
/opt/jboss-4.2.1.GA/bin
[root@jboss01 bin]# vi run.sh
root@jboss01:/opt/jboss-4.2.1.GA/bin
```

Edit **run.sh** script and change few entries i.e.

```

Applications - Actions Thu Sep 20, 12:51 PM
root@jboss01:/opt/jboss-4.2.1.GA/bin
File Edit View Terminal Tabs Help
warn "Could not query system maximum file descriptor limit: $MAX_FD_LIMIT"
fi
fi
JAVA_HOME="/opt/jrockit-R27.3.1-jdk1.5.0_11"
export JAVA_HOME
JAVA="$JAVA_HOME/bin/java"
JBOSS_HOME="/opt/jboss-4.2.1.GA/"
export JBOSS_HOME

# Setup the JVM
#if [ "x$JAVA" = "x" ]; then
#  if [ "x$JAVA_HOME" != "x" ]; then
#    JAVA="$JAVA_HOME/bin/java"
#  else
#    JAVA="java"
#  fi
#fi

# Setup the classpath
runjar="$JBOSS_HOME/bin/run.jar"
if [ ! -f "$runjar" ]; then
  die "Missing required file: $runjar"
fi
-- INSERT --
98,44 40%
root@jboss01:/opt/jboss-4.2.1.GA/bin

```

Comment **Setup JVM** section and add following entries as in figure, i.e.

```
JAVA_HOME="/opt/jrockit-R27.3.1-jdk1.5.0_11/"
```

```
export JAVA_HOME
```

```
JAVA="$JAVA_HOME/bin/java"
```

```
JBOSS_HOME="/opt/jboss-4.2.1.GA/"
```

```
export JBOSS_HOME
```

```

# Setup the JVM
# if [ "x$JAVA" = "x" ]; then
#   if [ "x$JAVA_HOME" != "x" ]; then
#     JAVA="$JAVA_HOME/bin/java"
#   else
#     JAVA="java"
#   fi
# fi

# Setup the classpath
runjar="$JBOSS_HOME/bin/run.jar"
if [ ! -f "$runjar" ]; then
  die "Missing required file: $runjar"
fi
JBOSS_BOOT_CLASSPATH="$runjar"

# Tomcat uses the JDT Compiler
# Only include tools.jar if someone wants to use the JDK instead,
# compatible distribution which JAVA_HOME points to
if [ "x$JAVAC_JAR" = "x" ]; then
  JAVAC_JAR_FILE="$JAVA_HOME/lib/tools.jar"
else
  JAVAC_JAR_FILE="$JAVAC_JAR"
fi
if [ ! -f "$JAVAC_JAR_FILE" ]; then
  # MacOSX does not have a separate tools.jar
  -- INSERT --

```

Check that

```
runjar="$JBOSS_HOME/bin/run.jar"
```

```
JAVAC_JAR_FILE="$JAVA_HOME/lib/tools.jar"
```

These two lines should be as in figure.

Now after making these changes save and quit from **run.sh**

It's the time to fix **shutdown.sh** script i.e.


```

root@jboss01:/opt/jboss-4.2.1.GA/bin
JAVA_HOME="/opt/jrockit-R27.3.1-jdk1.5.0_11"
export JAVA_HOME
JAVA="$JAVA_HOME/bin/java"
export JAVA
# Setup the JVM
#if [ "x$JAVA" = "x" ]; then
#   if [ "x$JAVA_HOME" != "x" ]; then
#       JAVA="$JAVA_HOME/bin/java"
#   else
#       JAVA="java"
#   fi
#fi
# Setup the classpath
JBOSS_BOOT_CLASSPATH="$JBOSS_HOME/bin/shutdown.jar:$JBOSS_HOME/client/jbossall-client.jar"
if [ "x$JBOSS_CLASSPATH" = "x" ]; then
    JBOSS_CLASSPATH="$JBOSS_BOOT_CLASSPATH"
else
    JBOSS_CLASSPATH="$JBOSS_CLASSPATH:$JBOSS_BOOT_CLASSPATH"
fi
-- INSERT --

```

Now comment out Setup the JVM section and add following lines as per figure.

```
JAVA_HOME="/opt/jrockit-R27.3.1-jdk1.5.0_11"
```

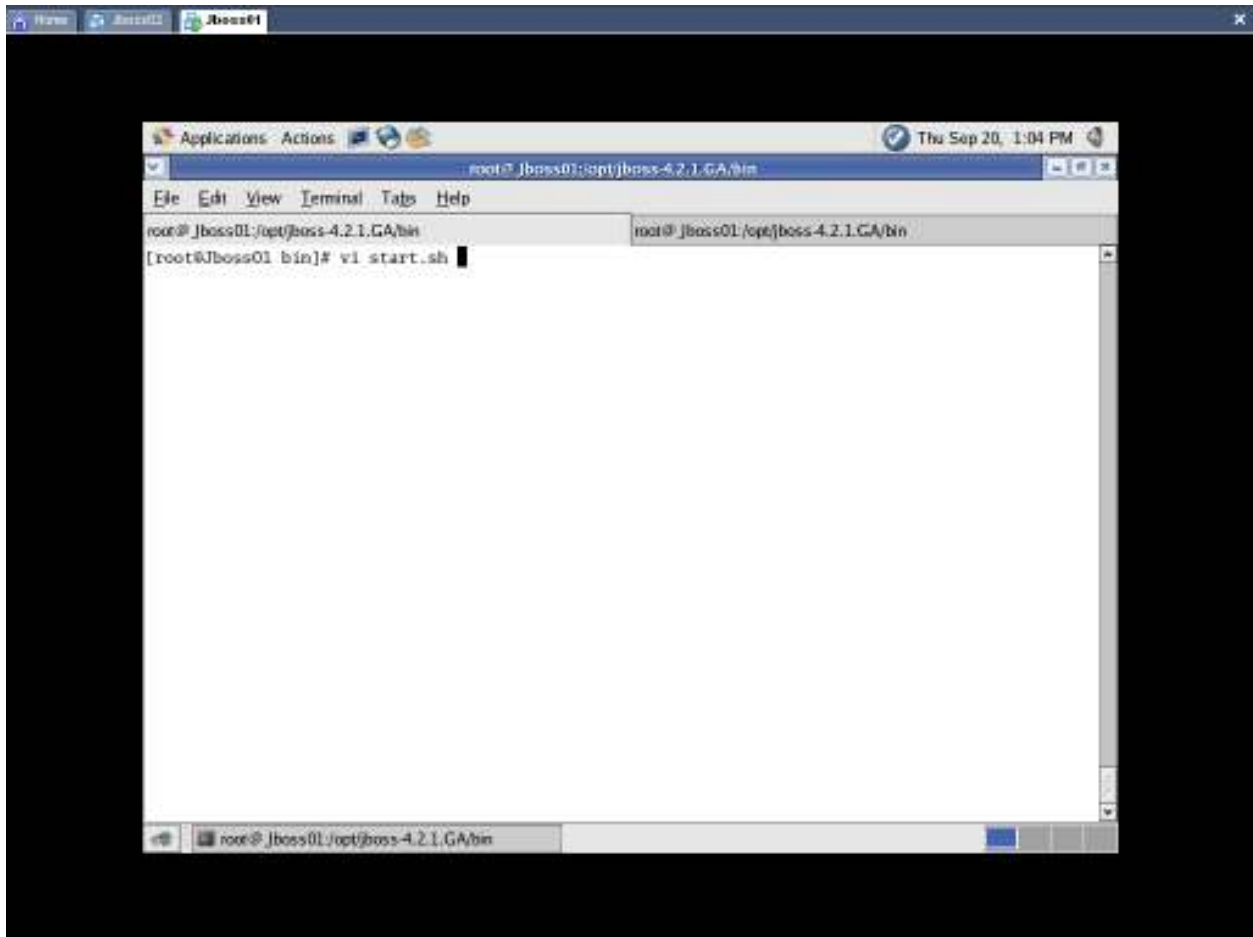
```
export JAVA_HOME
```

```
JAVA="$JAVA_HOME/bin/java"
```

```
export JAVA
```

After adding these lines, save and quit from **shutdown.sh** script.

Now is the time to write a small startup script, named **start.sh** ☺



The script should contain the following content,

```

Applications - Actions Fri Sep 21, 8:20 AM
root@jboss01:/opt/jboss-4.2.1.GA/bin
File Edit View Terminal Tabs Help
root@jboss01:/opt/jboss-4.2.1.GA/bin root@jboss01:/opt/jboss-4.2.1.GA/bin
#!/bin/bash

JBOSS_HOME=/opt/jboss-4.2.1.GA
export JBOSS_HOME

# here comes your boss

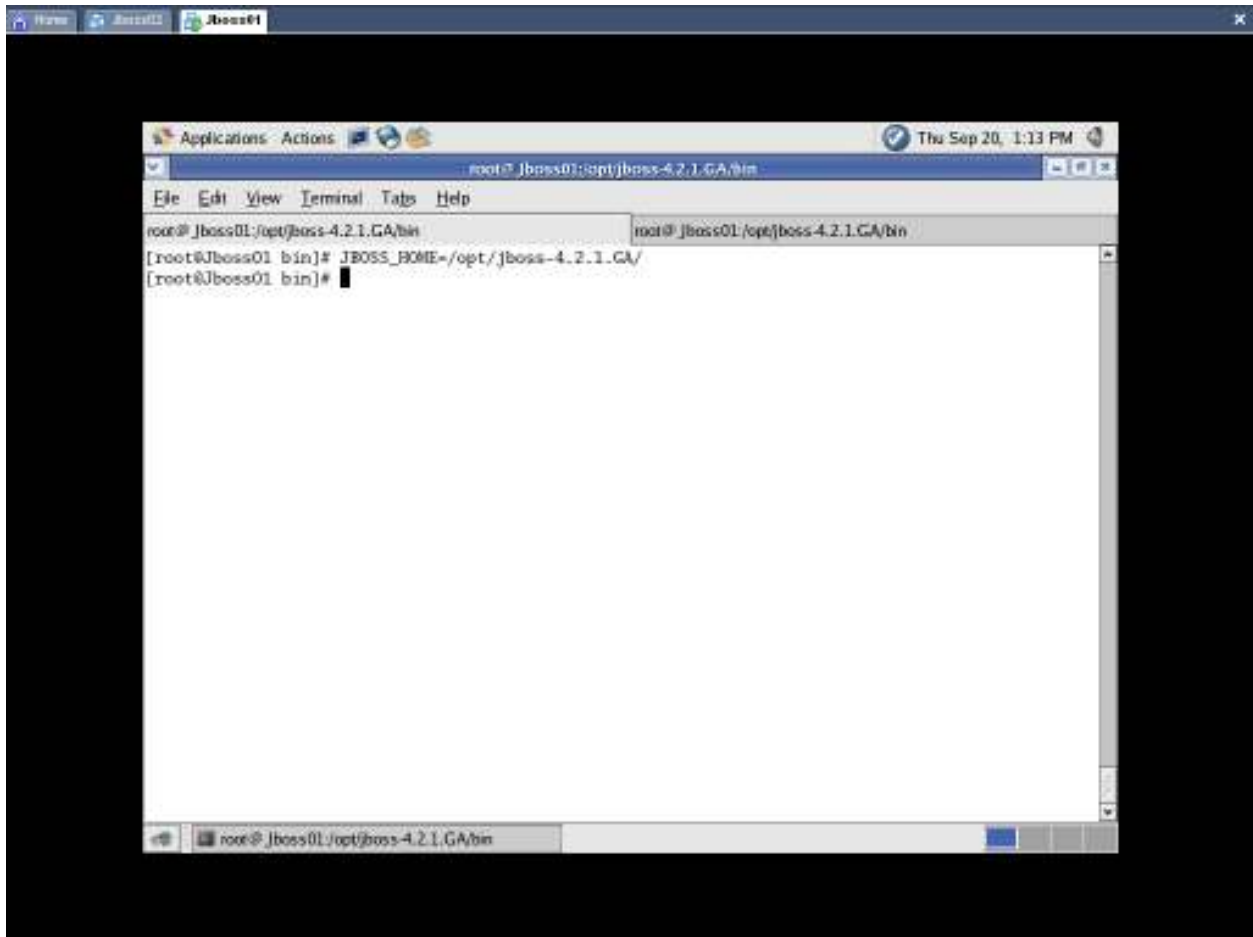
NODENAME="hostname"

# cluster properties
JAVA_OPTS="$JAVA_OPTS -Djboss.partition.name=MyCluster"
JAVA_OPTS="$JAVA_OPTS -Djboss.partition.udpGroup=224.0.0.100"
JAVA_OPTS="$JAVA_OPTS -Djboss.bind.address=$NODENAME"
JAVA_OPTS="$JAVA_OPTS -Djboss.fe.bind.address=$NODENAME"
JAVA_OPTS="$JAVA_OPTS -Djboss.be.bind.address=$NODENAME"
JAVA_OPTS="$JAVA_OPTS -Djboss.sync.bind.address=$NODENAME"
JAVA_OPTS="$JAVA_OPTS -Djava.awt.headless=true"
JAVA_OPTS="$JAVA_OPTS -Dresolve.dns=false"

touch $JBOSS_HOME/nohup.out
nohup sh run.sh -c all &
(sleep 5; chmod 755 $JBOSS_HOME/nohup.out) &
-
18,1 All
root@jboss01:/opt/jboss-4.2.1.GA/bin

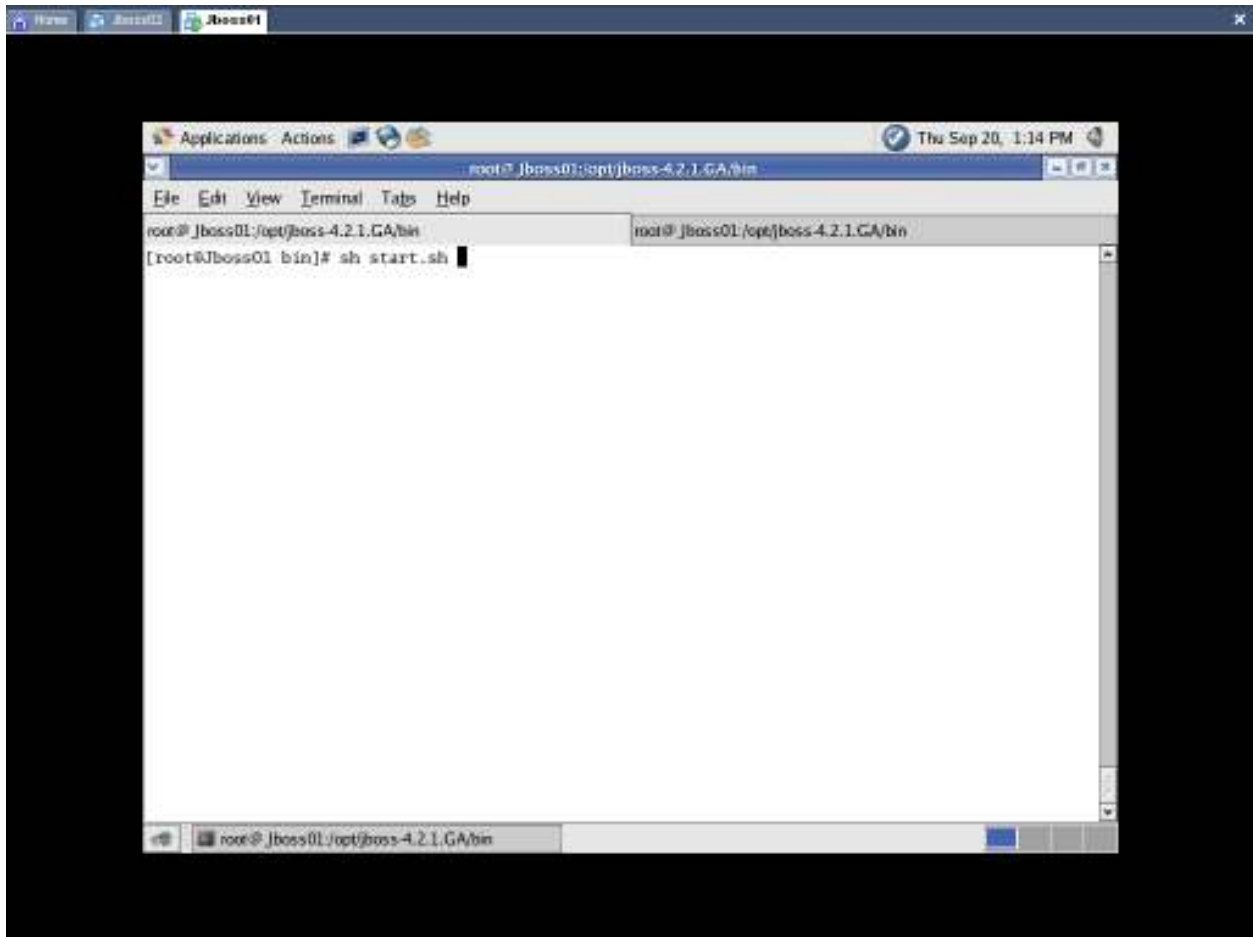
```

After adding these lines save and quit from **start.sh** script.

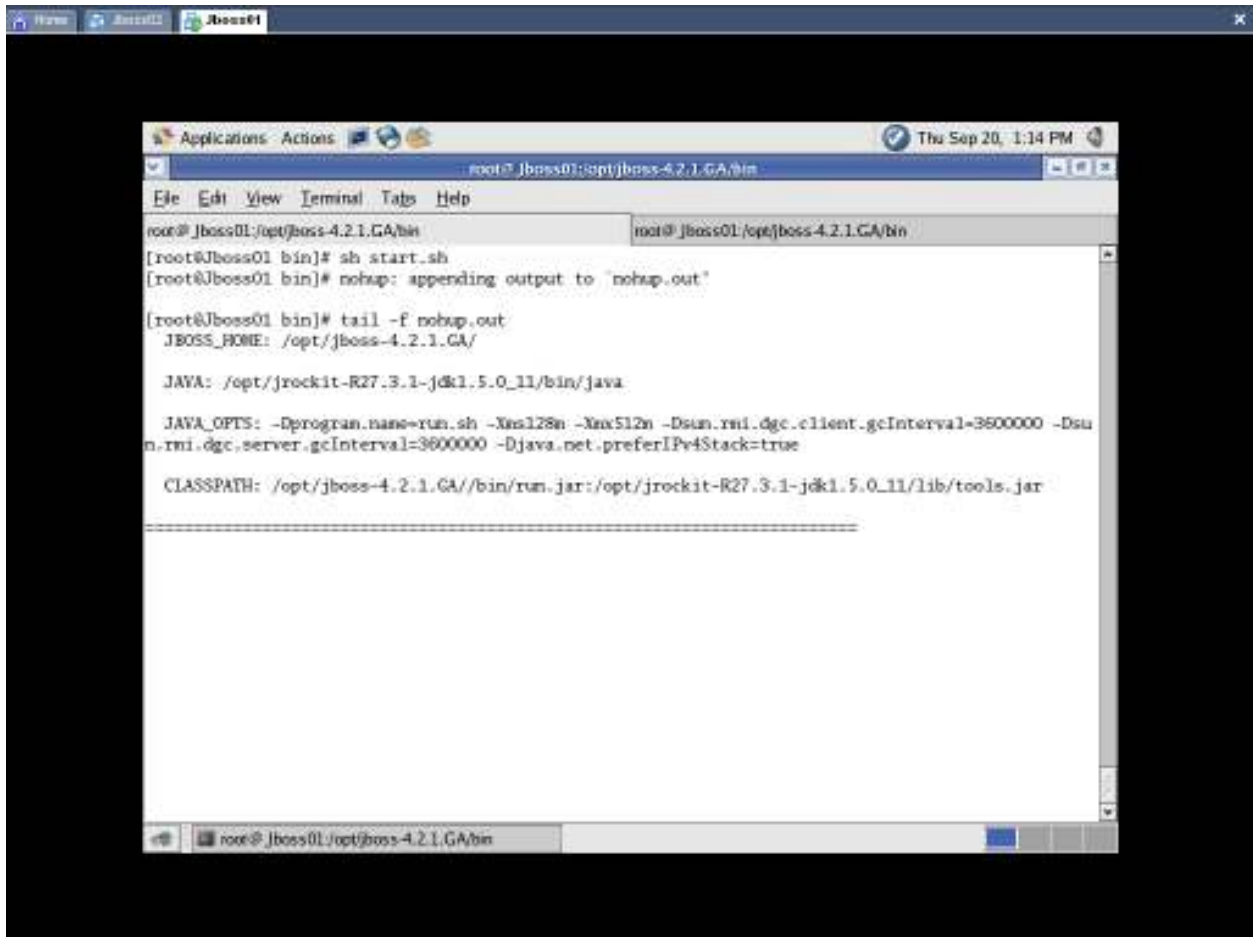
A screenshot of a terminal window on a Linux system. The window title is "Applications - Actions" and the date/time is "Thu Sep 20, 1:13 PM". The terminal shows the user is in the directory "/opt/jboss-4.2.1.GA/bin" and has entered the command "JBOSS_HOME=/opt/jboss-4.2.1.GA/" to set the environment variable. The prompt is "[root@Jboss01 bin]#".

```
root@_jboss01:/opt/jboss-4.2.1.GA/bin
root@_jboss01:/opt/jboss-4.2.1.GA/bin
[root@Jboss01 bin]# JBOSS_HOME=/opt/jboss-4.2.1.GA/
[root@Jboss01 bin]#
```

Before starting JBoss service, set the **JBOSS_HOME** variable.



Use **start.sh** script to start JBoss Server, and **\$tail -f nohup.out** command to see the Jboss server output on STDOUT,



```
root@jboss01:/opt/jboss-4.2.1.GA/bin
root@jboss01:/opt/jboss-4.2.1.GA/bin
[root@jboss01 bin]# sh start.sh
[root@jboss01 bin]# nohup: appending output to "nohup.out"
[root@jboss01 bin]# tail -f nohup.out
JBOSS_HOME: /opt/jboss-4.2.1.GA/
JAVA: /opt/jrockit-R27.3.1-jdk1.5.0_11/bin/java
JAVA_OPTS: -Dprogram.name=run.sh -Xmx128m -Xms512m -Dsun.rmi.dgc.client.gcInterval=3600000 -Dsun.rmi.dgc.server.gcInterval=3600000 -Djava.net.preferIPv4Stack=true
CLASSPATH: /opt/jboss-4.2.1.GA/bin/run.jar:/opt/jrockit-R27.3.1-jdk1.5.0_11/lib/tools.jar
```

```

root@jboss01:/opt/jboss-4.2.1.GA/bin
JAVA: /opt/jrockit-R27.3.1-jdk1.5.0_11/bin/java
JAVA_OPTS: -Dprogram.name=run.sh -Xms128m -Xmx512m -Dsun.rmi.dgc.client.gcInterval=3600000 -Dsun.rmi.dgc.server.gcInterval=3600000 -Djava.net.preferIPv4Stack=true
CLASSPATH: /opt/jboss-4.2.1.GA/bin/run.jar:/opt/jrockit-R27.3.1-jdk1.5.0_11/lib/tools.jar

=====
13:14:37,852 INFO [Server] Starting JBoss (MX MicroKernel)...
13:14:37,911 INFO [Server] Release ID: JBoss [Trinity] 4.2.1.GA (build: SVNTag=JBoss_4_2_1_GA date=200707131605)
13:14:37,917 INFO [Server] Home Dir: /opt/jboss-4.2.1.GA
13:14:37,918 INFO [Server] Home URL: file:/opt/jboss-4.2.1.GA/
13:14:37,922 INFO [Server] Patch URL: null
13:14:37,923 INFO [Server] Server Name: all
13:14:37,923 INFO [Server] Server Home Dir: /opt/jboss-4.2.1.GA/server/all
13:14:37,925 INFO [Server] Server Home URL: file:/opt/jboss-4.2.1.GA/server/all/
13:14:37,925 INFO [Server] Server Log Dir: /opt/jboss-4.2.1.GA/server/all/log
13:14:37,927 INFO [Server] Server Temp Dir: /opt/jboss-4.2.1.GA/server/all/tmp
13:14:37,931 INFO [Server] Root Deployment Filename: jboss-service.xml
13:14:40,505 INFO [ServerInfo] Java version: 1.5.0_11, BEA Systems, Inc.
13:14:40,505 INFO [ServerInfo] Java VM: BEA JRockit(R) R27.3.1-1-85830-1.5.0_11-20070716-1248-11
osx-ia32, BEA Systems, Inc.
13:14:40,505 INFO [ServerInfo] OS-System: Linux 2.6.9-42.El5pp.1386
13:14:42,174 INFO [Server] Core system initialized

```

```

root@jboss01:/opt/jboss-4.2.1.GA/bin
root@jboss01:/opt/jboss-4.2.1.GA/bin
13:14:37,852 INFO [Server] Starting JBoss (MX MicroKernel)...
13:14:37,911 INFO [Server] Release ID: JBoss (Trinity) 4.2.1.GA (build: SVNTag=JBoss_4.2.1.GA date=200707131605)
13:14:37,917 INFO [Server] Home Dir: /opt/jboss-4.2.1.GA
13:14:37,918 INFO [Server] Home URL: file:/opt/jboss-4.2.1.GA/
13:14:37,922 INFO [Server] Patch URL: null
13:14:37,923 INFO [Server] Server Name: all
13:14:37,923 INFO [Server] Server Home Dir: /opt/jboss-4.2.1.GA/server/all
13:14:37,925 INFO [Server] Server Home URL: file:/opt/jboss-4.2.1.GA/server/all/
13:14:37,925 INFO [Server] Server Log Dir: /opt/jboss-4.2.1.GA/server/all/log
13:14:37,927 INFO [Server] Server Temp Dir: /opt/jboss-4.2.1.GA/server/all/tmp
13:14:37,931 INFO [Server] Root Deployment Filename: jboss-service.xml
13:14:40,505 INFO [ServerInfo] Java version: 1.5.0_11, BEA Systems, Inc.
13:14:40,505 INFO [ServerInfo] Java VM: BEA JRockit(R) R27.3.1-1-85830-1.5.0.11-20070716-1248-1i max-ia32, BEA Systems, Inc.
13:14:40,505 INFO [ServerInfo] OS-System: Linux 2.6.9-42.ELsmp,i386
13:14:42,174 INFO [Server] Core system initialized
13:14:50,658 INFO [WebService] Using RMI server codebase: http://127.0.0.1:8083/
13:14:50,696 INFO [Log4jService$URLMatchFilterTask] Configuring from URL: resource:jboss-log4j.xml
13:14:55,299 INFO [TransactionManagerService] JBossTS Transaction Service (JTA version) - JBoss Inc.
13:14:55,299 INFO [TransactionManagerService] Setting up property manager MBean and JMX layer
13:14:55,924 INFO [TransactionManagerService] Starting recovery manager
13:14:56,420 INFO [TransactionManagerService] Recovery manager started
13:14:56,420 INFO [TransactionManagerService] Binding TransactionManager JNDI Reference

```



```

root@jboss01:/opt/jboss-4.2.1.GA/bin
root@jboss01:/opt/jboss-4.2.1.GA/bin
13:15:15,268 INFO [ServiceEndpointManager] jbosses-1.2.1.GA (Build-200704151756)
13:15:17,728 INFO [SNMPAgentService] SNMP agent going active
13:15:19,551 INFO [DefaultPartition] Initializing
13:15:19,710 INFO [STDOUT]
-----
GMS: address is 192.168.2.1:32771
-----
13:15:21,935 INFO [DefaultPartition] Number of cluster members: 1
13:15:21,936 INFO [DefaultPartition] Other members: 0
13:15:21,939 INFO [DefaultPartition] Fetching state (will wait for 30000 milliseconds):
13:15:21,941 INFO [DefaultPartition] State could not be retrieved (we are the first member in group)
13:15:22,270 INFO [HANamingService] Started ha-jndi bootstrap jnpPort=1100, backlog=50, bindAddress=/127.0.0.1
13:15:22,291 INFO [DetachedHANamingService$AutomaticDiscovery] Listening on /127.0.0.1:1102, group=230.0.0.4, HA-JNDI address=127.0.0.1:1100
13:15:24,417 INFO [TreeCache] No transaction manager lookup class has been defined. Transactions cannot be used
13:15:24,736 INFO [InterceptorChainFactory] interceptor chain is:
class org.jboss.cache.interceptors.CallInterceptor
class org.jboss.cache.interceptors.EvictionInterceptor
class org.jboss.cache.interceptors.PessimisticLockInterceptor
class org.jboss.cache.interceptors.PassivationInterceptor
class org.jboss.cache.interceptors.ActivationInterceptor
class org.jboss.cache.interceptors.UnlockInterceptor
class org.jboss.cache.interceptors.ReplicationInterceptor
class org.jboss.cache.interceptors.TxInterceptor
class org.jboss.cache.interceptors.CacheAgentInterceptor

```

You can see the above screen for "Number of Cluster members: 1" means it is the first member in the cluster, we will see same screen in startup of Jboss02 machine.

```

root@jboss01:/opt/jboss-4.2.1.GA/bin
13:15:55.719 INFO [RAMJobStore] RAMJobStore initialized.
13:15:55.721 INFO [StdSchedulerFactory] Quartz scheduler 'DefaultQuartzScheduler' initialized fr
on default resource file in Quartz package: 'quartz.properties'
13:15:55.722 INFO [StdSchedulerFactory] Quartz scheduler version: 1.5.2
13:15:55.735 INFO [QuartzScheduler] Scheduler DefaultQuartzScheduler_5_NON_CLUSTERED started.
13:15:59.647 INFO [ConnectionFactoryBindingService] Bound ConnectionManager 'jboss.jca:service=D
ataSourceBinding,name=DefaultDS' to JNDI name 'java:DefaultDS'
13:16:03.197 INFO [A] Bound to JNDI name: queue/A
13:16:03.205 INFO [B] Bound to JNDI name: queue/B
13:16:03.206 INFO [C] Bound to JNDI name: queue/C
13:16:03.208 INFO [D] Bound to JNDI name: queue/D
13:16:03.212 INFO [ex] Bound to JNDI name: queue/ex
13:16:03.266 INFO [testTopic] Bound to JNDI name: topic/testTopic
13:16:03.269 INFO [securedTopic] Bound to JNDI name: topic/securedTopic
13:16:03.271 INFO [testDurableTopic] Bound to JNDI name: topic/testDurableTopic
13:16:03.277 INFO [testQueue] Bound to JNDI name: queue/testQueue
13:16:03.433 INFO [UJLServerLLService] JBossMQ UJL service available at : /127.0.0.1:8093
13:16:03.501 INFO [DLQ] Bound to JNDI name: queue/DLQ
13:16:03.871 INFO [ConnectionFactoryBindingService] Bound ConnectionManager 'jboss.jca:service=C
onnectionFactoryBinding,name=JmsXA' to JNDI name 'java:JmsXA'
13:16:05.118 INFO [TomcatDeployer] deploy, ctxPath=/jmx-console, warUrl=.../deploy/jmx-console.w
ar/
13:16:10.063 INFO [Http11Protocol] Starting Coyote HTTP/1.1 on http-127.0.0.1-8080
13:16:10.516 INFO [AjpProtocol] Starting Coyote AJP/1.3 on ajp-127.0.0.1-8009
13:16:10.537 INFO [Server] JBoss (MX MicroKernel) [4.2.1.GA (build: SVNTag=JBoss_4_2_1_GA date=2
00707131605)] Started in 1m:32s:495ms

```

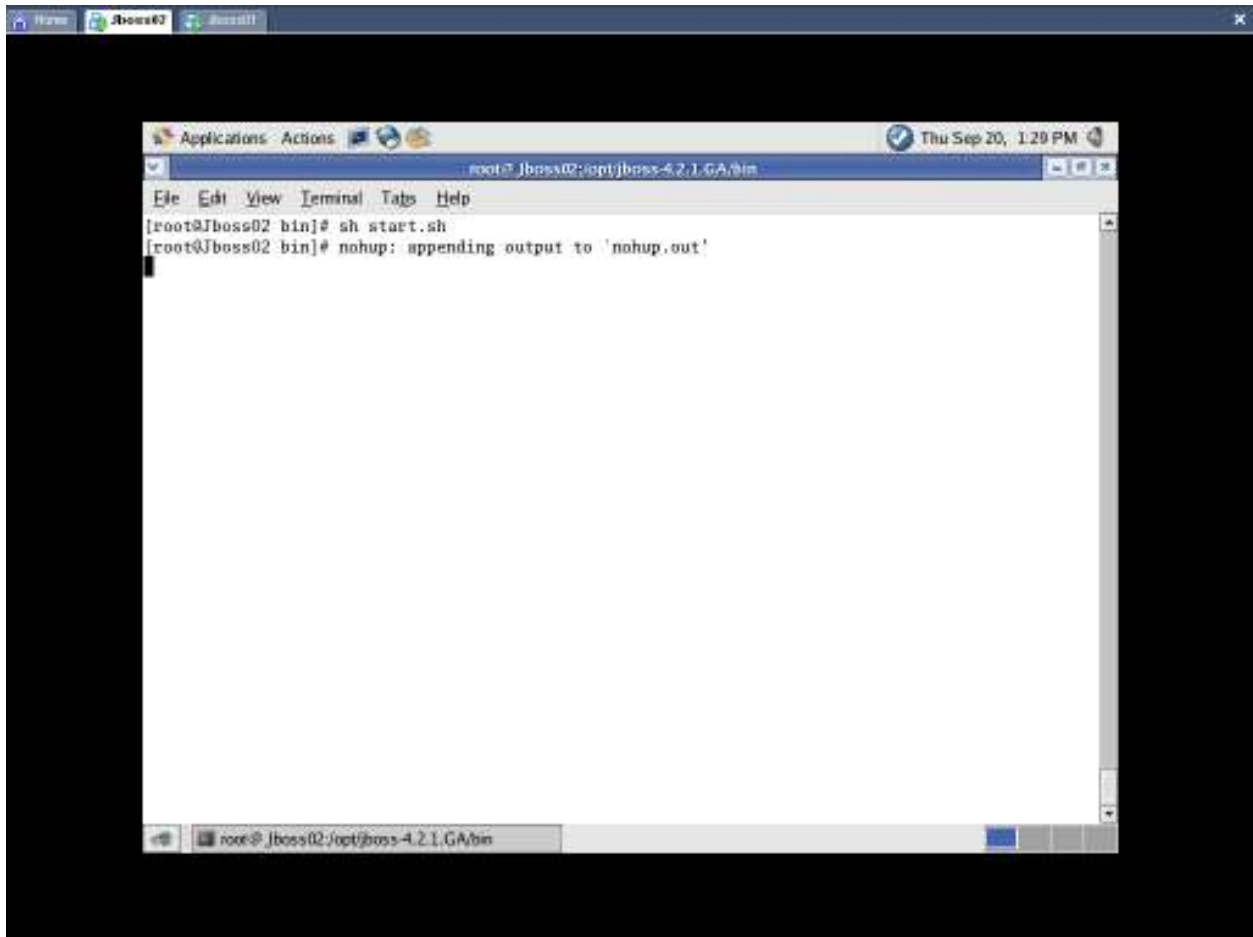
Now Jboss01 is started and ready to use ☺

After starting the Jboss01 it's the time to setup Jboss02, for Jboss02 we need to do same configuration steps as we did in Jboss01 for following i.e.

1. Unzip Jboss-4.2.1
2. Install JRockit JDK
3. Install JRockit JRE
4. Edit run.sh
5. Edit start.sh
6. Edit shutdown.sh

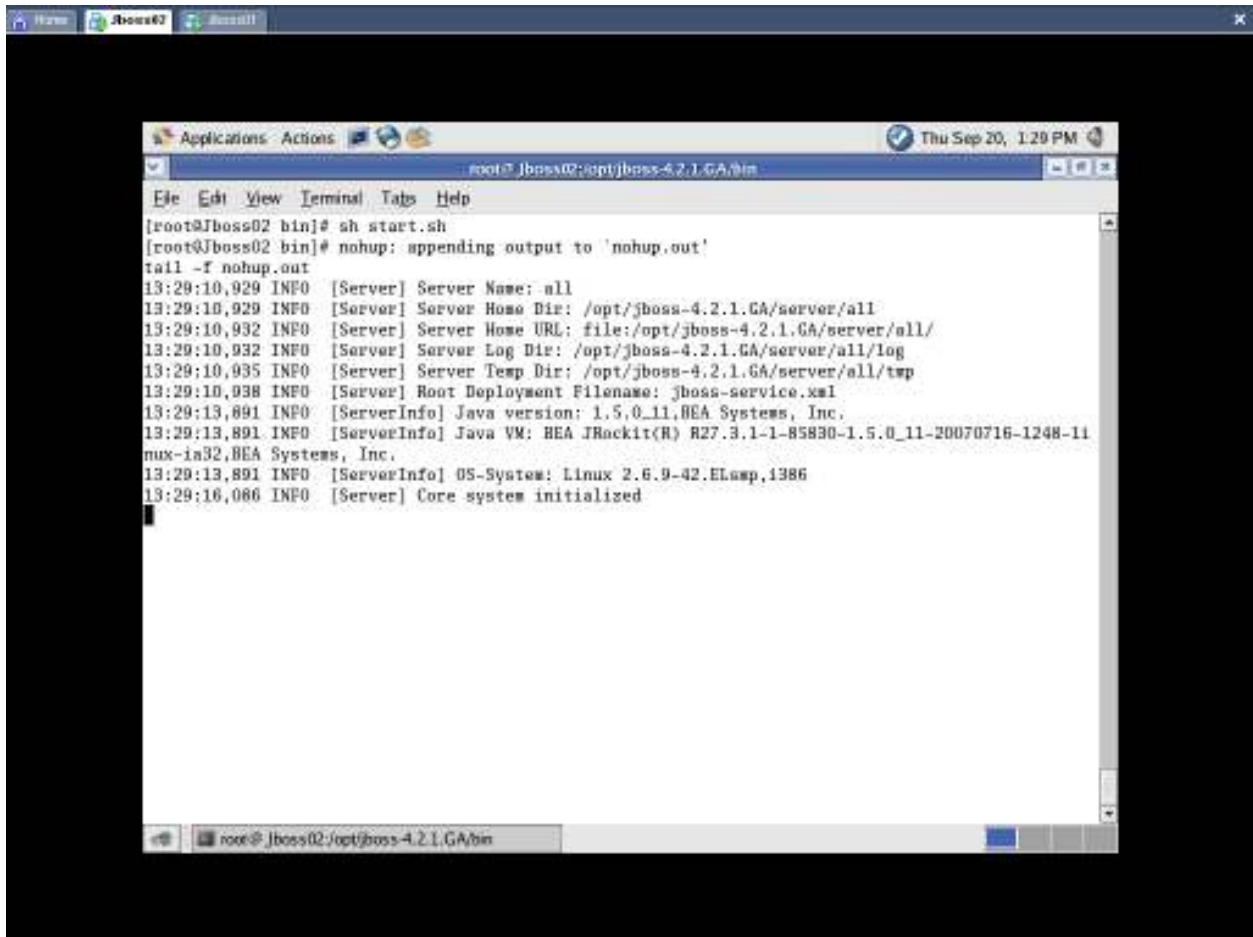
All the directory structure will remain same in Jboss02

After performing above 6 step on Jboss02, you are ready to start the second node in the cluster, i.e.



The image shows a terminal window titled "Applications - Actions" with a date and time of "Thu Sep 20, 1:29 PM". The terminal prompt is "root@jboss02:/opt/jboss-4.2.1.GA/bin". The user enters the command "sh start.sh" and then "nohup: appending output to 'nohup.out'".

```
root@jboss02:/opt/jboss-4.2.1.GA/bin
[root@jboss02 bin]# sh start.sh
[root@jboss02 bin]# nohup: appending output to 'nohup.out'
```



```
Applications Actions Thu Sep 20, 1:29 PM
root@jboss02:/opt/jboss-4.2.1.GA/bin
File Edit View Terminal Tabs Help
[root@jboss02 bin]# sh start.sh
[root@jboss02 bin]# nohup: appending output to 'nohup.out'
tail -f nohup.out
13:29:10,929 INFO [Server] Server Name: all
13:29:10,929 INFO [Server] Server Home Dir: /opt/jboss-4.2.1.GA/server/all
13:29:10,932 INFO [Server] Server Home URL: file:/opt/jboss-4.2.1.GA/server/all/
13:29:10,932 INFO [Server] Server Log Dir: /opt/jboss-4.2.1.GA/server/all/log
13:29:10,935 INFO [Server] Server Temp Dir: /opt/jboss-4.2.1.GA/server/all/tmp
13:29:10,938 INFO [Server] Root Deployment Filename: jboss-service.xml
13:29:13,891 INFO [ServerInfo] Java version: 1.5.0_11, BEA Systems, Inc.
13:29:13,891 INFO [ServerInfo] Java VM: BEA JRockit(TM) R27.3.1-1-85830-1.5.0_11-20070716-1248-11
mux-in32, BEA Systems, Inc.
13:29:13,891 INFO [ServerInfo] OS-System: Linux 2.6.9-42.ELsmp, i386
13:29:16,086 INFO [Server] Core system initialized
```

```

Applications - Actions Thu Sep 20, 1:30 PM
root@jboss02:/opt/jboss-4.2.1.GA/bin
File Edit View Terminal Tabs Help
-----
GMS: address is 192.168.2.2:32771
-----
13:30:00,604 WARN [FD_SOCKET] I was suspected by 192.168.2.1:32771; ignoring the SUSPECT message
13:30:00,656 INFO [DefaultPartition] Number of cluster members: 2
13:30:00,656 INFO [DefaultPartition] Other members: 1
13:30:00,665 INFO [DefaultPartition] Fetching state (will wait for 30000 milliseconds):
13:30:01,463 INFO [DefaultPartition] state was retrieved successfully (in 798 milliseconds)
13:30:02,062 INFO [HANamingService] Started ha-jndi bootstrap jnpPort=1100, backlog=50, bindAddress=/127.0.0.1
13:30:02,074 INFO [DetachedHANamingService$AutomaticDiscovery] Listening on /127.0.0.1:1102, group=230.0.0.4, HA-JNDI address=127.0.0.1:1100
13:30:03,379 INFO [TreeCache] No transaction manager lookup class has been defined. Transactions cannot be used
13:30:03,835 INFO [InterceptorChainFactory] interceptor chain is:
class org.jboss.cache.interceptors.CallInterceptor
class org.jboss.cache.interceptors.EvictionInterceptor
class org.jboss.cache.interceptors.PessimisticLockInterceptor
class org.jboss.cache.interceptors.PassivationInterceptor
class org.jboss.cache.interceptors.ActivationInterceptor
class org.jboss.cache.interceptors.UnlockInterceptor
class org.jboss.cache.interceptors.ReplicationInterceptor
class org.jboss.cache.interceptors.TxInterceptor
class org.jboss.cache.interceptors.CacheMgmtInterceptor
13:30:03,896 INFO [STDOUT]
-----
GMS: address is 192.168.2.2:32773
-----
root@jboss02:/opt/jboss-4.2.1.GA/bin

```

You can see the above screen where "Number of cluster member: 2" means it's the second member of the cluster.

```

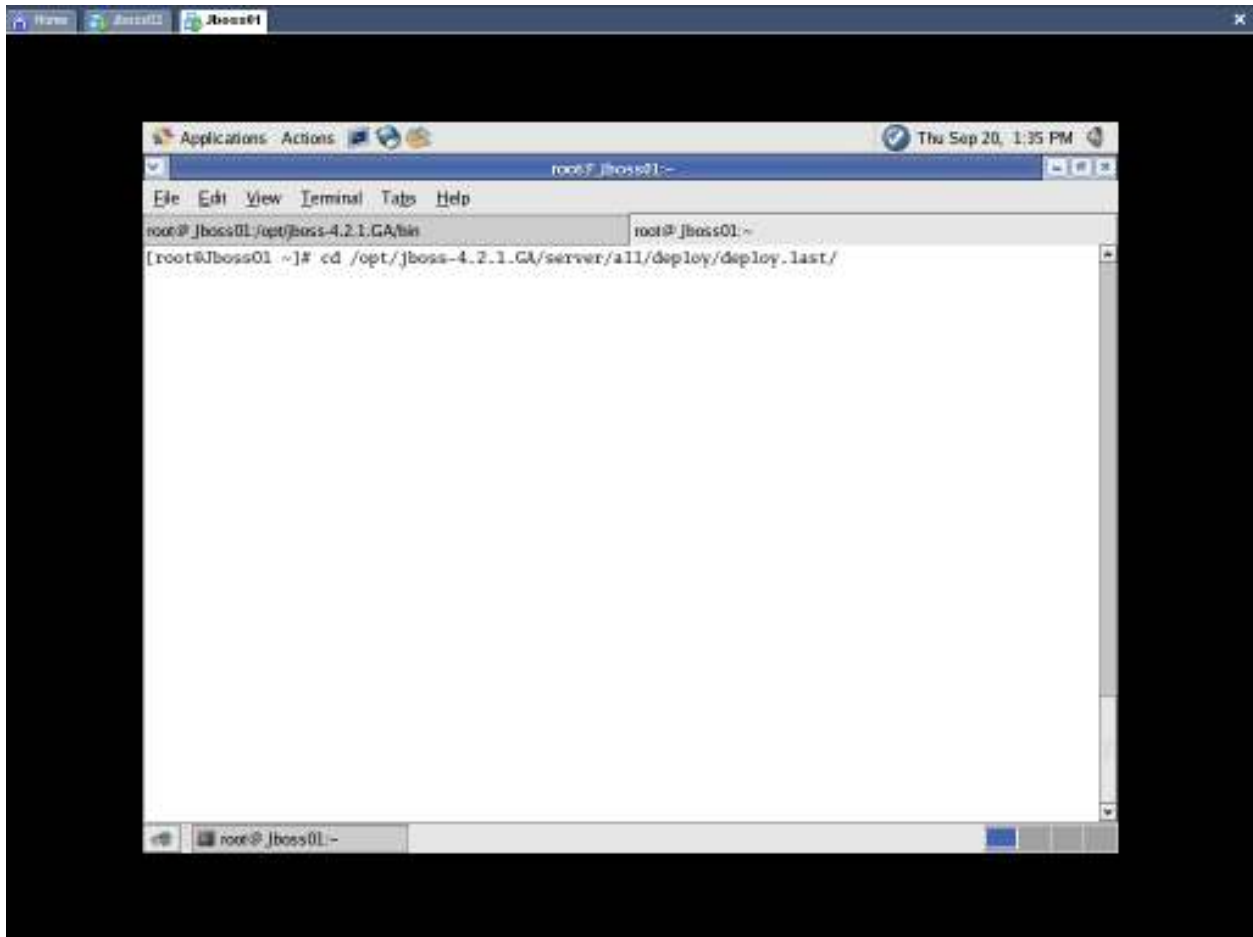
root@jboss02:/opt/jboss-4.2.1.GA/bin
File Edit View Terminal Tabs Help
13:30:23,136 INFO [RARDeployment] Required license terms exist, view META-INF/ra.xml in .../depl
oy/jboss-ha-xa-jdbc.rar
13:30:23,187 INFO [RARDeployment] Required license terms exist, view META-INF/ra.xml in .../depl
oy/jboss-local-jdbc.rar
13:30:23,232 INFO [RARDeployment] Required license terms exist, view META-INF/ra.xml in .../depl
oy/jboss-xa-jdbc.rar
13:30:23,621 INFO [RARDeployment] Required license terms exist, view META-INF/ra.xml in .../depl
oy/jms-ra.rar
13:30:23,660 INFO [RARDeployment] Required license terms exist, view META-INF/ra.xml in .../depl
oy/quartz-ra.rar
13:30:23,690 INFO [QuartzResourceAdapter] start quartz!!!
13:30:23,908 INFO [SimpleThreadPool] Job execution threads will use class loader of thread: main
13:30:23,997 INFO [QuartzScheduler] Quartz Scheduler v.1.5.2 created.
13:30:24,005 INFO [RAMJobStore] RAMJobStore initialized.
13:30:24,007 INFO [StdSchedulerFactory] Quartz scheduler 'DefaultQuartzScheduler' initialized fr
om default resource file in Quartz package: 'quartz.properties'
13:30:24,007 INFO [StdSchedulerFactory] Quartz scheduler version: 1.5.2
13:30:24,013 INFO [QuartzScheduler] Scheduler DefaultQuartzScheduler_$_NON_CLUSTERED started.
13:30:26,888 INFO [ConnectionFactoryBindingService] Bound ConnectionManager 'jboss.jca:service=D
ataSourceBinding,name=DefaultDS' to JNDI name 'java:DefaultDS'
13:30:28,518 INFO [ConnectionFactoryBindingService] Bound ConnectionManager 'jboss.jca:service=C
onnectionFactoryBinding,name=JmsXA' to JNDI name 'java:JmsXA'
13:30:28,566 INFO [TomcatDeployer] deploy, ctxPath=/jmx-console, warUrl=.../deploy/jmx-console.w
ar/
13:30:29,148 INFO [Http11Protocol] Starting Coyote HTTP/1.1 on http-127.0.0.1-8080
13:30:29,242 INFO [AjpProtocol] Starting Coyote AJP/1.3 on ajp-127.0.0.1-8009
13:30:29,253 INFO [Server] JBoss (MX MicroKernel) [4.2.1.GA (build: SVNTag=JBoss_4_2_1_GA date=2
00707131605)] Started in 1m:18s:233ms

```

This final screen shows that the JBoss server has been started on Jboss02 machine.

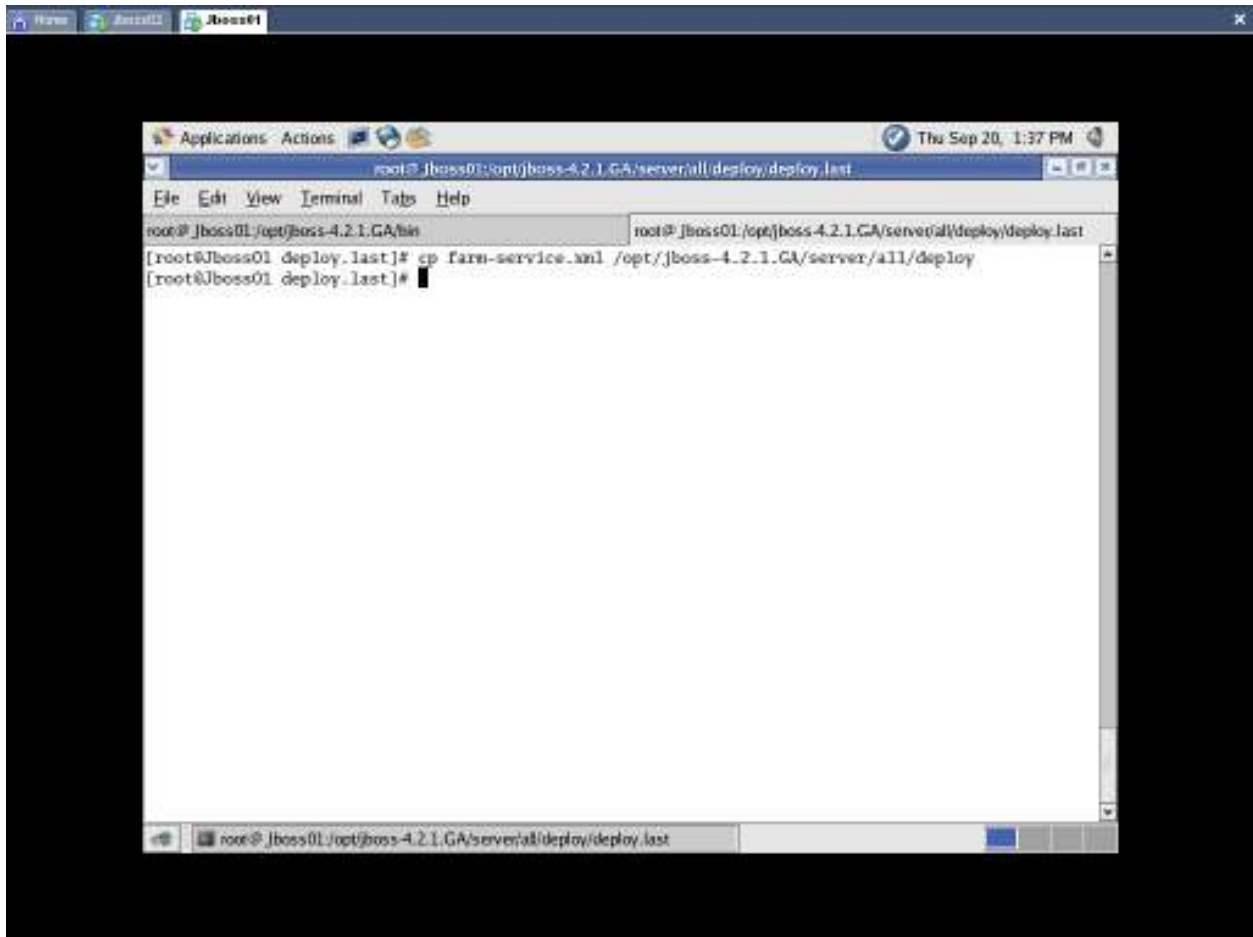
Now is the time to deploy the **JBoss FARMING**

For the reason first login to Jboss01 and perform following steps.



First change directory to

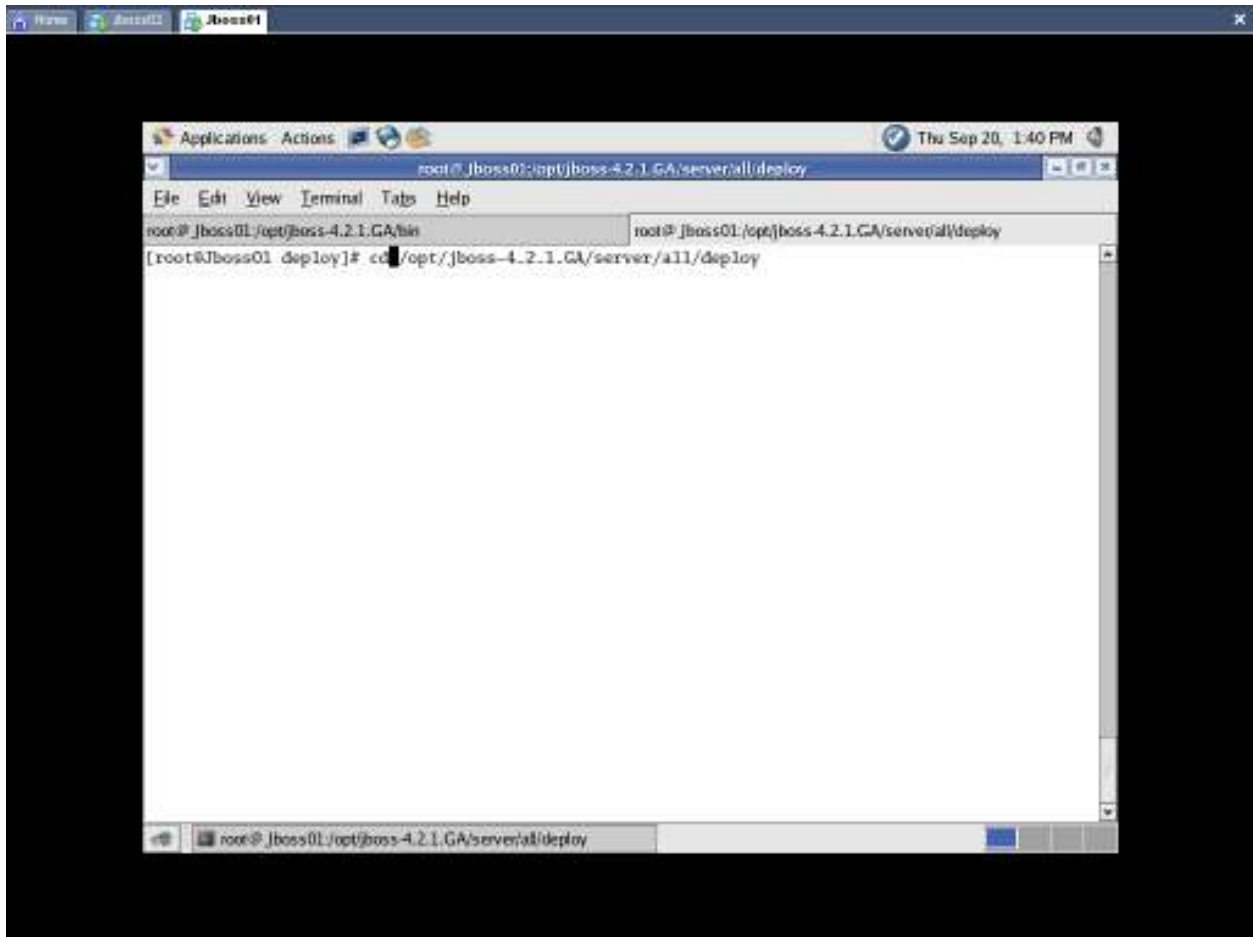
```
$cd "/opt/jboss-4.2.1.GA/server/all/deploy/deploy.last"
```



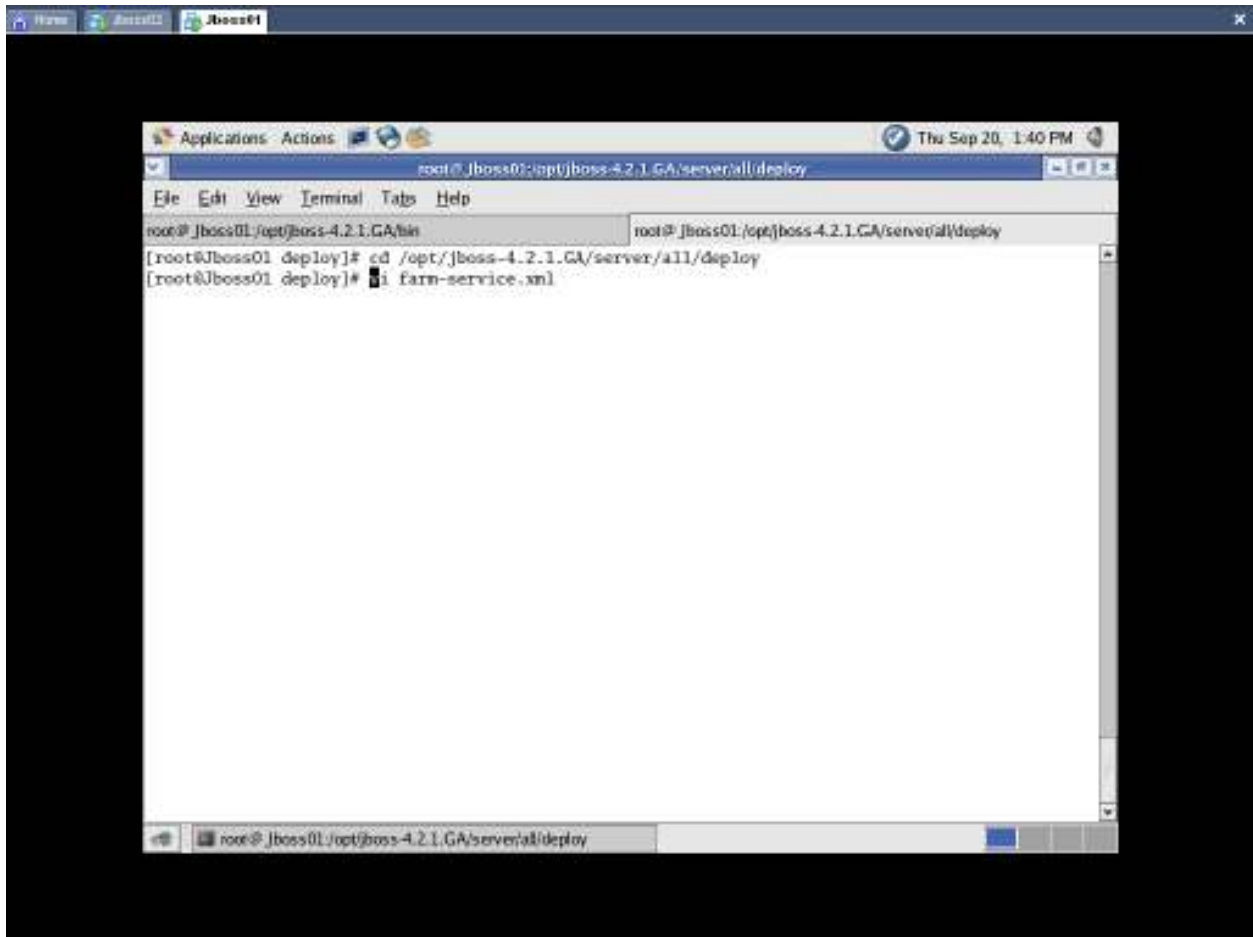
First copy

```
$cp farm-service.xml "/opt/jboss-4.2.1.GA/server/all/deploy"
```

Then, edit **farm-service.xml** in **"/opt/jboss-4.2.1.GA/server/all/deploy"** directory. i.e.



Now edit farm-service.xml



Change DefaultPartition to MyCluster i.e. the Jboss Cluster Partition Name in this manual.

```

root@jboss01:/opt/jboss-4.2.1.GA/server/all/deploy
<?xml version="1.0" encoding="UTF-8"?>

<!-- ----- -->
<!-- ----- -->
<!-- Sample Farming Service Configuration ----- -->
<!-- ----- -->
<!-- ----- -->

<service>

  <bean code="org.jboss.ha.framework.server.FarmMemberService"
        name="jboss:service=FarmMember,partition=${jboss.partition.name:MyCluster}" >

    <!-- We now inject the partition into the HAJNDI service instead
         of requiring that the partition name be passed -->
    <depends optional-attribute-name="ClusterPartition"
            proxy-type="attribute">jboss:service=${jboss.partition.name:MyCluster}</depends>

    <depends>jboss.web:service=WebServer</depends>

    <!-- Uncomment (and comment/remove version below) to enable usage of the
         DeploymentCache
    <depends optional-attribute-name="Deployer">jboss.deployment:type=DeploymentCache</depends>
    -->
    <depends optional-attribute-name="Deployer">jboss.system:service=MainDeployer</depends>

  </bean>
</service>

-- INSERT --                               17,79      Top

```

And on second location in same farm-service.xml i.e.

```

root@Jboss01:/opt/jboss-4.2.1.GA/server/all/deploy
<?xml version="1.0" encoding="UTF-8"?>
<!-- ----- -->
<!-- -->
<!-- Sample Farming Service Configuration -->
<!-- -->
<!-- ----- -->

<service>
  <bean code="org.jboss.ha.framework.server.FarmMemberService"
        name="/jboss:service=FarmMember,partition=${jboss.partition.name:MyCluster}" >
    <!-- We now inject the partition into the HAJNDI service instead
         of requiring that the partition name be passed -->
    <depends optional-attribute-name="ClusterPartition"
            proxy-type="attribute">jboss:service=${jboss.partition.name:MyCluster}</depends>
    <depends>jboss.web:service=WebServer</depends>

    <!-- Uncomment (and comment/remove version below) to enable usage of the
         DeploymentCache
    <depends optional-attribute-name="Deployer">jboss.deployment:type=DeploymentCache</depends>
    -->
    <depends optional-attribute-name="Deployer">jboss.system:service=MainDeployer</depends>
  </bean>
</service>

```

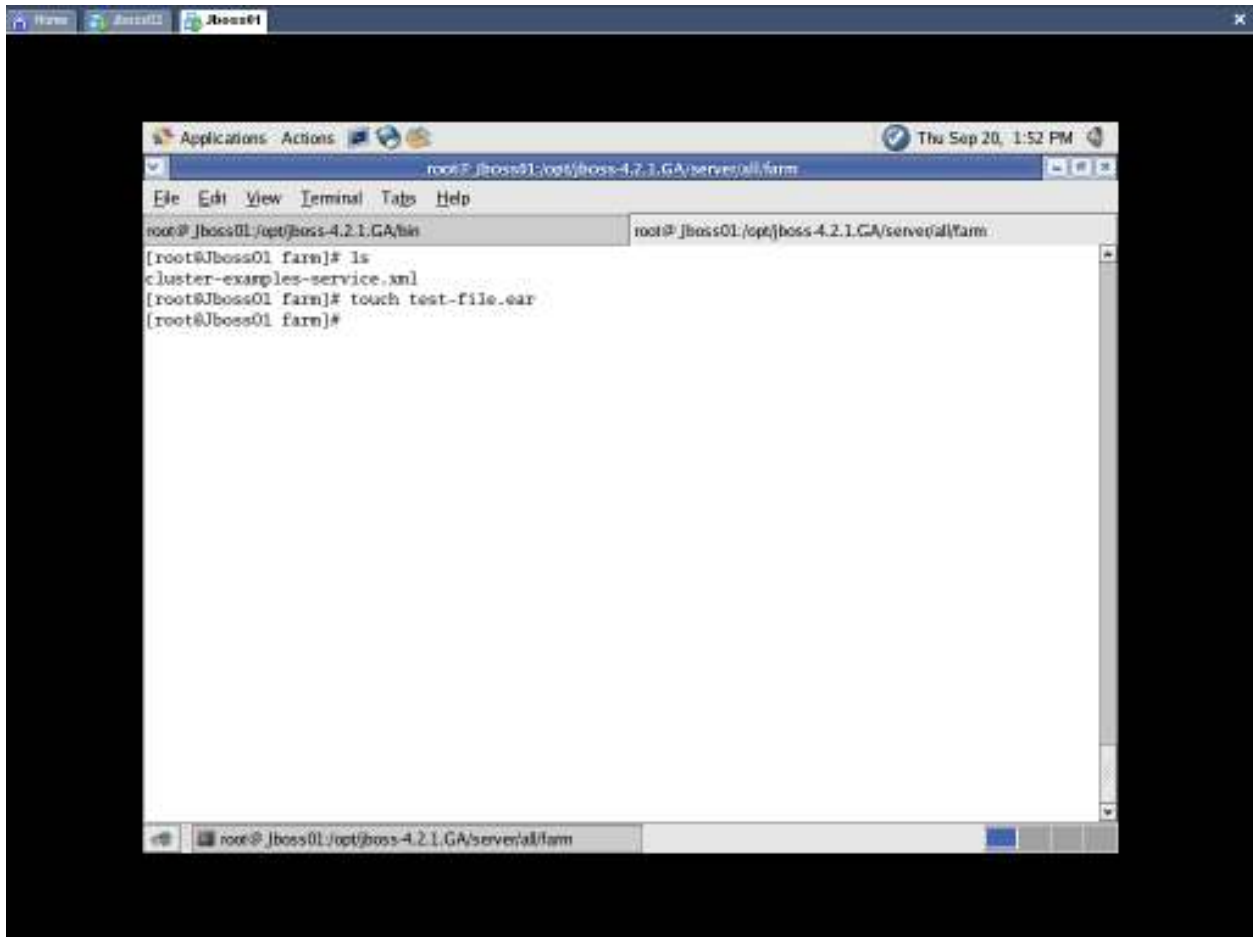
After changes Cluster Partition name on two locations in farm-service.xml, save and quit from the file.

Now it's the time to fix Jboss02 for **JBOSS FARMING**

Login to Jboss02 and perform same steps as we did in Jboss01 i.e.

1. `$cd /opt/jboss-4.2.1.GA/server/all/deploy/deploy.last`
2. `$cp farm-service.xml /opt/jboss-4.2.1.GA/server/all/deploy`
3. `$vi /opt/jboss-4.2.1.GA/server/all/deploy/farm-service.xml`
4. Change the DefaultPartition with MyPartition in farm-service.xml as we did in Jb0ss01.
5. Save and quit

After editing farm-service.xml on both servers, we need to test the farming, for the reason, we will create a fake .ear file in /opt/jboss-4.2.1.GA/server/all/farm/ directory in Jboss01 and will see on Jboss02 that it will automatically pulled in same location. i.e.



```
Applications - Actions Thu Sep 20, 1:52 PM
root@jboss01:/opt/jboss-4.2.1.GA/server/all/farm
File Edit View Terminal Tabs Help
root@jboss01:/opt/jboss-4.2.1.GA/bin
root@jboss01:/opt/jboss-4.2.1.GA/server/all/farm
[root@jboss01 farm]# ls
cluster-examples-service.xml
[root@jboss01 farm]# touch test-file.ear
[root@jboss01 farm]#
```

Do not be afraid of errors on JBoss Server output screen as test-file.ear is a fake and empty file, so of course it will give errors ☺

```

root@jboss01:/opt/jboss-4.2.1.GA/bin
at sun.reflect.GeneratedMethodAccessor23.invoke(Unknown Source)
at sun.reflect.DelegatingMethodAccessorImpl.invoke(DelegatingMethodAccessorImpl.java:25)
at java.lang.reflect.Method.invoke(Method.java:585)
at org.jboss.mx.interceptor.ReflectedDispatcher.invoke(ReflectedDispatcher.java:155)
at org.jboss.mx.server.Invocation.dispatch(Invocation.java:94)
at org.jboss.mx.interceptor.AbstractInterceptor.invoke(AbstractInterceptor.java:133)
at org.jboss.mx.server.Invocation.invoke(Invocation.java:88)
at org.jboss.mx.interceptor.ModelMBeanOperationInterceptor.invoke(ModelMBeanOperationInte
rceptor.java:142)
at org.jboss.mx.server.Invocation.invoke(Invocation.java:88)
at org.jboss.mx.server.AbstractMBeanInvoker.invoke(AbstractMBeanInvoker.java:264)
at org.jboss.mx.server.MBeanServerImpl.invoke(MBeanServerImpl.java:659)
at org.jboss.mx.util.MBeanProxyExt.invoke(MBeanProxyExt.java:210)
at $Proxy67.deploy(Unknown Source)
at org.jboss.deployment.scanner.URLDeploymentScanner.deploy(URLDeploymentScanner.java:421
)
at org.jboss.ha.framework.server.FarmMemberService.deploy(FarmMemberService.java:412)
at org.jboss.deployment.scanner.URLDeploymentScanner.scan(URLDeploymentScanner.java:634)
at org.jboss.deployment.scanner.AbstractDeploymentScanner$ScannerThread.doScan(AbstractDe
ploymentScanner.java:263)
at org.jboss.deployment.scanner.AbstractDeploymentScanner$ScannerThread.loop(AbstractDeplo
ymentScanner.java:274)
at org.jboss.deployment.scanner.AbstractDeploymentScanner$ScannerThread.run(AbstractDeplo
ymentScanner.java:225)
13:52:33.531 INFO [ClusterFileTransfer] Start push of file test-file.ear to cluster.
13:52:34.153 INFO [ClusterFileTransfer] Finished push of file test-file.ear to cluster.

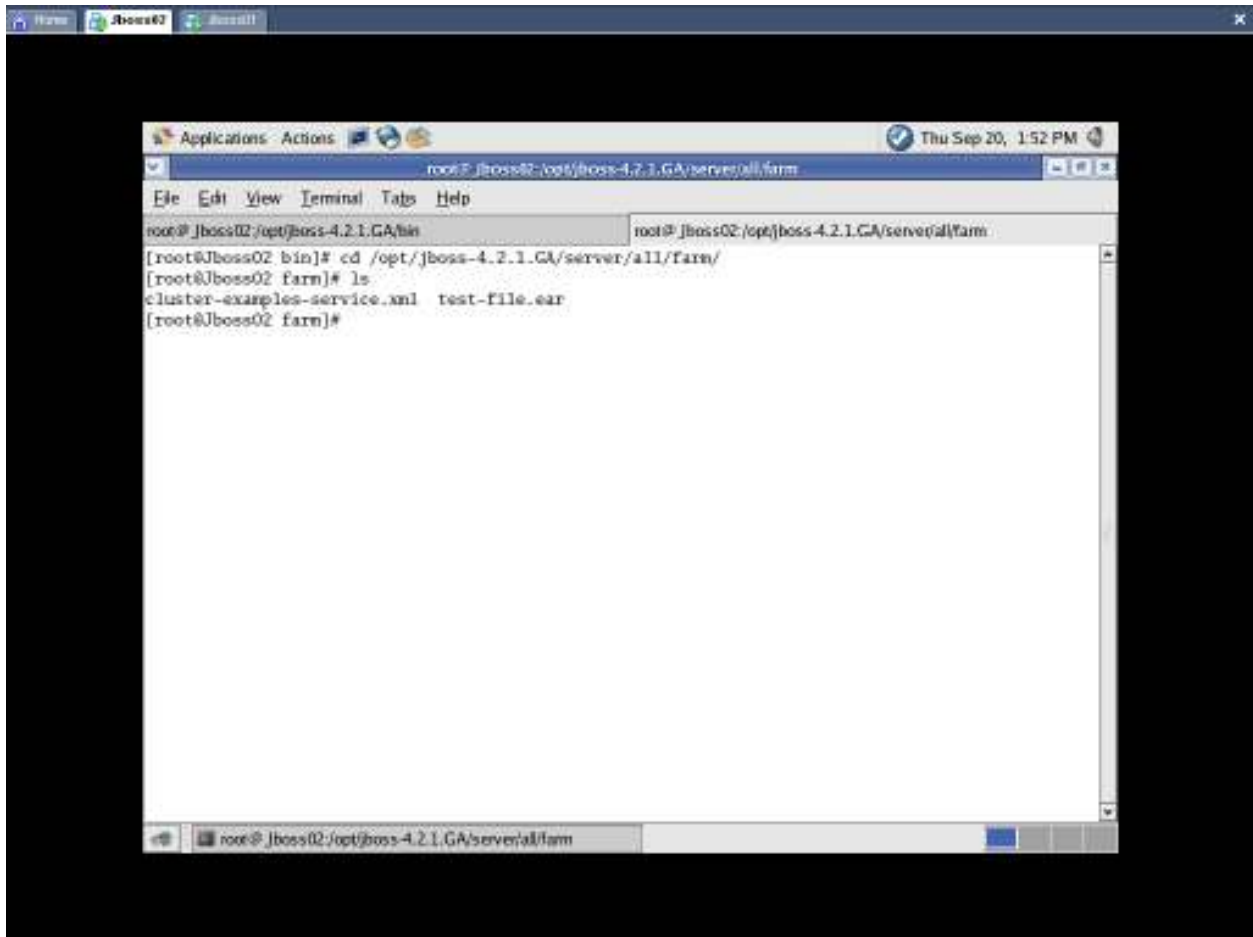
```

At Jboss02 you can see test-file.ear is detected !

```

root@jboss02:/opt/jboss-4.2.1.GA/bin
Applications Actions Thu Sep 20, 1:51 PM
File Edit View Terminal Tabs Help
13:30:24,005 INFO [RAMJobStore] RAMJobStore initialized.
13:30:24,007 INFO [StdSchedulerFactory] Quartz scheduler 'DefaultQuartzScheduler' initialized fr
om default resource file in Quartz package: 'quartz.properties'
13:30:24,007 INFO [StdSchedulerFactory] Quartz scheduler version: 1.5.2
13:30:24,013 INFO [QuartzScheduler] Scheduler DefaultQuartzScheduler_$_NON_CLUSTERED started.
13:30:26,888 INFO [ConnectionFactoryBindingService] Bound ConnectionManager 'jboss.jca:service=D
ataSourceBinding,name=DefaultDS' to JNDI name 'java:DefaultDS'
13:30:28,518 INFO [ConnectionFactoryBindingService] Bound ConnectionManager 'jboss.jca:service=C
onnectionFactoryBinding,name=JmsXA' to JNDI name 'java:JmsXA'
13:30:28,566 INFO [TomcatDeployer] deploy, ctxPath=/jmx-console, warUrl=../deploy/jmx-console.w
ar/
13:30:29,148 INFO [Http11Protocol] Starting Coyote HTTP/1.1 on http-127.0.0.1-8080
13:30:29,242 INFO [AjpProtocol] Starting Coyote AJP/1.3 on ajp-127.0.0.1-8009
13:30:29,253 INFO [Server] JBoss (MX MicroKernel) [4.2.1.GA (build: SVNTag=JBoss_4.2.1.GA date=2
00707131605)] Started in 1s:18s:233ms
13:50:07,270 INFO [FarmMemberService] farmDeployment(), deploy locally: farm/test-file.ear
13:50:07,305 ERROR [FarmMemberService] java.io.FileNotFoundException: /opt/jboss-4.2.1.GA/server/
all/tmp/test-file.ear (No such file or directory)
13:50:10,363 INFO [EARDeployer] Init J2EE application: file:/opt/jboss-4.2.1.GA/server/all/farm/
test-file.ear
13:50:10,451 ERROR [MainDeployer] Could not initialise deployment: file:/opt/jboss-4.2.1.GA/serve
r/all/farm/test-file.ear
org.jboss.deployment.DeploymentException: No META-INF/application.xml found
    at org.jboss.deployment.EARDeployer.init(EARDeployer.java:146)
    at org.jboss.deployment.MainDeployer.init(MainDeployer.java:872)
    at org.jboss.deployment.MainDeployer.deploy(MainDeployer.java:809)
    at org.jboss.deployment.MainDeployer.deploy(MainDeployer.java:782)
    at sun.reflect.GeneratedMethodAccessor23.invoke(Unknown Source)
    at sun.reflect.DelegatingMethodAccessorImpl.invoke(DelegatingMethodAccessorImpl.java:25)

```



```
root@jboss02:/opt/jboss-4.2.1.GA/bin
root@jboss02:/opt/jboss-4.2.1.GA/server/all/farm/
[root@jboss02 bin]# cd /opt/jboss-4.2.1.GA/server/all/farm/
[root@jboss02 farm]# ls
cluster-examples-service.xml  test-file.ear
[root@jboss02 farm]#
```

You can see the test-file.ear is automatically pulled at Jboss02.

Note:

If you get any problem during implementation of this manual please do not hesitate to contact me, (Email: nayyar.ahmad@sistafe.gov.mz) but I d'nt promise for replying all emails ☺

Cheers!