High Availability & Fault Tolerance of the Deployment Manager using NFS on Linux

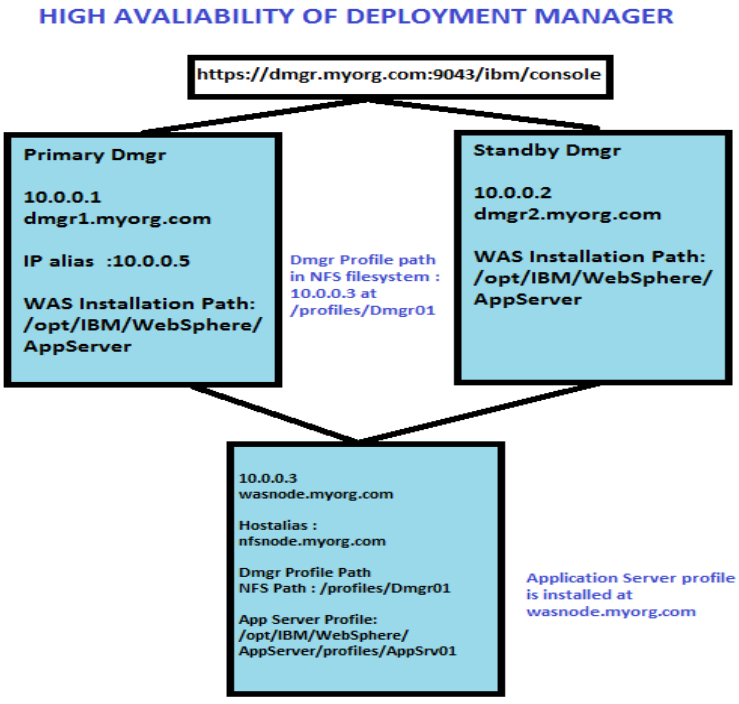
Abstract:

- For this exercise a shared filesystem will be created using NFS 4 on which the dmgr profile will be created.
- This filesystem would be mounted on both the Primary and secondary dmgr servers.
- Ip alias and host alias would be used during the creation of dmgrs profiles
- The Ip alias will be active only on one Dmgr at a time either primary or standby depending on the situation of failover or failback.
- The dmgr process will be running on the node which hosts the ip alias .

NOTE : I have used NFS4 to simulate this scenario .. but in a productions env you could use SAN storage or any similar Technology . Also for the clustering it can be setup using any other OS based clustering available like POWER HA or RHEL Clustering etc

Env Diagram :

WebSphere Version: 8.5.5.0
OS : RHEL 6.5



Highlevel Steps :

Step1 : Install and configure NFS 4 on the Server which will hold the Dmgr profile

Step2 : Create the Shared Filesystem for Dmgr profiles on the NFS Server

Step3: Mount shared filesystem on Primary Dmgr : dmgr1.myorg.com (10.0.0.1)

Step4: Mount shared filesystem on Standby Dmgr : dmgr2.myorg.com (10.0.0.2)

Step5: Set Ip Alias on the Primary ie dmgr1.myorg.com (10.0.0.1)

Step6: Install WebSphere Application Server on the Primary Dmgr ie dmgr1.myorg.com (10.0.0.1)

Step7: Create the Dmgr profile on dmgr1.myorg.com

Step8: Install WebSpere Application Server on the Application Server Node ie wasnode.myorg.com (10.0.0.3)

Step9: Create AppServer profile on wasnode.myorg.com (10.0.0.3)

Step10: Federate the Appserver Profile from wasnode.myorg.com (10.0.0.3) to the Dmgr Cell

Step11: Install WebSpere Application Server on the Standby Dmgr ie dmgr2.myorg.com (10.0.0.2)

Step12: Copy profileRegistry.xml from the dmg1.myorg.com to dmg2.myorg.com

Step13: Failover from Primary ie dmgr1.myorg.com (10.0.0.1) to the Standby dmgr2.myorg.com (10.0.0.2)

Step14: Testing the Failover to Standby dmgr2.myorg.com (10.0.0.2) from Primary ie dmgr1.myorg.com (10.0.0.1)

Step15: Failback to Primary ie dmgr1.myorg.com (10.0.0.1) from Standby dmgr2.myorg.com (10.0.0.2)

Step1: Install and configure NFS 4 on the Server which will hold the Dmgr profile

In this approach we are using a shared folder where we will create the dmgr profile .

This filesystem will be mounted on both the **Primary ie dmgr1.myorg.com and Standby dmgr2.myorg.com)** but only one server will have the dmgr process running where the ip alias ie 10.0.0.5 is configured to .

The Nfs services and the shared filesystem is installed on **wasnode.myorg.com (10.0.0.3)** .
I have set a host alias to this ip as **nfsnode.myorg.com**

Server details:
IP : 10.0.0.3:
Hostname: wasnode.myorg.com
Hostalias : nfsnode.myorg.com
Shared Dmgr profile path : /profiles/Dmgr01

Below are the hosts entries configured in /etc/hosts file of **nfsnode.myorg.com**

```
[root@wasnode ~]# cat /etc/hosts
# Dmgr
10.0.0.1 dmgr1.myorg.com
10.0.0.2 dmgr2.myorg.com
10.0.0.5 dmgr.myorg.com

#Node1 :
10.0.0.3 wasnode.myorg.com  nfsnode.myorg.com
[root@wasnode ~]#
```

Assumption and Liberties:

- You are familiar with NFS and its configuration, if not take the help of the OS system Admins
- The below steps only the basic workable steps , you could customize the NFS as per your requirement and needs
- The Linux iptables firewall is stopped to facilitate the connectivity, but you could modify the iptables to suite your needs

NOTE : I have used NFS , Its recommended to have a SAN storage for this in the LIVE env . But where SAN is not available, this would fit the bill ☺

a) **Installation of NFS packages .**
Install NFS package on the server which will host the shared dmgr profile filesystem
You can use **yum** utility to install the nfs packages **"yum install nfs-utils nfs-utils-lib"**

NOTE : Installing of NFS is not covered in this article . Please follow the below link for installing and additional configurations for setting NFS

http://www.computernetworkingnotes.com/network-administration/how-to-configure-nfs-server-in-rhel-6.html

b) Validate the NFS packages

Check the nfs packages are installed using rpm command.
Ensure that **nfs-utils-lib, nfs4-acl-tools, nfs-utils** are installed

[root@wasnode ~]# rpm -qa | grep nfs

```
[root@wasnode ~]# rpm -qa | grep nfs
nfs-utils-lib-1.1.5-6.el6.x86_64
nfs4-acl-tools-0.3.3-6.el6.x86_64
nfs-utils-1.2.3-39.el6.x86_64
```

c) NFS services also requires rpcbind package

[root@wasnode ~]# rpm -qa rpcbind

```
[root@wasnode ~]# rpm -qa rpcbind
rpcbind-0.2.0-11.el6.x86_64
[root@wasnode ~]#
[root@wasnode ~]#
```

d) Start the NFS Services using below command

[root@wasnode ~]# service nfs start

```
[root@wasnode ~]# service nfs start
Starting NFS services:                                     [  OK  ]
Starting NFS quotas:                                       [  OK  ]
Starting NFS mountd:                                       [  OK  ]
Starting NFS daemon:                                       [  OK  ]
Starting RPC idmapd:                                       [  OK  ]
[root@wasnode ~]#
```

e) Auto Start the nfs and rpcbind services

Ensure that the nfs services and rpcbind services are autostarted after reboot of the nfs server using chkconfig command

[root@wasnode ~]# chkconfig nfs on
[root@wasnode ~]# chkconfig rpcbind on

```
[root@wasnode ~]# chkconfig nfs on
[root@wasnode ~]# chkconfig rpcbind on
[root@wasnode ~]#
```

f) Iptables configurations

Stop the iptables firewall to prevent any issues due to firewall

NOTE . You can configure the iptables to allow only NFS communication .Its out of scope of this document. Please google it up

```
[root@wasnode ~]# service iptables stop
iptables: Setting chains to policy ACCEPT: filter          [  OK  ]
iptables: Flushing firewall rules:                         [  OK  ]
iptables: Unloading modules:                               [  OK  ]
[root@wasnode ~]#
```

Step2 : Create the Shared Filesystem for Dmgr profiles on the NFS Server

This is the folder **(/profiles/Dmgr01**) where the dmgr profile will be created .
This folder needs to be mounted on both the Primary ie dmgr1.myorg.com and Standby dmgr2.myorg.com

a) Create the directory which would be shared

[root@wasnode ~]# mkdir -p /profiles/Dmgr01

```
[root@wasnode ~]# mkdir -p /profiles/Dmgr01
[root@wasnode ~]#
[root@wasnode ~]#
```

b) Configure the NFS files with the filesystem details

Update the NFS configuration file with below details and the ips from where this filesystem is to be mounted.

[root@wasnode ~]# vi /etc/exports

/profiles/Dmgr01 10.0.0.1(rw,sync,no_root_squash) 10.0.0.2(rw,sync,no_root_squash)

~

```
[root@wasnode ~]#
[root@wasnode ~]# vi /etc/exports
/profiles/Dmgr01  10.0.0.1(rw,sync,no_root_squash) 10.0.0.2(rw,sync,no_root_squash)
~
~
~
```

NOTE :

- The filesystem /profiles/Dmgr01 will be mounted on Primary ie dmgr1.myorg.com (10.0.0.1) and Standby dmgr2.myorg.com (10.0.0.2) .
- From a security stand point only provide the needed ips .. don't add a wildcard based ips or hostnames like *.myorg.com etc
- Provide appropriate permissions like (rw, no_root_squash) etc .
- If dmgr process will be run by other users ensure the uid and gids are same for that user in all the servers

c) Validate the changes and reread the exportfs file

Execute the below command

[root@wasnode ~]# exportfs -a

To check the nfs mounts you can run

[root@wasnode ~]# exportfs -a

[root@wasnode ~]# showmount -e

```
[root@wasnode ~]# exportfs -a
[root@wasnode ~]#
[root@wasnode ~]# exportfs
/profiles/Dmgr01
                10.0.0.1
/profiles/Dmgr01
                10.0.0.2
[root@wasnode ~]#
[root@wasnode ~]#
```

```
[root@wasnode ~]# showmount -e
Export list for wasnode.myorg.com:
/profiles/Dmgr01 10.0.0.2,10.0.0.1
[root@wasnode ~]#
[root@wasnode ~]#
```

Step3: Mount shared filesystem on Primary Dmgr : dmgr1.myorg.com (10.0.0.1)

This step need to be done on both NFS Client Machine ie Primary ie dmgr1.myorg.com (10.0.0.1) and Standby dmgr2.myorg.com (10.0.0.2)

On dmgr1.myorg.com

a) Modify the host file

Update the host files to have the entries for all the systems involved ..Ref as mentioned below .

```
[root@wasnode ~]# cat /etc/hosts
# Dmgr
10.0.0.1 dmgr1.myorg.com
10.0.0.2 dmgr2.myorg.com
10.0.0.5 dmgr.myorg.com

#Node1 :
10.0.0.3 wasnode.myorg.com  nfsnode.myorg.com
[root@wasnode ~]#
```

NOTE : The Ip alias 10.0.0.5 and hostname with dmgr.myorg.com is the VIP which will be used to create the dmgr profile and the node federation

b) Mount filesystems on dmgr nodes

To mount the share filesystem /profiles/Dmgr01 on dmgr1.myorg.com , ensure that you can connect to nfsnode.myorg.com (the NFS server)

```
[root@dmgr1 ~]# hostname
dmgr1.myorg.com
[root@dmgr1 ~]#
[root@dmgr1 ~]# ping nfsnode.myorg.com
PING wasnode.myorg.com (10.0.0.3) 56(84) bytes of data.
64 bytes from wasnode.myorg.com (10.0.0.3): icmp_seq=1 ttl=64 time=0.318 ms
64 bytes from wasnode.myorg.com (10.0.0.3): icmp_seq=2 ttl=64 time=0.232 ms
^C
--- wasnode.myorg.com ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1559ms
rtt min/avg/max/mdev = 0.232/0.275/0.318/0.043 ms
[root@dmgr1 ~]#
[root@dmgr1 ~]#
```

c) Create a local mount point for the shared filesystem .

I create the same folder structure as the shared filesystem

[root@dmgr1 ~]# mkdir -p /profiles/Dmgr01

```
[root@dmgr1 ~]#
[root@dmgr1 ~]# mkdir -p /profiles/Dmgr01
[root@dmgr1 ~]#
```

d) Mount the shared filesystem with "mount" command & validate using "df -h"

[root@dmgr1 ~]# mount -t nfs4 nfsnode.myorg.com:/profiles/Dmgr01 /profiles/Dmgr01

```
[root@dmgr1 ~]# mount -t nfs4 nfsnode.myorg.com:/profiles/Dmgr01 /profiles/Dmgr01
[root@dmgr1 ~]#
[root@dmgr1 ~]# df -h
Filesystem                      Size  Used Avail Use% Mounted on
/dev/sda2                        35G  7.3G   26G  23% /
tmpfs                           932M   72K  932M   1% /dev/shm
/dev/sda1                        15G  165M   14G   2% /opt
nfsnode.myorg.com:/profiles/Dmgr01   35G  6.2G   27G  19% /profiles/Dmgr01
[root@dmgr1 ~]#
[root@dmgr1 ~]#
```

You can see the shared filesystem from nfsnode.myorg.com is mounted on dmgr1.myorg.com at mount point **/profiles/Dmgr01**

"nfsnode.myorg.com:/profiles/Dmgr01 35G 6.2G 27G 19% /profiles/Dmgr01"

e) **Validate if the root can write to the shared folder .**
I created a test file in /profiles/Dmgr01 using touch

```
[root@dmgr1 ~]# cd /profiles/Dmgr01
[root@dmgr1 Dmgr01]#
[root@dmgr1 Dmgr01]# touch test1
[root@dmgr1 Dmgr01]#
[root@dmgr1 Dmgr01]# ls -ltr
total 0
-rw-r--r--. 1 root root 0 May 29  2016 test1
[root@dmgr1 Dmgr01]#
[root@dmgr1 Dmgr01]#
```

The files is created in the dmgr1.myorg.com at /profiles/Dmgr01

f) **Validate it on the nfs server :**
The test file created from dmg1 is visble from nfsnode.myorg.com server too

```
[root@wasnode IBMSoftware]# cd /profiles/Dmgr01/
[root@wasnode Dmgr01]# ls -ltr
total 0
-rw-r--r--. 1 root root 0 May 29 06:46 test1
[root@wasnode Dmgr01]#
[root@wasnode Dmgr01]#
```

g) **Auto Mount of Shared Filesystem**

Ensure the automount of the shared filesystem **/profiles/Dmgr01** after the reboot of dmgr1.myorg.com

Edit the /etc/fstab using vi

[root@dmgr1 ~]# vi /etc/fstab

Add the below mentioned line in the /etc/fstab as per the screenshot below . Save and exit the fstab file

nfsnode.myorg.com:/profiles/Dmgr01 /profiles/Dmgr01 nfs4 defaults 0 0

NOTE : Please be careful while editing /etc/fstab. Any typo or mistake can prevent the server from booting up

```
[root@dmgr1 ~]# vi /etc/fstab
#
# /etc/fstab
# Created by anaconda on Sun May 29 03:14:45 2016
#
# Accessible filesystems, by reference, are maintained under '/dev/disk'
# See man pages fstab(5), findfs(8), mount(8) and/or blkid(8) for more info
#
UUID=e0ae82a2-8ce7-44a4-bcfc-ac54ddac6a20 /                       ext4    defaults        1 1
UUID=03d6309a-8f1f-42dd-a8e2-7b063f64bd5f /opt                    ext4    defaults        1 2
tmpfs                   /dev/shm                tmpfs   defaults        0 0
devpts                  /dev/pts                devpts  gid=5,mode=620  0 0
sysfs                   /sys                    sysfs   defaults        0 0
proc                    /proc                   proc    defaults        0 0
nfsnode.myorg.com:/profiles/Dmgr01 /profiles/Dmgr01  nfs4  defaults  0 0
```

h) Reread the fstab file using the "mount -a" command

```
[root@dmgr1 ~]# mount -a
[root@dmgr1 ~]#
[root@dmgr1 ~]# df -h
Filesystem                      Size  Used Avail Use% Mounted on
/dev/sda2                        35G  7.9G   26G  24% /
tmpfs                           932M  888K  931M   1% /dev/shm
/dev/sda1                        15G  2.7G   12G  20% /opt
nfsnode.myorg.com:/profiles/Dmgr01   35G  8.2G   25G  25% /profiles/Dmgr01
[root@dmgr1 ~]#
```

Now the shared filesystem **/profiles/Dmgr01** will be automounted on **dmgr1.myorg.com** post reboot

Step4: Mount shared filesystem on Standby Dmgr : dmgr2.myorg.com (10.0.0.2)

Similar to Step3 , the same needs to be performed on dmgr2.myorg.com

On dmgr2.myorg.com

a) **Host file modification on dmgr2.myorg.com**
Update the host files to have the entries for all the systems involved ..Ref as mentioned below .

```
[root@wasnode ~]# cat /etc/hosts
# Dmgr
10.0.0.1 dmgr1.myorg.com
10.0.0.2 dmgr2.myorg.com
10.0.0.5 dmgr.myorg.com

#Node1 :
10.0.0.3 wasnode.myorg.com  nfsnode.myorg.com
[root@wasnode ~]#
```

NOTE : The ip alias 10.0.0.5 with hostname dmgr.myorg.com is the VIP which will be used to create the dmgr profile and the node federation

b) **Mount /profiles/Dmgr01**
To mount the share filesystem /profiles/Dmgr01 on dmgr2.myorg.com ensure that you can connect to nfsnode.myorg.com (the nfs server) using **ping** command

c) **Create a local mount point for the shared filesystem** .
I create the same folder structure as the shared filesystem

[root@dmgr2 /]# mkdir /profiles/Dmgr01

d) Mount the shared filesystem using mount command and validate using "df -h"

[root@dmgr2 ~]# mount -t nfs4 nfsnode.myorg.com:/profiles/Dmgr01 /profiles/Dmgr01

```
[root@dmgr2 /]# hostname
dmgr2.myorg.com
[root@dmgr2 /]#
[root@dmgr2 /]# mkdir /profiles/Dmgr01
[root@dmgr2 /]#
[root@dmgr2 /]# mount -t nfs4 nfsnode.myorg.com:/profiles/Dmgr01 /profiles/Dmgr01
[root@dmgr2 /]#
[root@dmgr2 /]# df -h
Filesystem                          Size  Used Avail Use% Mounted on
/dev/sda2                            35G  8.0G   26G  24% /
tmpfs                               932M   76K  932M   1% /dev/shm
/dev/sda1                            15G  165M   14G   2% /opt
nfsnode.myorg.com:/profiles/Dmgr01   35G  8.0G   26G  25% /profiles/Dmgr01
[root@dmgr2 /]#
[root@dmgr2 /]#
```

You can see the shared filesystem from **nfsnode.myorg.com** is also mounted on dmgr2.myorg.com on /profiles/Dmgr01

"nfsnode.myorg.com:/profiles/Dmgr01 35G 6.2G 27G 19% /profiles/Dmgr01"

NOTE : The shared filesystem /profiles/Dmgr01 from nfsnode.myorg.com is mounted on both Primary ie dmgr1.myorg.com (10.0.0.1) and Standby dmgr2.myorg.com (10.0.0.2) at /profiles/Dmgr01 folder

e) **Validate if the root can write to the shared folder .**
I created a test file in /profiles/Dmgr01 using touch

f) **Auto mount of /profiles/Dmgr01**
Ensure the automount of the shared filesystem /profiles/Dmgr01 on the reboot of dmgr2.myorg.com

Edit the /etc/fstab using vi

[root@dmgr2 ~]# vi /etc/fstab

Add the below mentioned line in the /etc/fstab as per the screenshot below . Save and exit the fstab file

nfsnode.myorg.com:/profiles/Dmgr01 /profiles/Dmgr01 nfs4 defaults 0 0

NOTE : Please be careful while editing /etc/fstab. Any typo or mistake can prevent the server from booting up

g) Similar to dmgr1.myorg.com reread the fstab file using the "mount -a" command

Now shared filesystem /profiles/Dmgr01 will be automounted on dmgr2.myorg.com post reboot

Step5: Set Ip Alias on the Primary ie dmgr1.myorg.com (10.0.0.1)

This ip alias will be used to connect to the dmgr console and other admin activities like addNode etc . and the Dmgr process will bind to this ip

a) Login to the primay dmgr ie **dmgr1.myorg.com** (10.0.0.1) as root
b) Execute the ifconfig command to set the ip alias to **eth0:0** adapter

NOTE: The Ethernet Adapter name may vary based on the OS type (AIX , solaris , Linux etc)
Please get in touch with the OS System Admin in case of any query for setting this up .
You can check the Ethernet Adapter name using "ifconfig -a"

[root@dmgr1 IBMSoftware]# ifconfig eth0:0 10.0.0.5 up

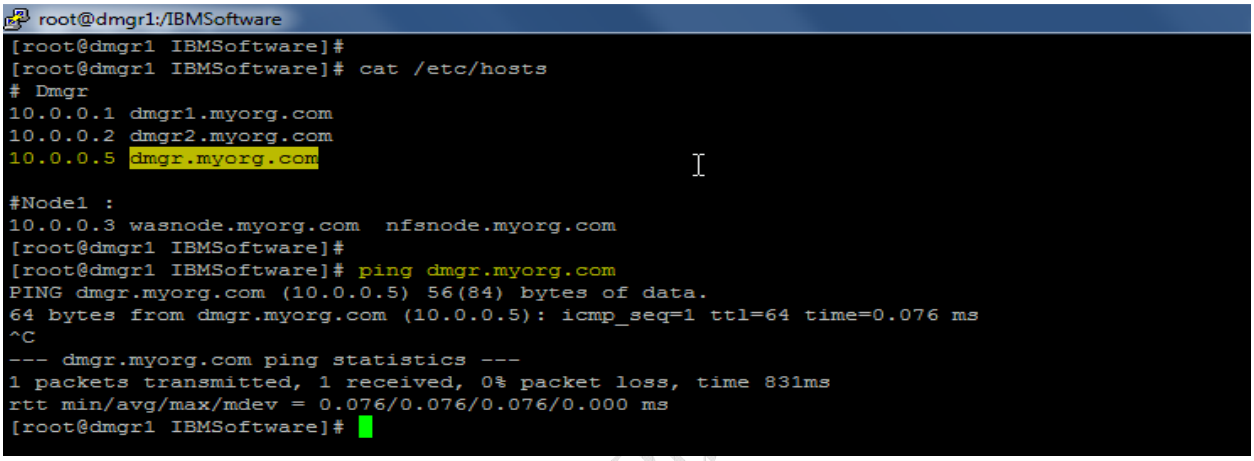
[root@dmgr1 IBMSoftware]# ifconfig -a

```
[root@dmgr1 properties]# ifconfig eth0:0 10.0.0.5 up
[root@dmgr1 properties]#
[root@dmgr1 properties]# ifconfig a
a: error fetching interface information: Device not found
[root@dmgr1 properties]# ifconfig -a
eth0      Link encap:Ethernet  HWaddr 00:0C:29:62:E0:B9
          inet addr:10.0.0.1  Bcast:10.0.0.255  Mask:255.255.255.0
          inet6 addr: fe80::20c:29ff:fe62:e0b9/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:854265 errors:0 dropped:0 overruns:0 frame:0
          TX packets:1822706 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:167076852 (159.3 MiB)  TX bytes:2232100975 (2.0 GiB)

eth0:0    Link encap:Ethernet  HWaddr 00:0C:29:62:E0:B9
          inet addr:10.0.0.5  Bcast:10.255.255.255  Mask:255.0.0.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1

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:536 errors:0 dropped:0 overruns:0 frame:0
          TX packets:536 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:60228 (58.8 KiB)  TX bytes:60228 (58.8 KiB)

pan0      Link encap:Ethernet  HWaddr 36:E5:82:B1:4E:E8
          BROADCAST MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:0 (0.0 b)  TX bytes:0 (0.0 b)

[root@dmgr1 properties]#
```

NOTE : This needs to be done only on the PRIMAY DMGR ie dmgr1.myorg.com and NOT on the secondary dmgr2.myorg.com , Unless you are failing over from the PRIMARY to the STANDBY . We will simulate it later in this document . At a given time only one server either Primary or Standby Dmgr will have the ip alias configured

I have set a host alias (**dmgr.myorg.com) against the ipalias (10.0.0.5)** within the host files. It can also be added to the internal DNS server

The screenshots for reference



NOTE : IMP!!! : For the dmgr profile creation and the federation use the host alias dmgr.myorg.com instead of dmgr1.myorg.com

Step6: Install WebSphere Application Server on the Primary Dmgr ie dmgr1.myorg.com (10.0.0.1)

We need to install WAS on all the Nodes ie
dmgr1.myorg.com, dmgr2.myorg.com (It will run the Dmgr in High Availability)
wasnode.myorg.com (It will run the Application Server)

In this step we will install WAS on dmgr1.myorg.com

a) **Login to dmgr1.myorg.com as root**
b) **Ensure that the packages for the WAS and the necessary fixpacks are saved in the server**

NOTE : Ensure that all the prerequisites and filesystem space is fulfilled and GUI access is available . You could download and install the latest SDK and WAS fixpack

I have saved the packages in **/IBMSoftware** and would be installing **WAS 8.5.5.0 using IIM 1.6.2**

```
[root@dmgr1 IBMSoftware]# pwd
/IBMSoftware
[root@dmgr1 IBMSoftware]#
[root@dmgr1 IBMSoftware]# ls -ltr
total 2909900
-rw-r--r--. 1 root root  902443241 Dec  5  2014 WASND_v8.5.5_3of3.zip
-rw-r--r--. 1 root root 1054717615 Dec  5  2014 WASND_v8.5.5_1of3.zip
-rw-r--r--. 1 root root 1022550691 Dec  5  2014 WASND_v8.5.5_2of3.zip
drwxr-xr-x. 2 root root       4096 May 29 03:47 IM1.6.2
[root@dmgr1 IBMSoftware]#
[root@dmgr1 IBMSoftware]#
```

NOTE : This HA for DMGR document would work for all the Version of WAS .

c) **Extract IIM 1.6.2**

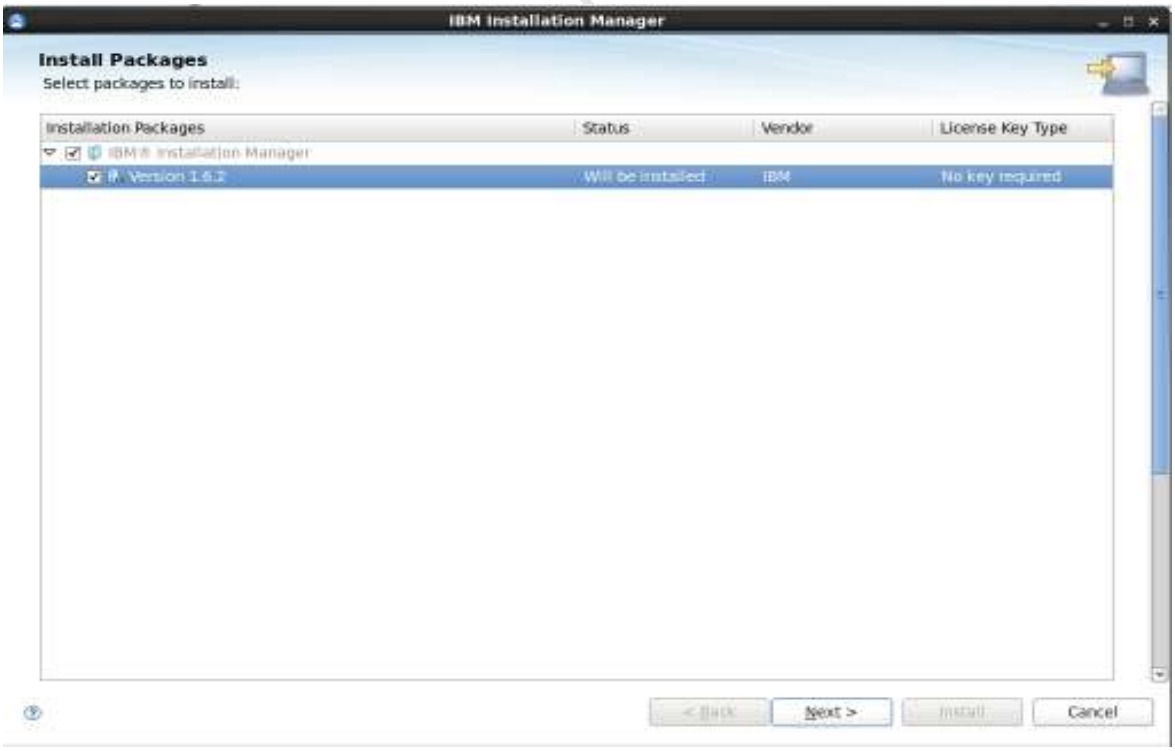
```
[root@dmgr1 IM1.6.2]# cd /IBMSoftware/IM1.6.2/
[root@dmgr1 IM1.6.2]#
[root@dmgr1 IM1.6.2]# unzip Install_Mgr_v1.6.2_Lnx_WASv8.5.5.zip
```

d) **Extract WebSphere Application Server 8.5.5.0 in the same location**

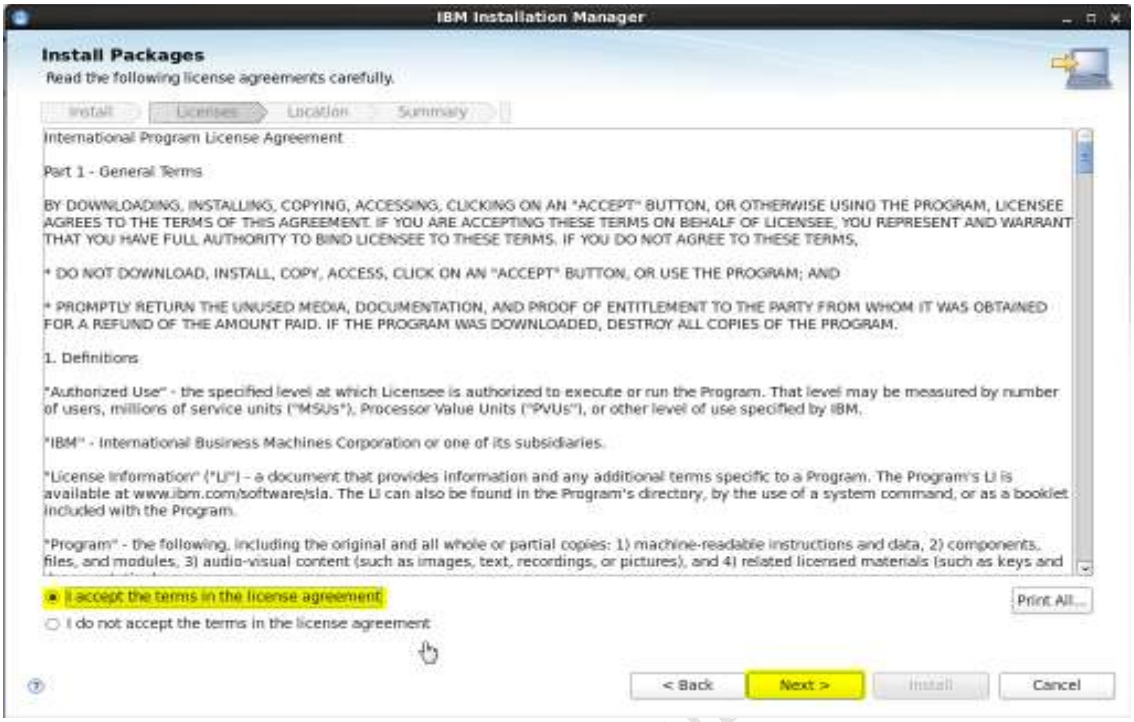
[root@dmgr1 IBMSoftware]# unzip WASND_v8.5.5_1of3.zip
[root@dmgr1 IBMSoftware]# unzip WASND_v8.5.5_2of3.zip
[root@dmgr1 IBMSoftware]# unzip WASND_v8.5.5_3of3.zip

e) Install Installation manager

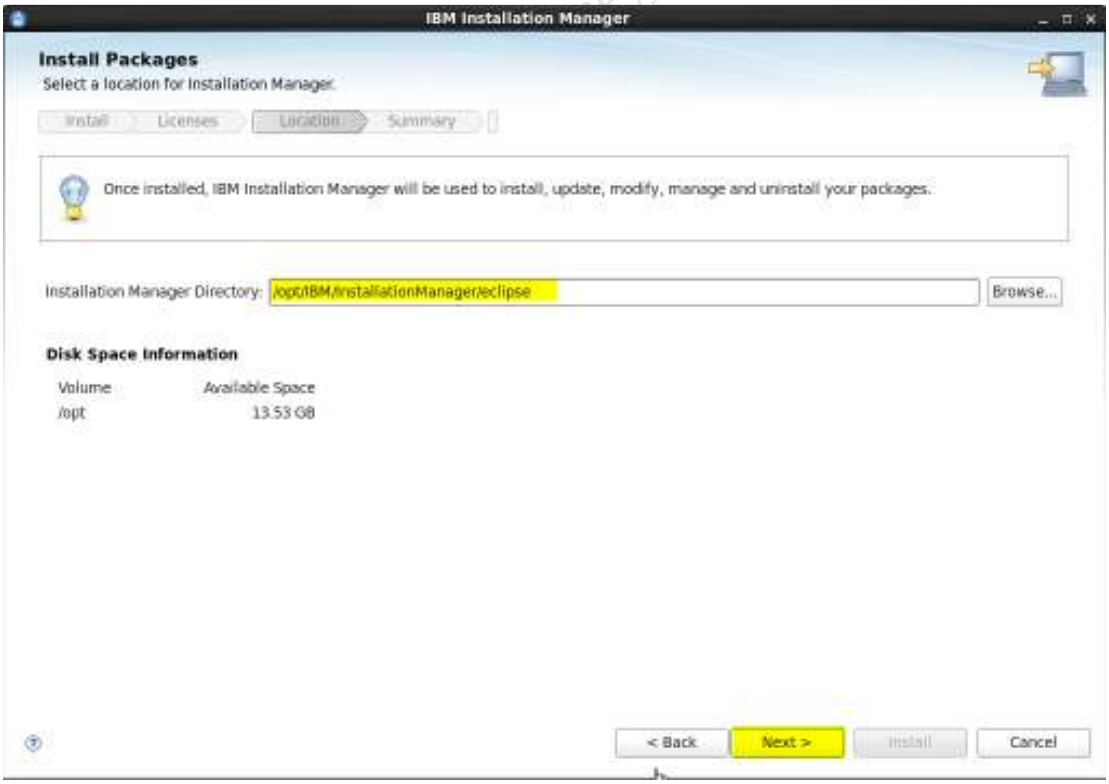
f) Select the IIM Package



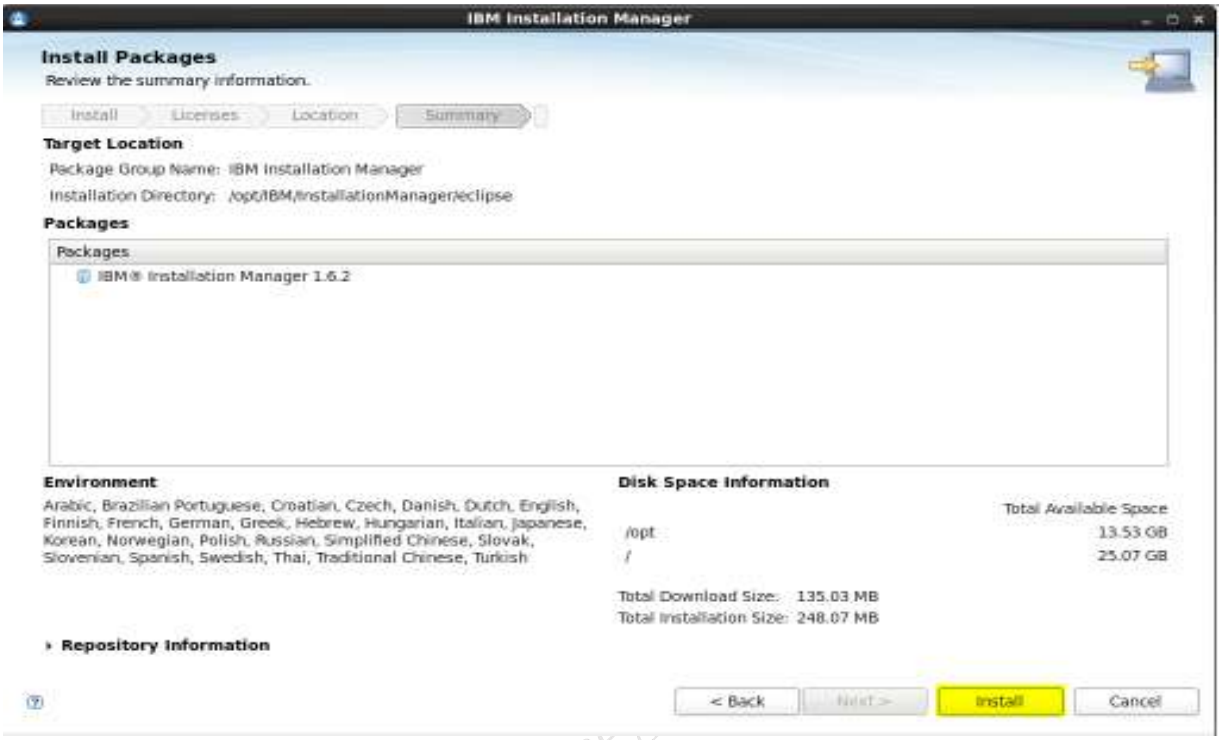
g) Accept the License

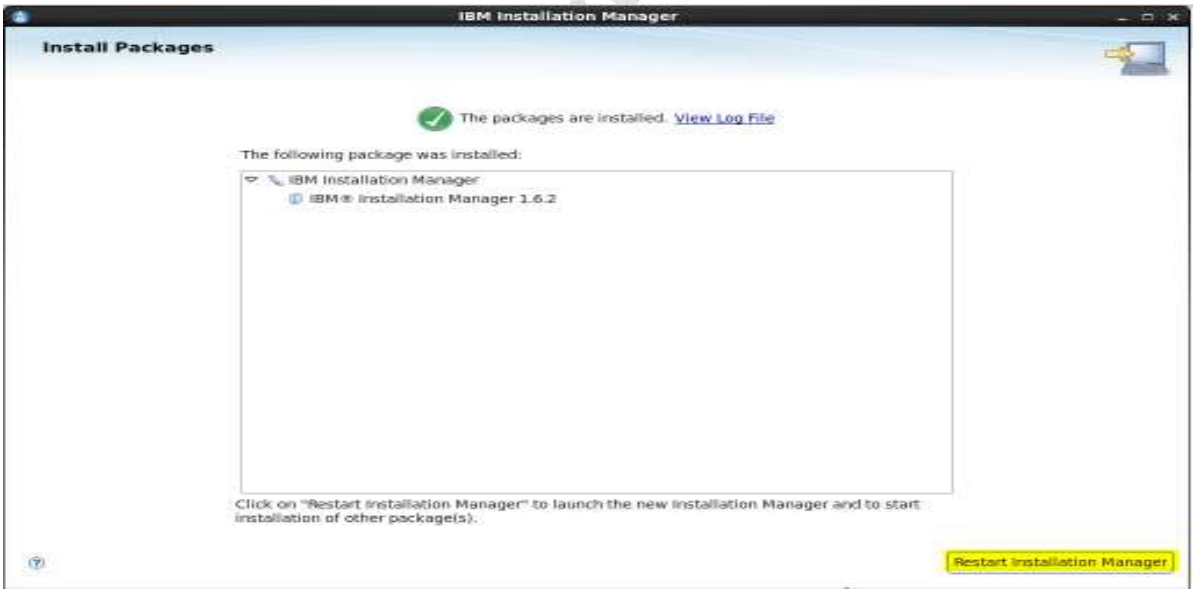


h) Define the path where the IIM will be installed. I have kept the default path



i) Validate the Summary and click Install



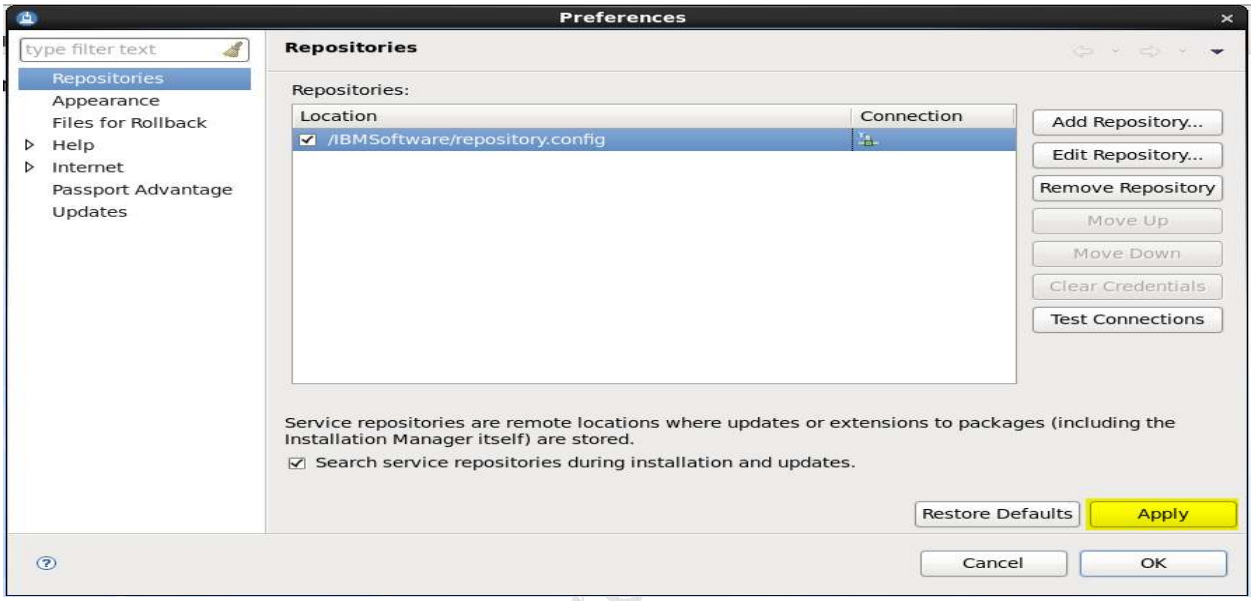


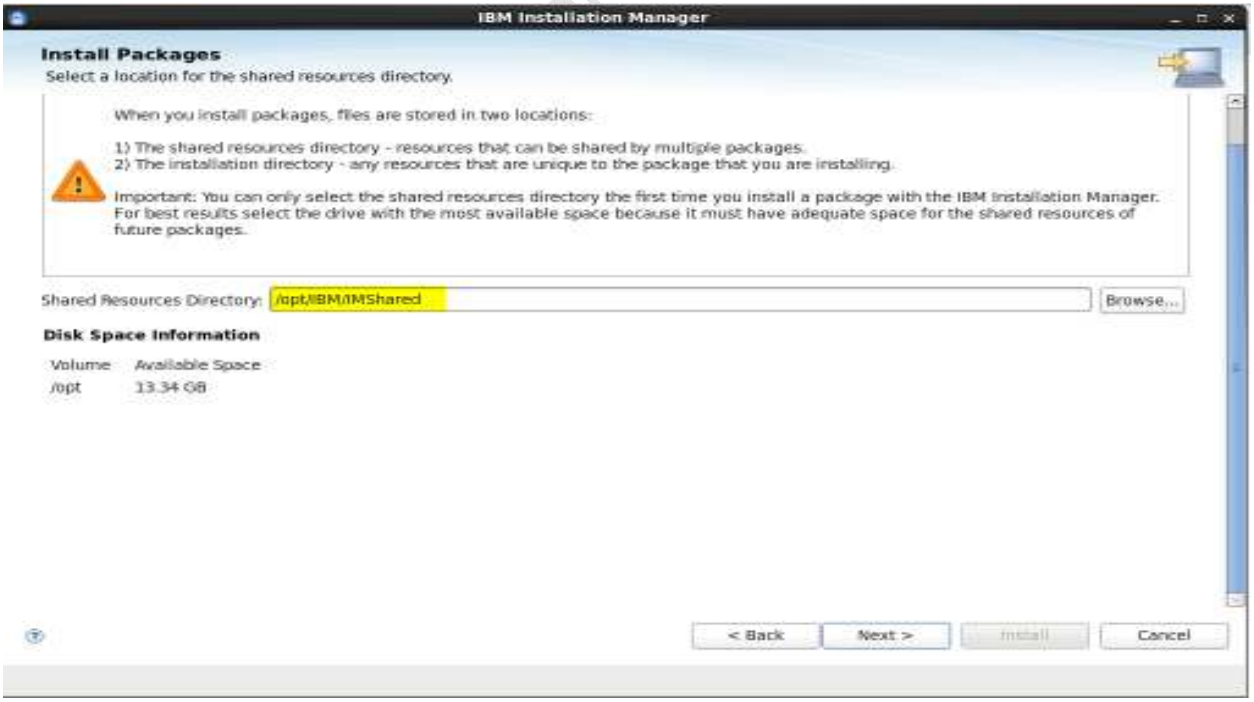
Installation of IIM 1.6.2 is successful

j) Launch the IIM

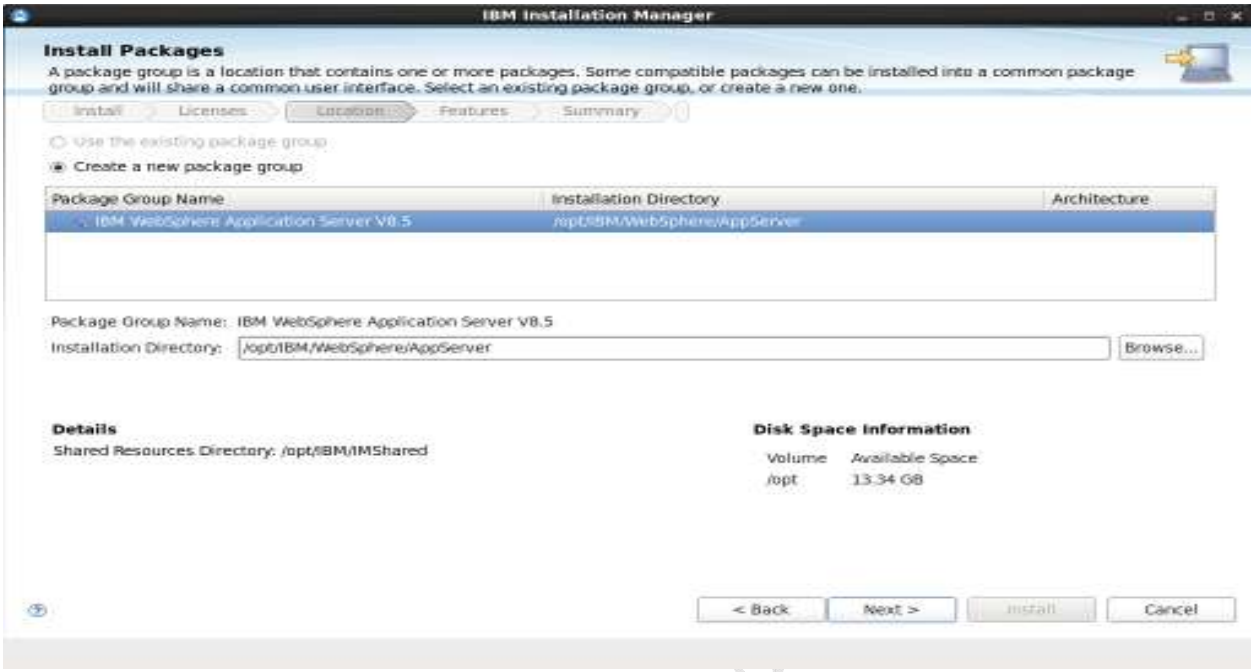
```
drwxr-xr-x. 12 root root 4096 May 29 05:15 IM1.6.2
[root@dmgr1 IBMSoftware]# /opt/IBM/InstallationManager/eclipse/IBMIM
```

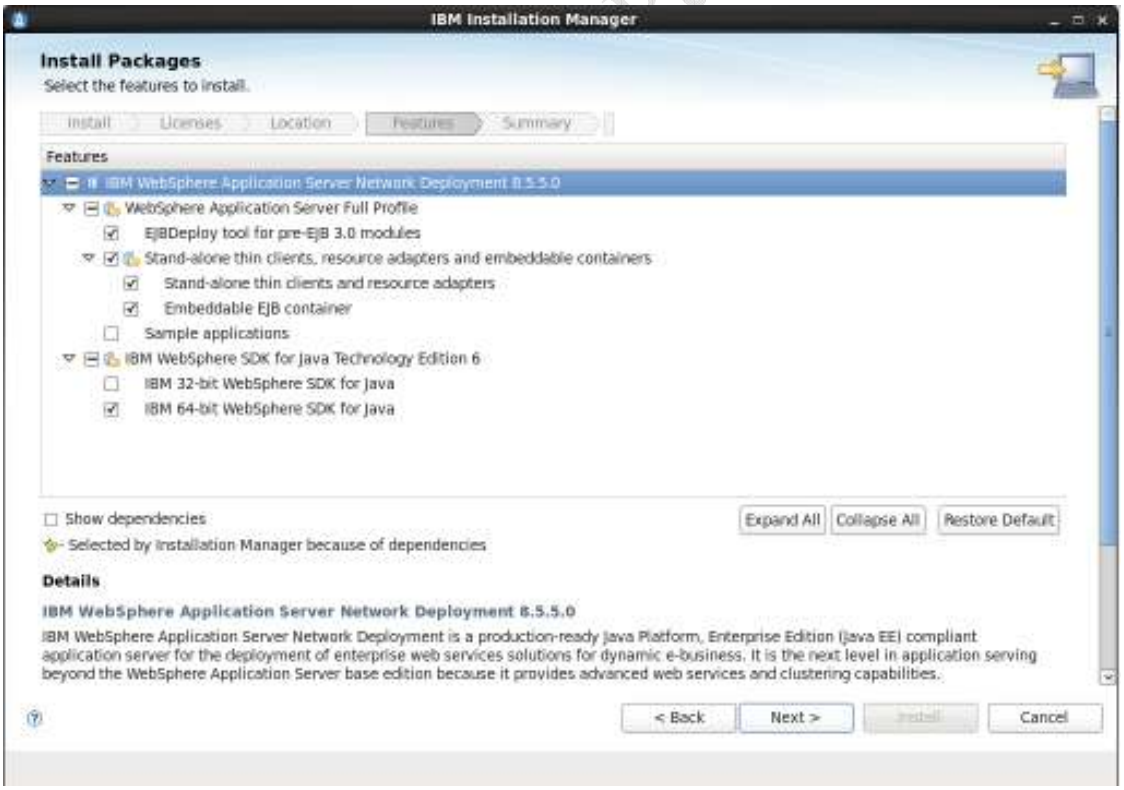
k) Add WebSphere Repository in IIM



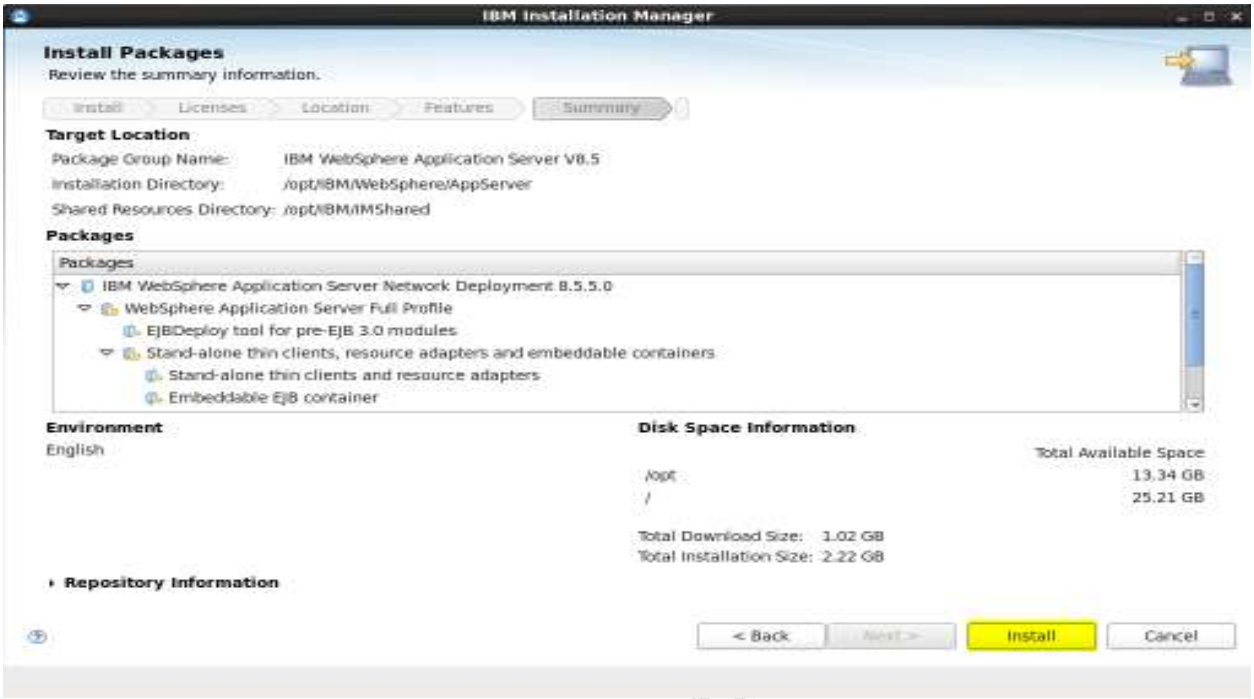


l) Mention the path of WAS Installation

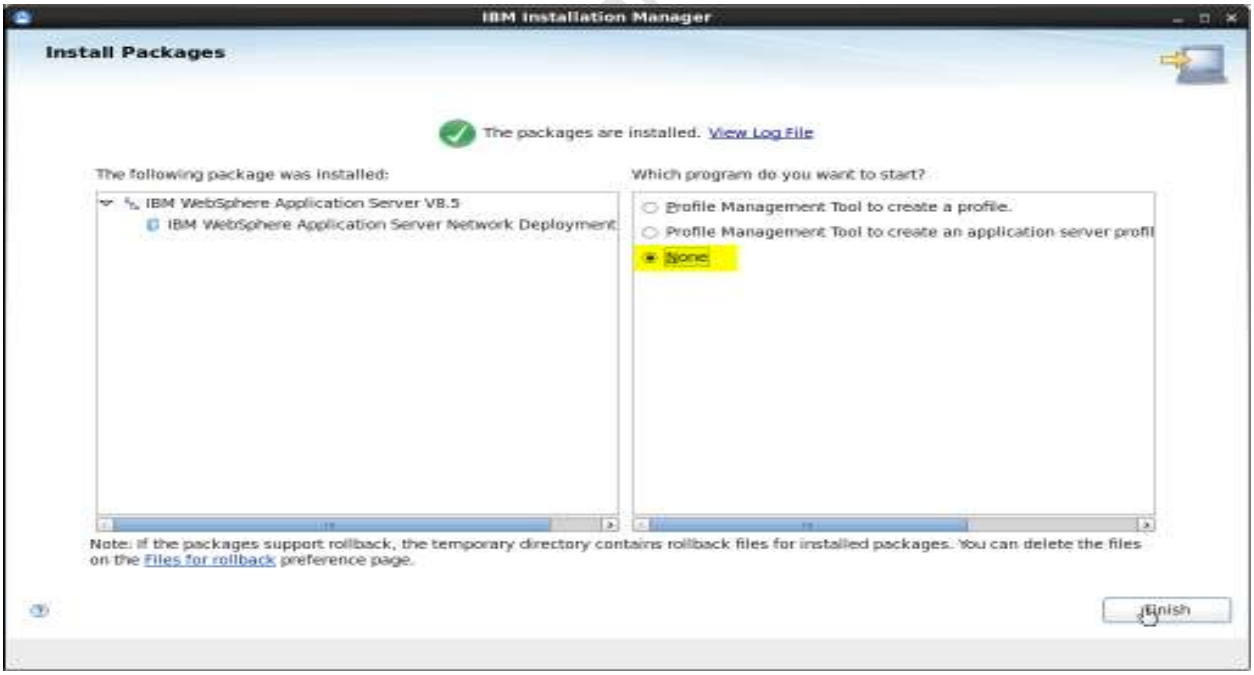




m) Review the summary and Click Install



n) Once the Installation is completed **Select None** . **Do not create the profile now**



Step7: Create the Dmgr profile on dmgr1.myorg.com

a) **Login to dmgr1.myorg.com**
b) **Navigate to the /opt/IBM/WebSphere/AppServer/bin**

[root@dmgr1 profiles]# cd /opt/IBM/WebSphere/AppServer/bin

c) **Execute manageprofile.sh to create the dmgr profile**

*[root@dmgr1 bin]# ./manageprofiles.sh -create -profileName **Dmgr01** -profilePath **/profiles/Dmgr01** -templatePath /opt/IBM/WebSphere/AppServer/profileTemplates/management -serverType DEPLOYMENT_MANAGER -cellName Cell01 -nodeName DmgrNode -hostName dmgr.myorg.com -enableAdminSecurity true -adminUserName wasadmin -adminPassword password*

NOTE: Here the /profiles/Dmgr01 is the shared NFS filesystem
For creation of the profiles refer to below link
http://webspherepundit.com/?p=1612

d) **Validate the profiles directory**

[root@dmgr1 bin]# cd /profiles/Dmgr01/

```
[root@dmgr1 profiles]# cd /opt/IBM/WebSphere/AppServer/bin
[root@dmgr1 bin]#
[root@dmgr1 bin]# ./manageprofiles.sh -create -profileName Dmgr01 -profilePath /profiles/Dmgr01 -templatePath /opt/IBM/WebSphere/AppServer/profileTemplates/management -serverType DEPLOYMENT_MANAGER
 -cellName Cell01 -nodeName DmgrNode -hostName dmgr.myorg.com -enableAdminSecurity true -adminUserName wasadmin -adminPassword password
INSTCONFSUCCESS: Success: Profile Dmgr01 now exists. Please consult /profiles/Dmgr01/logs/AboutThisProfile.txt for more information about this profile.
[root@dmgr1 bin]# cd /profiles/Dmgr01/
[root@dmgr1 Dmgr01]# ls -ltr
total 56
drwxr-xr-x. 2 root   root   4096 May 29  2016 installedApps
drwxr-xr-x. 2 root   root   4096 May 29  2016 installedConnectors
drwxr-xr-x. 2 root   root   4096 May 29  2016 installableApps
drwxr-xr-x. 6 root   root   4096 May 29  2016 configuration
drwxr-xr-x. 9 nobody nobody 4096 May 29  2016 config
drwxr-xr-x. 3 root   root   4096 May 29  2016 servers
drwxr-xr-x. 2 root   root   4096 May 29  2016 etc
drwxr-xr-x. 2 root   root   4096 May 29  2016 firststeps
drwxr-xr-x. 6 root   root   4096 May 29  2016 OTiS
drwxr-xr-x. 7 root   root   4096 May 29  2016 properties
drwxr-xr-x. 3 nobody nobody 4096 May 29  2016 bin
drwxr-xr-x. 3 root   root   4096 May 29  2016 wstemp
drwxr-xr-x. 2 root   root   4096 May 29  2016 logs
drwxr-xr-x. 5 root   root   4096 May 29  2016 temp
```

e) **Start the Dmgr using startManager.sh**

[root@dmgr1 Dmgr01]# /profiles/Dmgr01/bin/startManager.sh

```
[root@dmgr1 Dmgr01]# /profiles/Dmgr01/bin/startManager.sh
ADMU0116I: Tool information is being logged in file
           /profiles/Dmgr01/logs/dmgr/startServer.log
ADMU0128I: Starting tool with the Dmgr01 profile
ADMU3100I: Reading configuration for server: dmgr
ADMU3200I: Server launched. Waiting for initialization status.
ADMU3000I: Server dmgr open for e-business; process id is 59093
[root@dmgr1 Dmgr01]#
```

f) Get the WAS admin console ports from AboutThisProfile.txt

[root@dmgr1 Dmgr01]# cat /profiles/Dmgr01/logs/AboutThisProfile.txt

Cell name: Cell01
Host name: dmgr.myorg.com
Administrative console port: **9060**
Administrative console secure port: **9043**

Admin console url : https://dmgr.myorg.com:9043/ibm/console

```
[root@dmgr1 Dmgr01]# cat /profiles/Dmgr01/logs/AboutThisProfile.txt
Application server environment to create: Management
Location: /profiles/Dmgr01
Disk space required: 30 MB
Profile name: Dmgr01
Make this profile the default: True
Node name: DmgrNode
Cell name: Cell01
Host name: dmgr.myorg.com
Enable administrative security (recommended): True
Administrative console port: 9060
Administrative console secure port: 9043
Management bootstrap port: 9809
Management SOAP connector port: 8879
Run Management as a service: False
[root@dmgr1 Dmgr01]#
[root@dmgr1 Dmgr01]#
```

Login to the admin console to validate the profile creation

Step8: Install WebSpere Application Server on the Application Server Node ie wasnode.myorg.com (10.0.0.3)

a) Login to wasnode.myorg.com (10.0.0.3) as root and extract IIM
b) Install IIM 1.6.2
c) Install WebSphere Application Server 8.5.5.0 using IIM
d) Perform the steps similar to the Installation of WAS on dmgr1.myorg.com .. follow step 6 for the details

Step9 : Create AppServer profile on wasnode.myorg.com (10.0.0.3)

a) Login to the wasnode.myorg.com as root
b) Navigate to /opt/IBM/WebSphere/AppServer/bin/

[root@wasnode profiles]# cd /opt/IBM/WebSphere/AppServer/bin/

c) Execute the manageprofile command

*[root@wasnode bin]# ./manageprofiles.sh -create -profileName **AppSrv01** -profilePath **/opt/IBM/WebSphere/AppServer/profiles/AppSrv01** -templatePath /opt/IBM/WebSphere/AppServer/profileTemplates/default -serverName server1 -nodeName wasnodeNode1 -hostName wasnode.myorg.com -enableAdminSecurity true -adminUserName wasadmin -adminPassword wasadmin@12*

NOTE: For creation of the profiles refer to below link
http://webspherepundit.com/?p=1612

Step10: Federate the Appserver Profile from wasnode.myorg.com (10.0.0.3) to the Dmgr Cell

a) **Login to the Appserver Node ie wasnode.myorg.com**
b) **Ensure the connectivity between the App Server Node and Dmgr ie 10.0.0.5 (dmgr.myorg.com)**

[root@wasnode bin]# ping dmgr.myorg.com

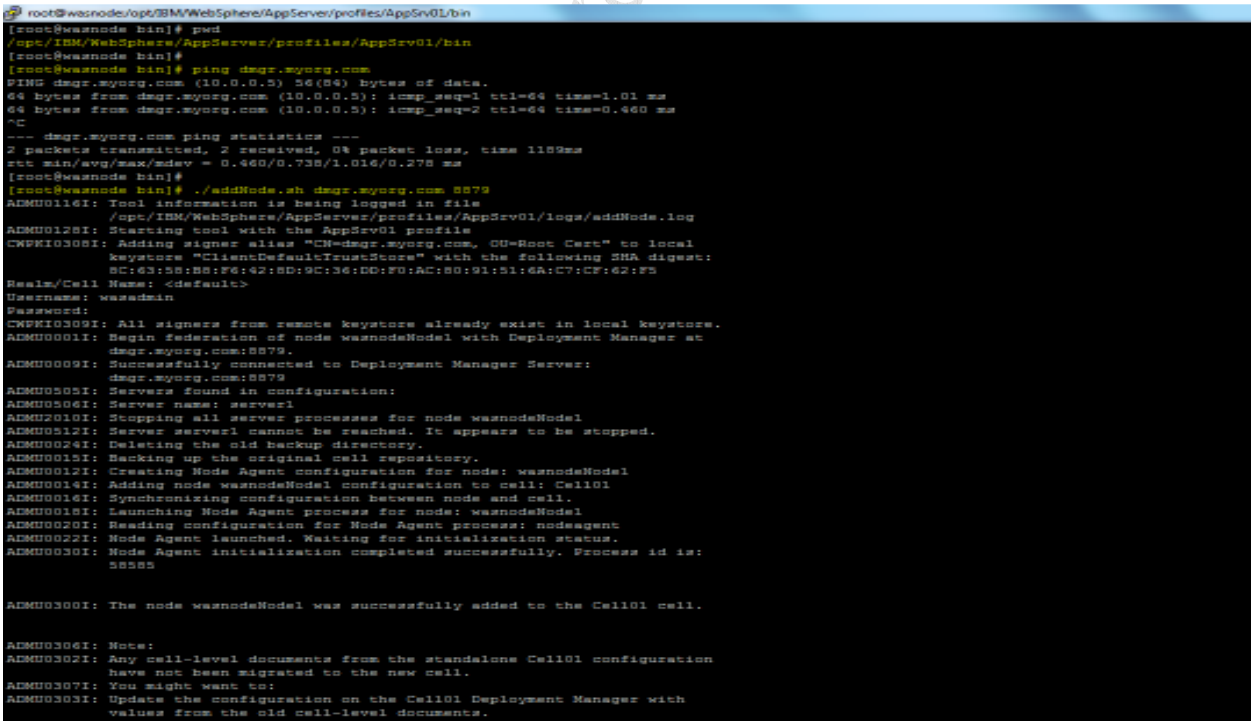
NOTE : Here we have to provide the hostname alias ie dmgr.myorg.com instead of individual hostname ie dmgr1.myorg.com or dmgr2.myorg.com

NOTE : Ensure the time difference between app server node and dmgr nodes are less than 5 min

c) Navigate to <APP_PROFILE_HOME>/bin ie **/opt/IBM/WebSphere/AppServer/profiles/AppSrv01/bin**
d) **Execute the addNode.sh command .**
You could add –includeapps option to add the applications from the appserver node in the dmgr cell

[root@wasnode bin]# ./addNode.sh dmgr.myorg.com 8879

NOTE : Here we have to provide the hostname alias ie dmgr.myorg.com instead of individual hostname ie dmgr1.myorg.com or dmgr2.myorg.com

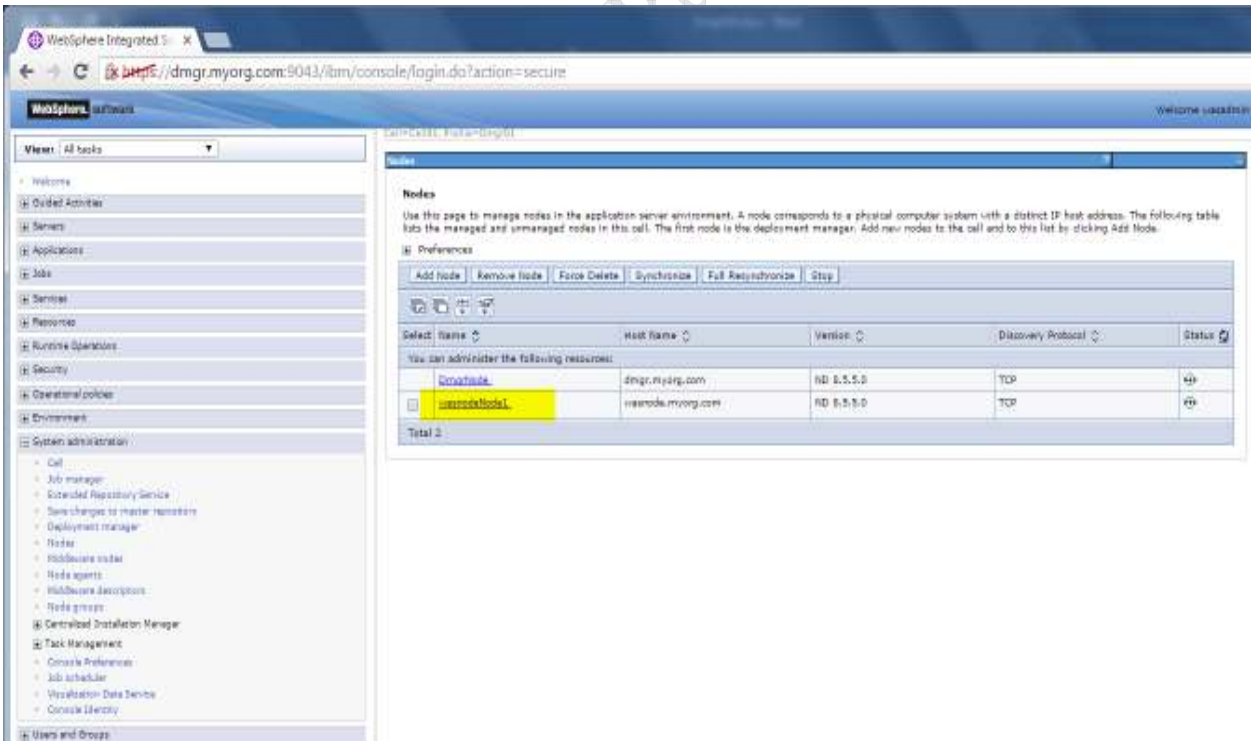


This will also start the nodeagent .

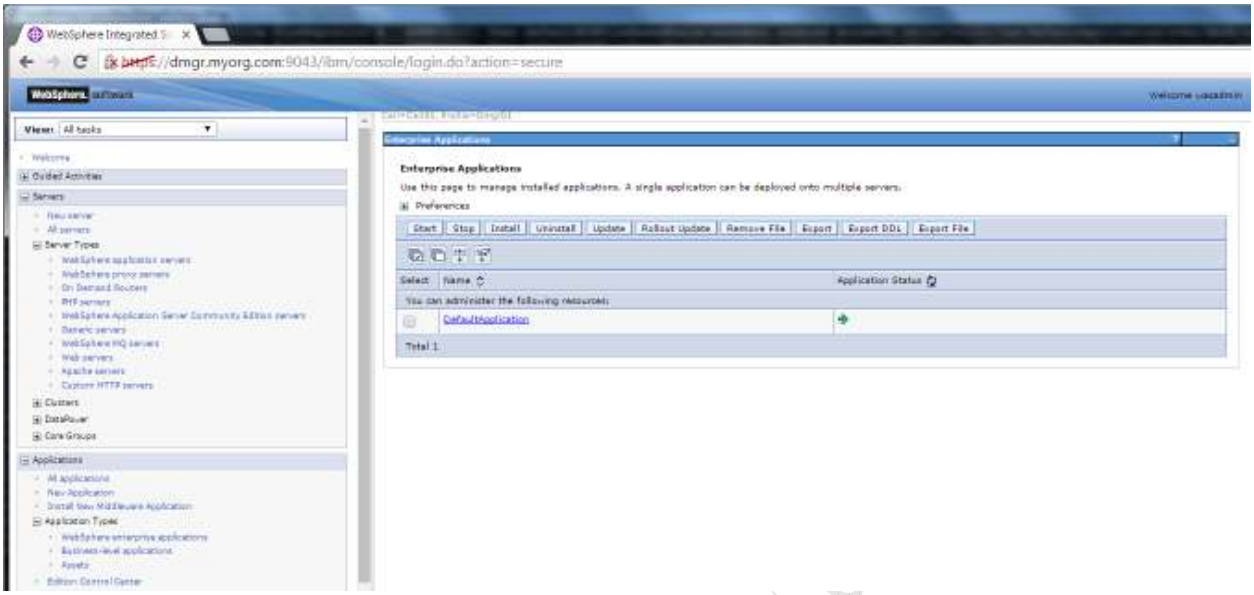
e) Login to the dmgr to validate the federation

https://dmgr.myorg.com:9043/ibm/console/logon.jsp

f) Navigate to **"System administraton" >> Nodes**

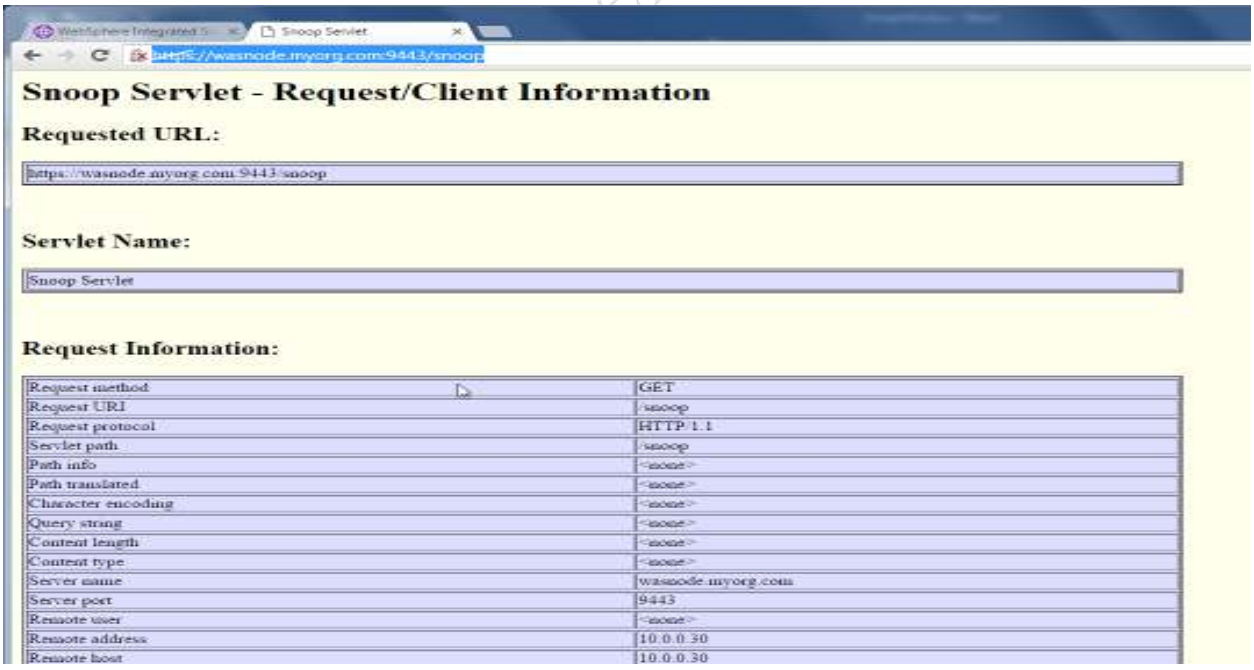


g) Deploy the default application to test the env



h) Check the snoop application

https://wasnode.myorg.com:9443/snoop



Step 11: Install WebSpere Application Server on the Standby Dmgr ie dmgr2.myorg.com (10.0.0.2)

a) **Login to dmgr2.myorg.com (10.0.0.2) as root and extract IIM**
b) **Install IIM 1.6.2**
c) **Install WebSphere Application Server 8.5.5.0 using IIM**
d) **Perform the steps similar to the Installation of WAS on dmgr1.myorg.com .. follow step 6 for the details**

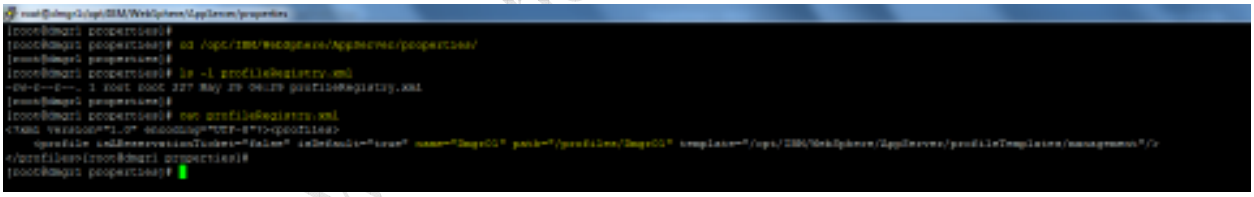
DO NOT CREATE the dmgr profile again .. We will use the profile created from dmgr1.myorg.com which is present in the shared filesystem ie /profiles/Dmgr01

Step12 : Copy profileRegistry.xml from the dmg1.myorg.com to dmg2.myorg.com

a) **Login to dmgr1.myorg.com**
b) **Copy the profileRegistry.xml**
Navigate to cd /opt/IBM/WebSphere/AppServer/properties/ and copy the profileRegistry.xml to dmgr2.myorg.com in the same location

[root@dmgr1 properties]# cd /opt/IBM/WebSphere/AppServer/properties/

NOTE : The profileRegistry.xml will contain the profiles which were created on the respective servers .. in this case only Dmgr01 profile is created



Copy the profileRegistry.xml to dmgr2.myorg.com using scp .

scp profileRegistry.xml root@dmgr2.myorg.com:/opt/IBM/WebSphere/AppServer/properties/

Validate it on the Standby Dmgr Node ie dmgr2.myorg.com

```
[root@dmgr2 properties]# pwd
/opt/IBM/WebSphere/AppServer/properties
[root@dmgr2 properties]# ls -l profileRegistry.xml
-rw-r--r--. 1 root root 227 Aug 19 21:02 profileRegistry.xml
[root@dmgr2 properties]#
```

Step13 : Failover from Primary ie dmgr1.myorg.com (10.0.0.1) to the Standby dmgr2.myorg.com (10.0.0.2)

Current Status: Dmgr process is running on 10.0.0.1 ie the dmgr1.myorg.com

We will failover the Dmgr process from Primary ie dmgr1.myorg.com (10.0.0.1) to the Standby dmgr2.myorg.com (10.0.0.2)

a) Kill the Dmgr process on dmgr1.myorg.com to simulate the actual crash or stop the dmgr services
[root@dmgr1 properties]# /profiles/Dmgr01/bin/stopManager.sh
Or

[root@dmgr1 properties]# kill -9 <pid of dmgr process >

```
[root@dmgr1 properties]# /profiles/Dmgr01/bin/stopManager.sh
ADMU0116I: Tool information is being logged in file
           /profiles/Dmgr01/logs/dmgr/stopServer.log
ADMU0128I: Starting tool with the Dmgr01 profile
ADMU3100I: Reading configuration for server: dmgr
Realm/Cell Name: <default>
Username: wasadmin
Password:
ADMU3201I: Server stop request issued. Waiting for stop status.
ADMU4000I: Server dmgr stop completed.

[root@dmgr1 properties]#
```

b) Check the ip alias configured in dmgr1.myorg.com . This needs to be removed

```
[root@dmgr1 properties]# ifconfig -a
eth0      Link encap:Ethernet  HWaddr 00:0C:29:62:E0:B9
          inet addr:10.0.0.1  Bcast:10.0.0.255  Mask:255.255.255.0
          inet6 addr: fe80::20c:29ff:fe62:e0b9/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:853474 errors:0 dropped:0 overruns:0 frame:0
          TX packets:1821974 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:166889875 (159.1 MiB)  TX bytes:2231952091 (2.0 GiB)

eth0:0    Link encap:Ethernet  HWaddr 00:0C:29:62:E0:B9
          inet addr:10.0.0.5  Bcast:10.255.255.255  Mask:255.0.0.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1

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:516 errors:0 dropped:0 overruns:0 frame:0
          TX packets:516 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:58616 (57.2 KiB)  TX bytes:58616 (57.2 KiB)

pan0      Link encap:Ethernet  HWaddr 36:E5:82:B1:4E:E8
          BROADCAST MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:0 (0.0 b)  TX bytes:0 (0.0 b)

[root@dmgr1 properties]#
```

c) Unalias the ip address 10.0.0.5 from dmgr1.myorg.com

[root@dmgr1 properties]# /sbin/ifconfig eth0:0 10.0.0.5 down

d) Validate it using ifconfig command

[root@dmgr1 properties]# ifconfig -a

```
[root@dmgr1 properties]# /sbin/ifconfig eth0:0 10.0.0.5 down
[root@dmgr1 properties]# ifconfig -a
eth0      Link encap:Ethernet  HWaddr 00:0C:29:62:E0:B9
          inet addr:10.0.0.1  Bcast:10.0.0.255  Mask:255.255.255.0
          inet6 addr: fe80::20c:29ff:fe62:e0b9/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:853575 errors:0 dropped:0 overruns:0 frame:0
          TX packets:1822079 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:166946601 (159.2 MiB)  TX bytes:2231984029 (2.0 GiB)

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:524 errors:0 dropped:0 overruns:0 frame:0
          TX packets:524 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:59264 (57.8 KiB)  TX bytes:59264 (57.8 KiB)

pan0      Link encap:Ethernet  HWaddr 36:E5:82:B1:4E:E8
          BROADCAST MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:0 (0.0 b)  TX bytes:0 (0.0 b)
```

e) On Standby dmgr2.myorg.com (10.0.0.2) add the ip alias 10.0.0.5

```
[root@dmgr2 properties]# ifconfig -a
eth0      Link encap:Ethernet  HWaddr 00:0C:29:EB:96:C2
          inet addr:10.0.0.2  Bcast:10.0.0.255  Mask:255.255.255.0
          inet6 addr: fe80::20c:29ff:feeb:96c2/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:2570 errors:0 dropped:0 overruns:0 frame:0
          TX packets:2928 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:253367 (247.4 KiB)  TX bytes:509472 (497.5 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:144 errors:0 dropped:0 overruns:0 frame:0
          TX packets:144 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:11368 (11.1 KiB)  TX bytes:11368 (11.1 KiB)

[root@dmgr2 properties]#
```

f) Execute "ifconfig eth0:0 10.0.0.5 up"

```
[root@dmgr2 properties]#
[root@dmgr2 properties]# ifconfig eth0:0 10.0.0.5 up
[root@dmgr2 properties]#
[root@dmgr2 properties]# ifconfig -a
eth0      Link encap:Ethernet  HWaddr 00:0C:29:EB:96:C2
          inet addr:10.0.0.2  Bcast:10.0.0.255  Mask:255.255.255.0
          inet6 addr: fe80::20c:29ff:feeb:96c2/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:2590 errors:0 dropped:0 overruns:0 frame:0
          TX packets:2942 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:254947 (248.9 KiB)  TX bytes:512000 (500.0 KiB)

eth0:0    Link encap:Ethernet  HWaddr 00:0C:29:EB:96:C2
          inet addr:10.0.0.5  Bcast:10.255.255.255  Mask:255.0.0.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1

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:144 errors:0 dropped:0 overruns:0 frame:0
          TX packets:144 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:11368 (11.1 KiB)  TX bytes:11368 (11.1 KiB)

[root@dmgr2 properties]#
```

g) Ensure that the shared nfs filesystem /profiles/Dmgr01 is mounted on dmgr2.myorg.com

```
[root@dmgr2 properties]# hostname
dmgr2.myorg.com
[root@dmgr2 properties]#
[root@dmgr2 properties]# df -h
Filesystem                      Size  Used Avail Use% Mounted on
/dev/sda2                        35G   12G   23G  34% /
tmpfs                           932M  224K  932M   1% /dev/shm
/dev/sda1                        15G  2.7G   12G  20% /opt
nfsnode.myorg.com:/profiles/Dmgr01   35G   12G   22G  35% /profiles/Dmgr01
[root@dmgr2 properties]#
[root@dmgr2 properties]#
```

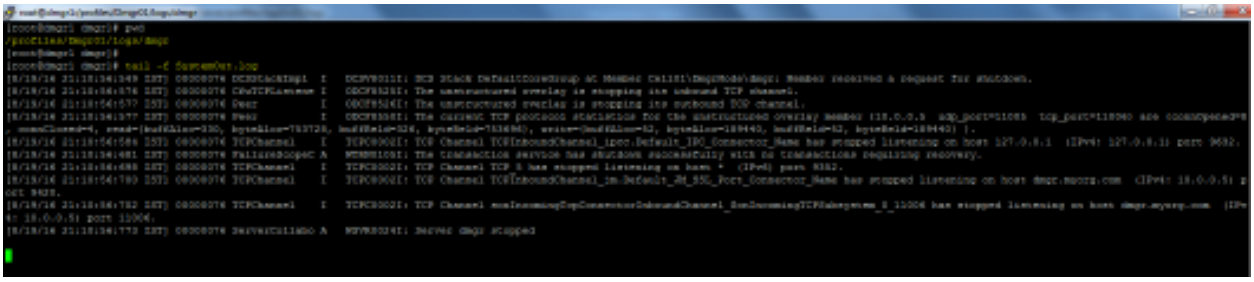
h) Start the dmgr services on dmgr2.myorg.com

i) From dmgr2.myorg.com execute the startManager.sh from /profiles/Dmgr01/bin

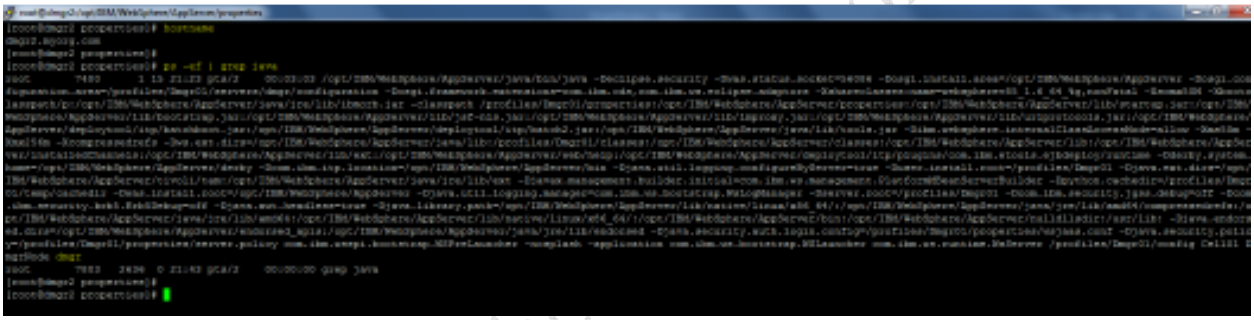
```
[root@dmgr2 properties]# /profiles/Dmgr01/bin/startManager.sh
ADMU0116I: Tool information is being logged in file
           /profiles/Dmgr01/logs/dmgr/startServer.log
ADMU3100I: Reading configuration for server: dmgr
ADMU3200I: Server launched. Waiting for initialization status.
ADMU3000I: Server dmgr open for e-business; process id is 7400
[root@dmgr2 properties]#
```

j) Check the dmgr logs from /profiles/Dmgr01/logs/dmgr

[root@dmgr1 dmgr]# tail -f SystemOut.log



k) Check the dmgr processes



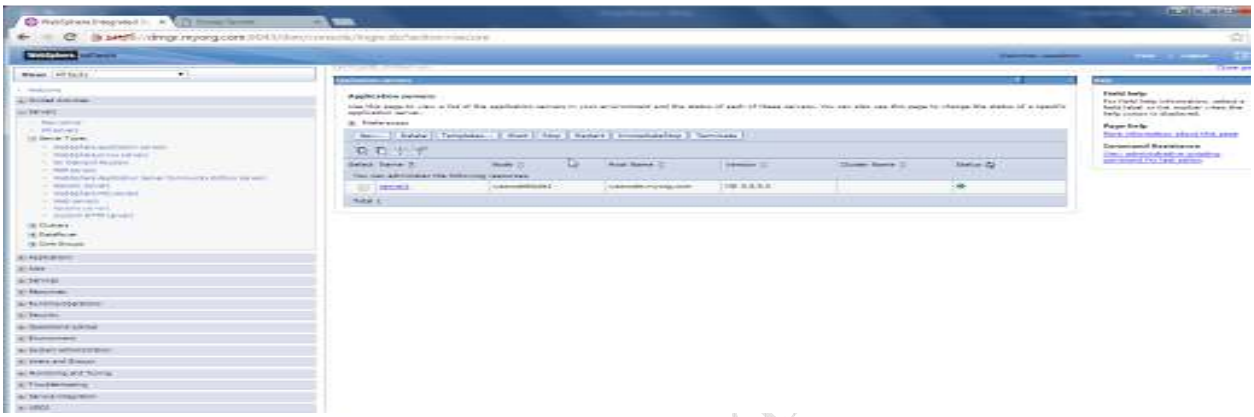
l) On dmgr1.myorg.com , there is no dmgr process running

```
[root@dmgr1 properties]# hostname
dmgr1.myorg.com
[root@dmgr1 properties]#
[root@dmgr1 properties]# ps -ef | grep java
root      63210  50520  0 21:41 pts/0    00:00:00 grep java
[root@dmgr1 properties]#
[root@dmgr1 properties]#
```

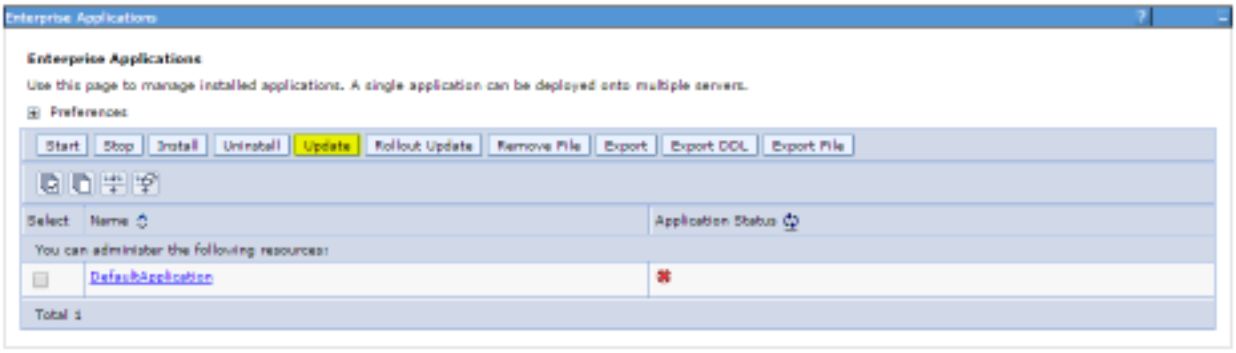
Step14: Testing the Failover to Standby dmgr2.myorg.com (10.0.0.2) from Primary ie dmgr1.myorg.com (10.0.0.1)

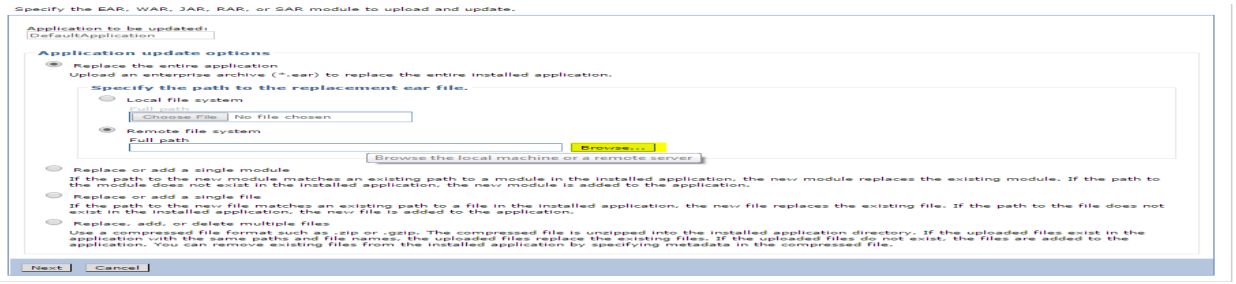
a) Try restarting the server1 using the admin console url ie
http://dmgr.myorg.com:9060/ibm/console

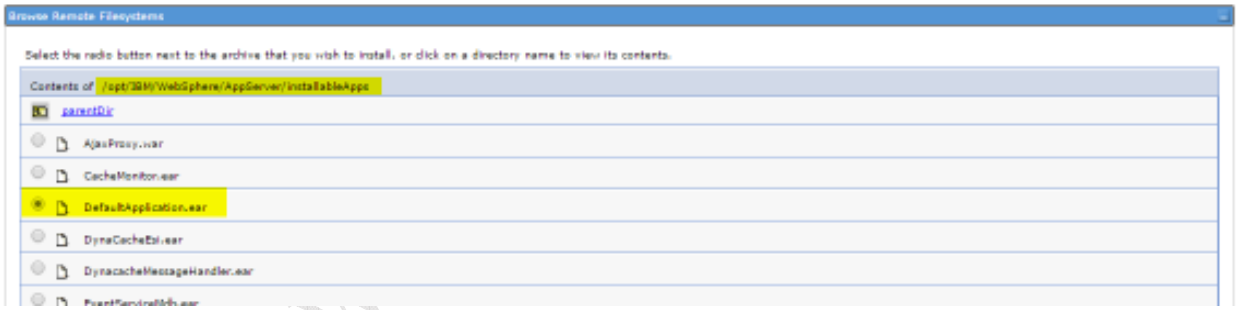
NOTE : currently the dmgr process is running in dmgr2.ibm.com



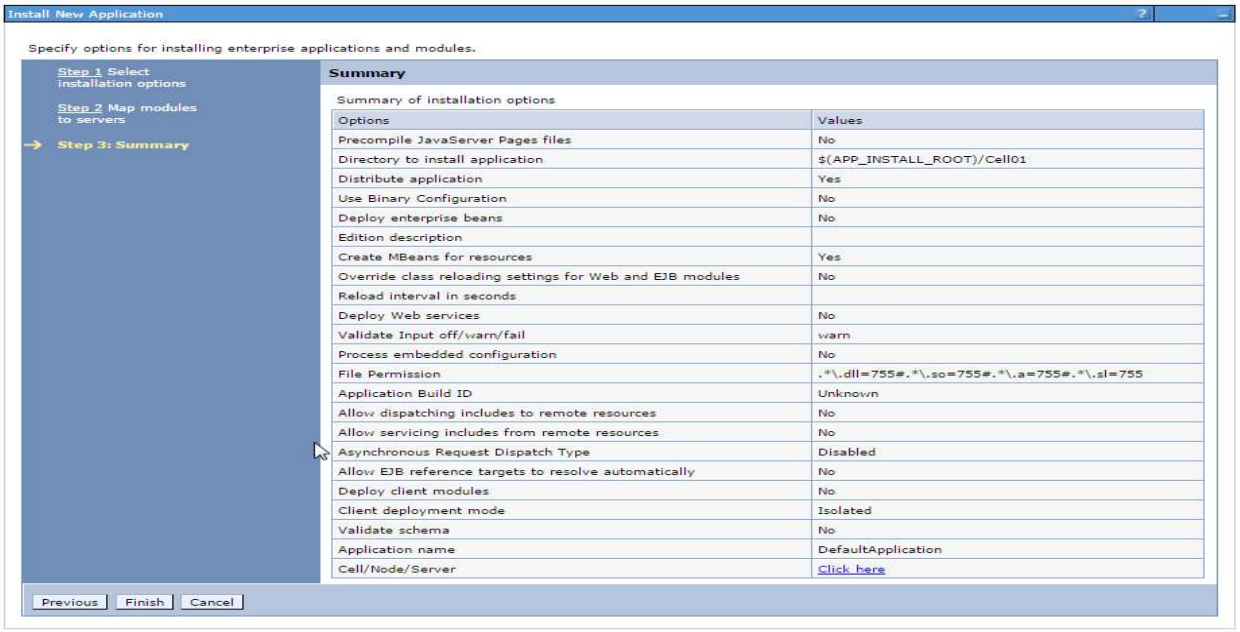
b) **Try updating the "Default application "**

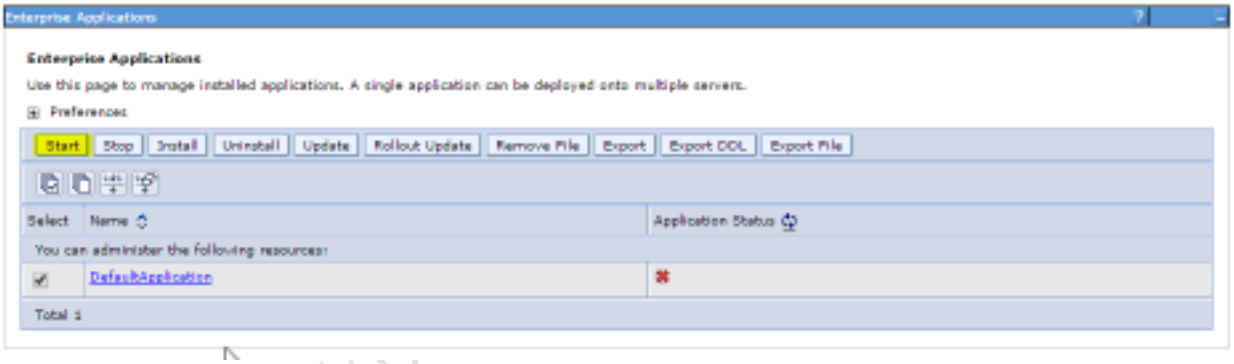


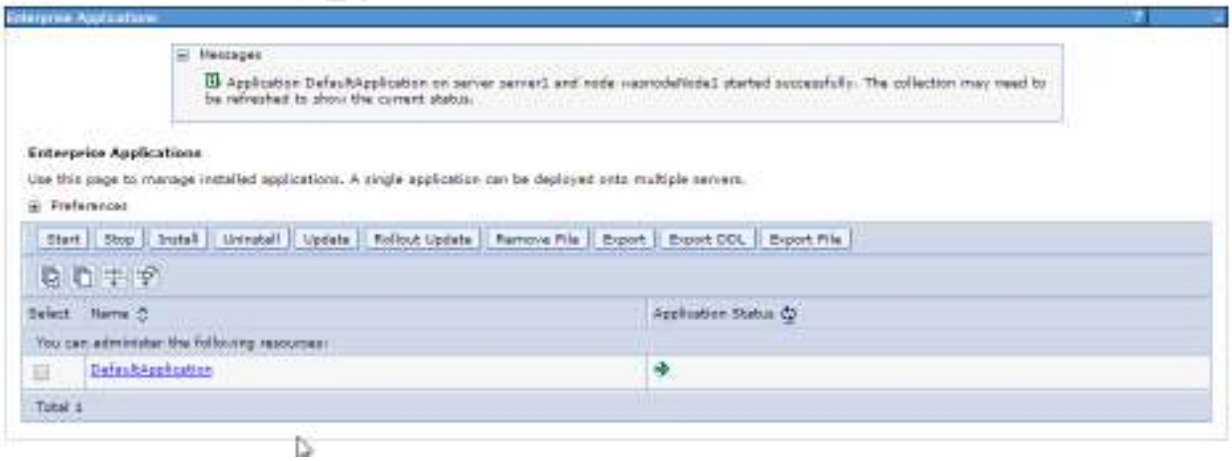




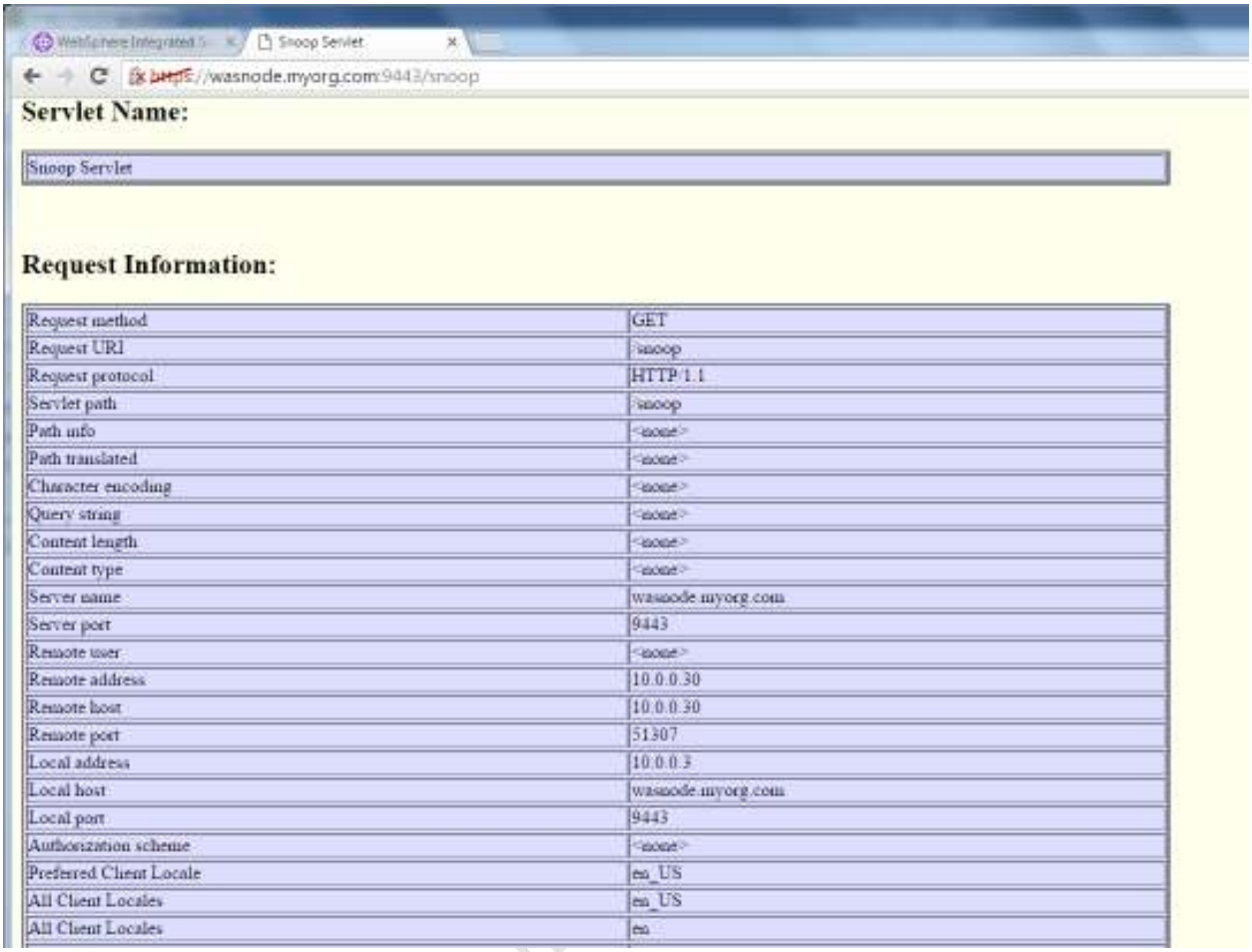
Steps skipped for brevity







Please Subscribe to the site http://webspherepundit.com
And also like the Facebook Page https://www.facebook.com/webspherepundit



You could perform any other actions from the Dmgr to see if all the functionality works

Steps 15 : Failback to Primary ie dmgr1.myorg.com (10.0.0.1) from Standby dmgr2.myorg.com (10.0.0.2)

a) Kill the process to simulate the Crash of Standby or stop the dmgr services on dmgr2.myorg.com

```
[root@dmgr2 properties]# ps -ef | grep java
root      7400     1 15 21:23 pts/2    00:03:03 /opt/IBM/WebSphere/AppServer/java/bin/java -Declipse.security -Dwas.status.socket=56086 -Dosgi.install.area=/opt/IBM/WebSphere/AppServer -Dosgi.configuration.area=/profiles/Dmgr01/servers/dmgr/configuration -Dosgi.framework.extensions=com.ibm.cds,com.ibm.ws.eclipse.adaptors -Xshareclasses:name=webspherev85_1.6_64_%g,nonFatal -Xscmx50M -Xbootclasspath/p:/opt/IBM/WebSphere/AppServer/java/jre/lib/ibmorb.jar -classpath /profiles/Dmgr01/properties:/opt/IBM/WebSphere/AppServer/properties:/opt/IBM/WebSphere/AppServer/lib/startup.jar:/opt/IBM/WebSphere/AppServer/lib/bootstrap.jar:/opt/IBM/WebSphere/AppServer/lib/jsf-nls.jar:/opt/IBM/WebSphere/AppServer/lib/lmproxy.jar:/opt/IBM/WebSphere/AppServer/lib/urlprotocols.jar:/opt/IBM/WebSphere/AppServer/deploytool/itp/batchboot.jar:/opt/IBM/WebSphere/AppServer/deploytool/itp/batch2.jar:/opt/IBM/WebSphere/AppServer/java/lib/tools.jar -Dibm.websphere.internalClassAccessMode=allow -Xms50m -Xmx256m -Xcompressedrefs -Dws.ext.dirs=/opt/IBM/WebSphere/AppServer/java/lib:/profiles/Dmgr01/classes:/opt/IBM/WebSphere/AppServer/classes:/opt/IBM/WebSphere/AppServer/lib:/opt/IBM/WebSphere/AppServer/installedChannels:/opt/IBM/WebSphere/AppServer/lib/ext:/opt/IBM/WebSphere/AppServer/web/help:/opt/IBM/WebSphere/AppServer/deploytool/itp/plugins/com.ibm.etools.ejbdeploy/runtime -Dderby.system.home=/opt/IBM/WebSphere/AppServer/derby -Dcom.ibm.itp.location=/opt/IBM/WebSphere/AppServer/bin -Djava.util.logging.configureByServer=true -Duser.install.root=/profiles/Dmgr01 -Djava.ext.dirs=/opt/IBM/WebSphere/AppServer/tivoli/tam:/opt/IBM/WebSphere/AppServer/java/jre/lib/ext -Djavax.management.builder.initial=com.ibm.ws.management.PlatformMBeanServerBuilder -Dpython.cachedir=/profiles/Dmgr01/temp/cachedir -Dwas.install.root=/opt/IBM/WebSphere/AppServer -Djava.util.logging.manager=com.ibm.ws.bootstrap.WsLogManager -Dserver.root=/profiles/Dmgr01 -Dcom.ibm.security.jgss.debug=off -Dcom.ibm.security.krb5.Krb5Debug=off -Djava.awt.headless=true -Djava.library.path=/opt/IBM/WebSphere/AppServer/lib/native/linux/x86_64/:/opt/IBM/WebSphere/AppServer/java/jre/lib/amd64/compressedrefs:/opt/IBM/WebSphere/AppServer/java/jre/lib/amd64:/opt/IBM/WebSphere/AppServer/lib/native/linux/x86_64/:/opt/IBM/WebSphere/AppServer/bin:/opt/IBM/WebSphere/AppServer/nulldllsdir:/usr/lib: -Djava.endorsed.dirs=/opt/IBM/WebSphere/AppServer/endorsed_apis:/opt/IBM/WebSphere/AppServer/java/jre/lib/endorsed -Djava.security.auth.login.config=/profiles/Dmgr01/properties/wsjaas.conf -Djava.security.policy=/profiles/Dmgr01/properties/server.policy com.ibm.wsspi.bootstrap.WSPreLauncher -nosplash -application com.ibm.ws.bootstrap.WSLauncher com.ibm.ws.runtime.WsServer /profiles/Dmgr01/config Cell01 Dmgr01 dmgrNode dmgr
root      7803  2636  0 21:43 pts/2    00:00:00 grep java
[root@dmgr2 properties]#
[root@dmgr2 properties]#
[root@dmgr2 properties]#
[root@dmgr2 properties]# kill -9 7400
[root@dmgr2 properties]#
[root@dmgr2 properties]# ps -ef | grep java
root      7813  2636  0 21:46 pts/2    00:00:00 grep java
[root@dmgr2 properties]#
[root@dmgr2 properties]#
```

b) **Remove the alias 10.0.0.5 from dmgr2.myorg.com using** ***[root@dmgr2 properties]# /sbin/ifconfig eth0:0 10.0.0.5 down*** ***[root@dmgr2 properties]# ifconfig -a***

```
[root@dmgr2 properties]# ifconfig -a
eth0      Link encap:Ethernet  HWaddr 00:0C:29:EB:96:C2
          inet addr:10.0.0.2  Bcast:10.0.0.255  Mask:255.255.255.0
          inet6 addr: fe80::20c:29ff:feeb:96c2/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:89359 errors:0 dropped:0 overruns:0 frame:0
          TX packets:97828 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:36654005 (34.9 MiB)  TX bytes:39968848 (38.1 MiB)

eth0:0    Link encap:Ethernet  HWaddr 00:0C:29:EB:96:C2
          inet addr:10.0.0.5  Bcast:10.255.255.255  Mask:255.0.0.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1

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:231 errors:0 dropped:0 overruns:0 frame:0
          TX packets:231 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:19901 (19.4 KiB)  TX bytes:19901 (19.4 KiB)

[root@dmgr2 properties]#
[root@dmgr2 properties]# clear
[root@dmgr2 properties]# /sbin/ifconfig eth0:0 10.0.0.5 down
[root@dmgr2 properties]# ifconfig -a
eth0      Link encap:Ethernet  HWaddr 00:0C:29:EB:96:C2
          inet addr:10.0.0.2  Bcast:10.0.0.255  Mask:255.255.255.0
          inet6 addr: fe80::20c:29ff:feeb:96c2/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:89389 errors:0 dropped:0 overruns:0 frame:0
          TX packets:97851 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:36661079 (34.9 MiB)  TX bytes:39974050 (38.1 MiB)

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:231 errors:0 dropped:0 overruns:0 frame:0
          TX packets:231 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:19901 (19.4 KiB)  TX bytes:19901 (19.4 KiB)

[root@dmgr2 properties]#
```

c) **Add the ip alias 10.0.0.5 on dmgr1.myorg.com on eth0:0**
[root@dmgr1 IBMSoftware]# ifconfig eth0:0 10.0.0.5 up
[root@dmgr1 IBMSoftware]# ifconfig -a

```
[root@dmgr1 properties]# ifconfig eth0:0 10.0.0.5 up
[root@dmgr1 properties]#
[root@dmgr1 properties]# ifconfig a
a: error fetching interface information: Device not found
[root@dmgr1 properties]# ifconfig -a
eth0      Link encap:Ethernet  HWaddr 00:0C:29:62:E0:B9
          inet addr:10.0.0.1  Bcast:10.0.0.255  Mask:255.255.255.0
          inet6 addr: fe80::20c:29ff:fe62:e0b9/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:854265 errors:0 dropped:0 overruns:0 frame:0
          TX packets:1822706 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:167076852 (159.3 MiB)  TX bytes:2232100975 (2.0 GiB)

eth0:0    Link encap:Ethernet  HWaddr 00:0C:29:62:E0:B9
          inet addr:10.0.0.5  Bcast:10.255.255.255  Mask:255.0.0.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1

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:536 errors:0 dropped:0 overruns:0 frame:0
          TX packets:536 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:60228 (58.8 KiB)  TX bytes:60228 (58.8 KiB)

pan0      Link encap:Ethernet  HWaddr 36:E5:82:B1:4E:E8
          BROADCAST MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:0 (0.0 b)  TX bytes:0 (0.0 b)

[root@dmgr1 properties]#
[root@dmgr1 properties]#
```

d) **Start the dmgr services on dmg1.myorg.com**

[root@dmgr1 properties]# /profiles/Dmgr01/bin/startManager.sh

```
[root@dmgr1 properties]# /profiles/Dmgr01/bin/startManager.sh
```

And view the dmgr logs

Test the dmgr on dmgr1.myorg.com by login in the admin console
https://dmgr.myorg.com:9043/ibm/console/logon.jsp

These are the detailed steps for setting up a High Availability in Dmgr using NFS on Linux

NOTE : These can be configured using SAN Storage instead of NFS, also the OS based Cluster can be used for the automatic moving of the ips