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## Install clusterware

```
# Cleanup script if already RAC is installed

rm -rf /etc/init.d/init.*
rm -rf /u01/app/oracle
rm -rf /u01/app/oracle/oraInventory
cd /etc
rm -rf ora*

# only on one node
rm -rf /ocfs/clusterware/*

/etc/init.d/oracleasm deletedisk VOL1
/etc/init.d/oracleasm deletedisk VOL2
/etc/init.d/oracleasm deletedisk VOL3

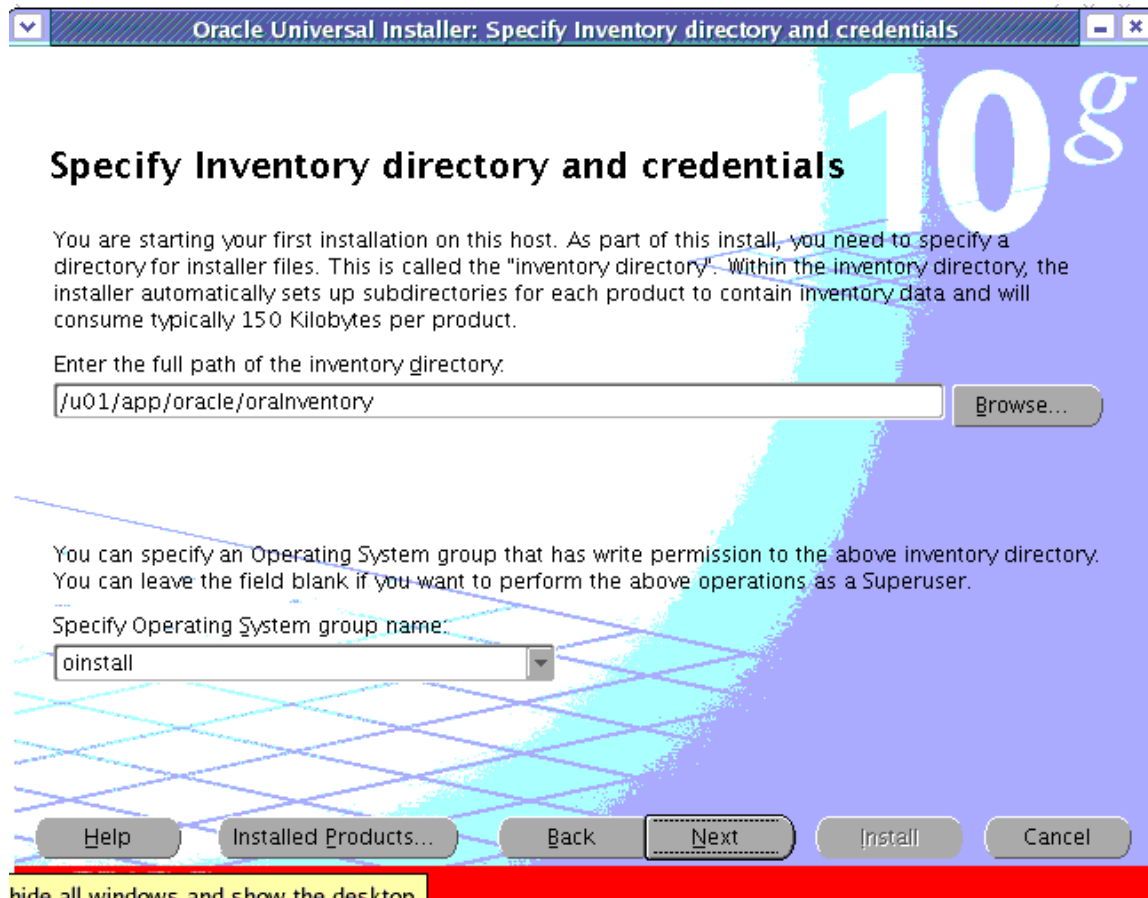
/etc/init.d/oracleasm createdisk VOL1 /dev/sdc1
/etc/init.d/oracleasm createdisk VOL2 /dev/sdd1
/etc/init.d/oracleasm createdisk VOL3 /dev/sde1
```

-- Reboot the servers

After downloading, as the oracle user on rac1, execute

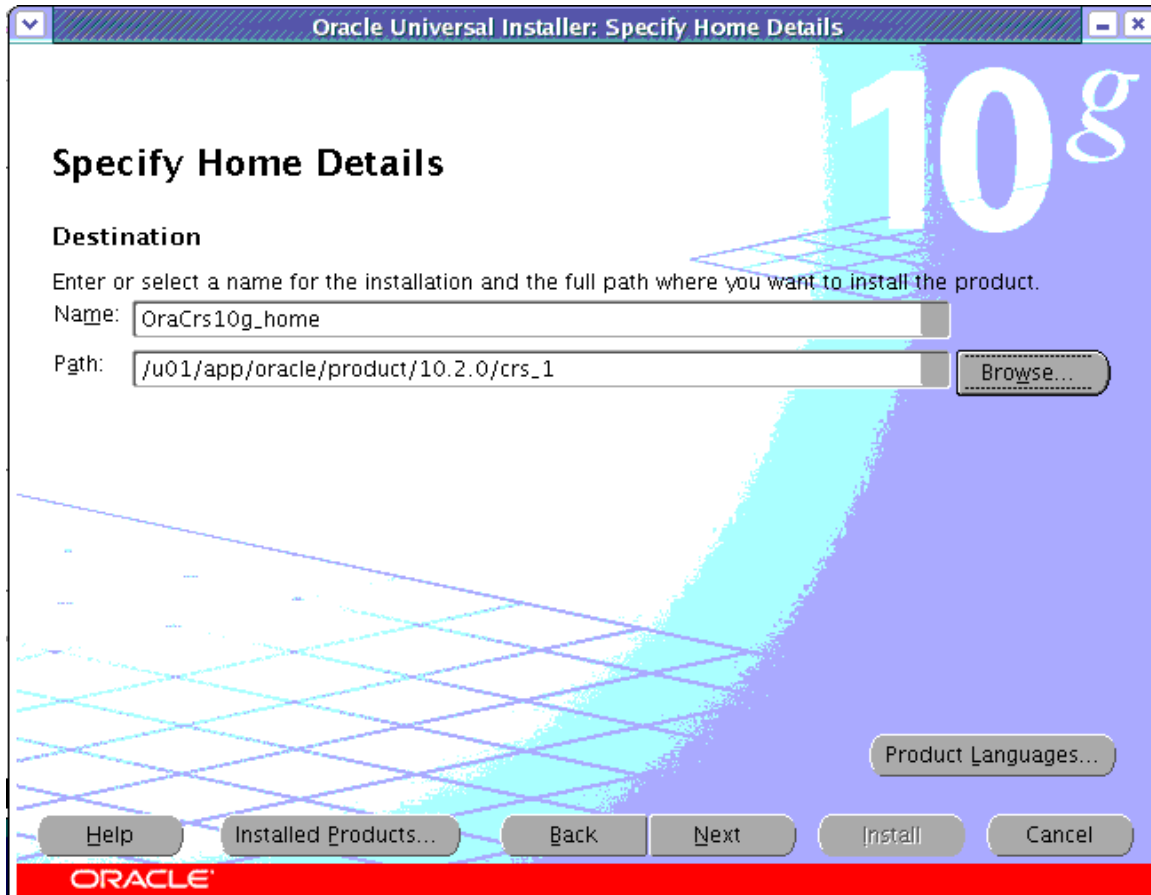
```
-----
[root@rac1 ~]# xhost +
access control disabled, clients can connect from any host
[root@rac1 ~]# su - oracle
rac1-> cd /software/clusterware/
cluvfy/      install/      rpm/          stage/        welcome.html
doc/         response/    runInstaller  upgrade/
rac1-> cd /software/clusterware/runInstaller
-bash: cd: /software/clusterware/runInstaller: Not a directory
rac1-> cd /software/clusterware/
rac1-> ./runInstaller
```

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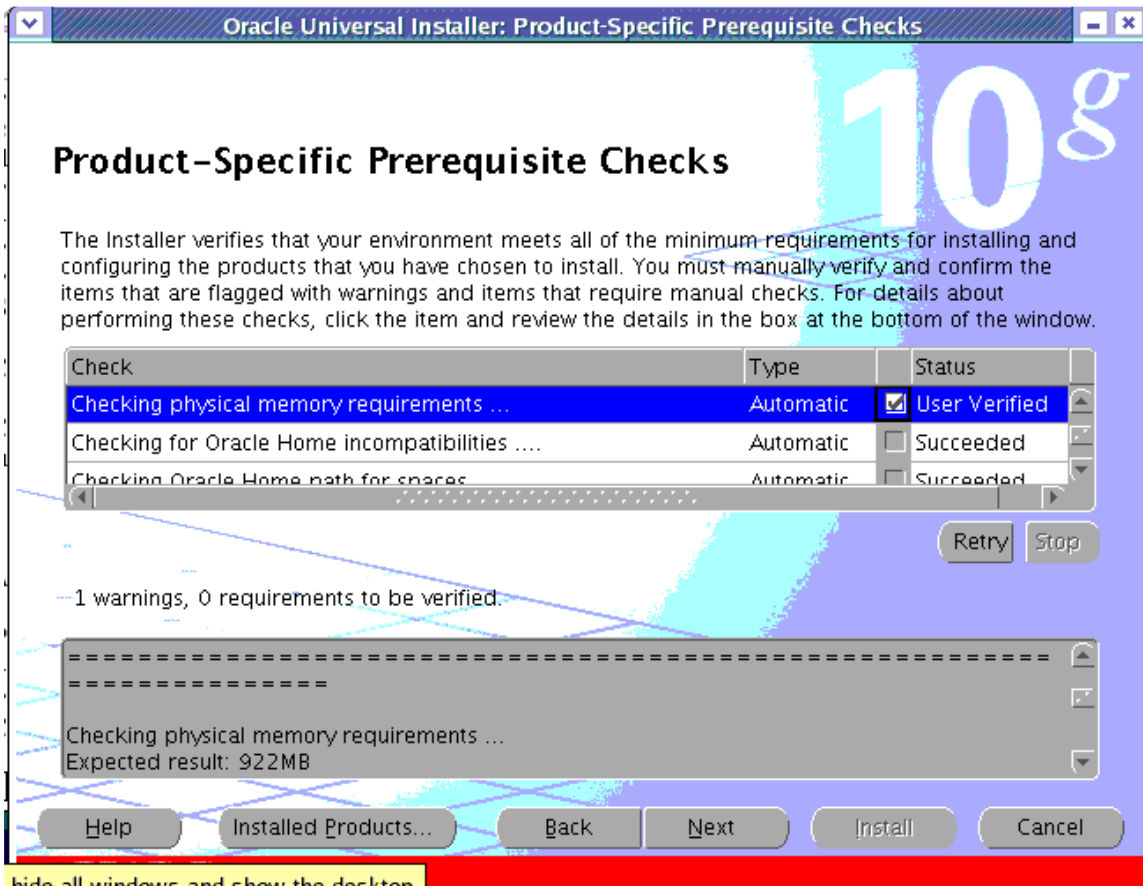


Change the CRS path -  
/u01/app/oracle/product/10.2.0/crs\_1

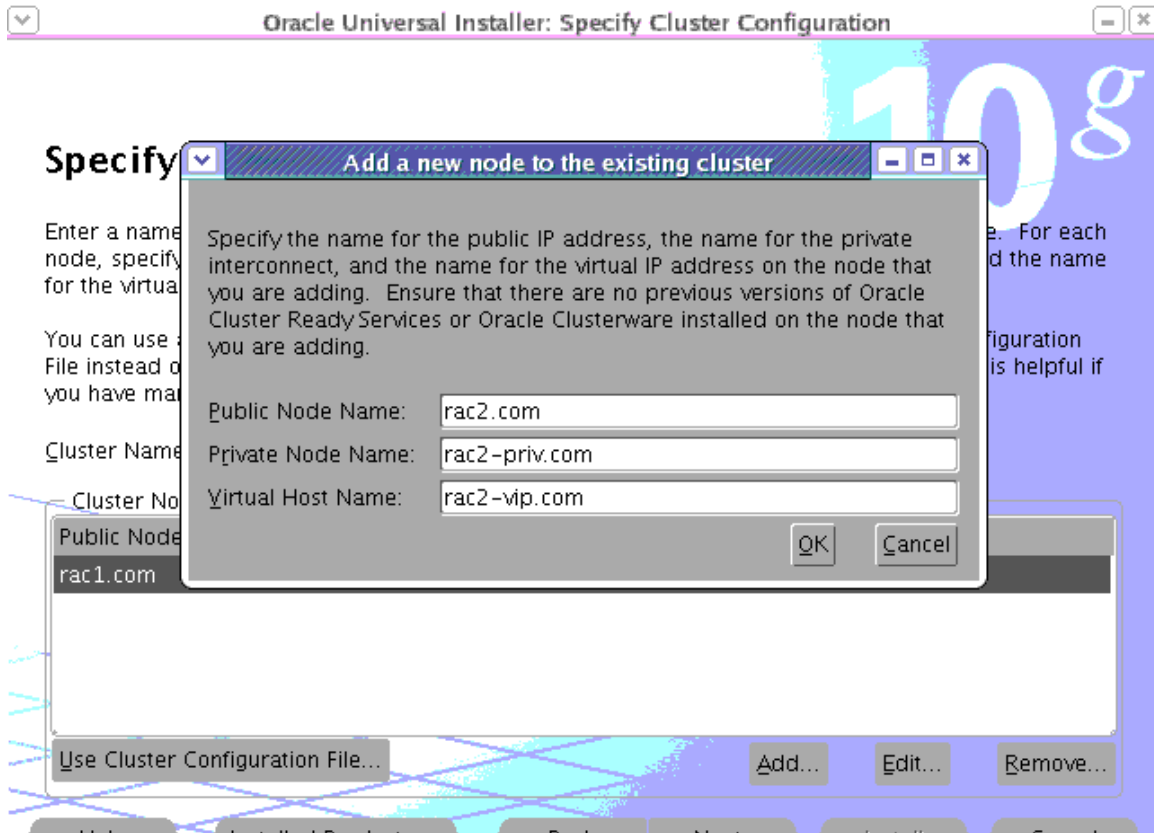
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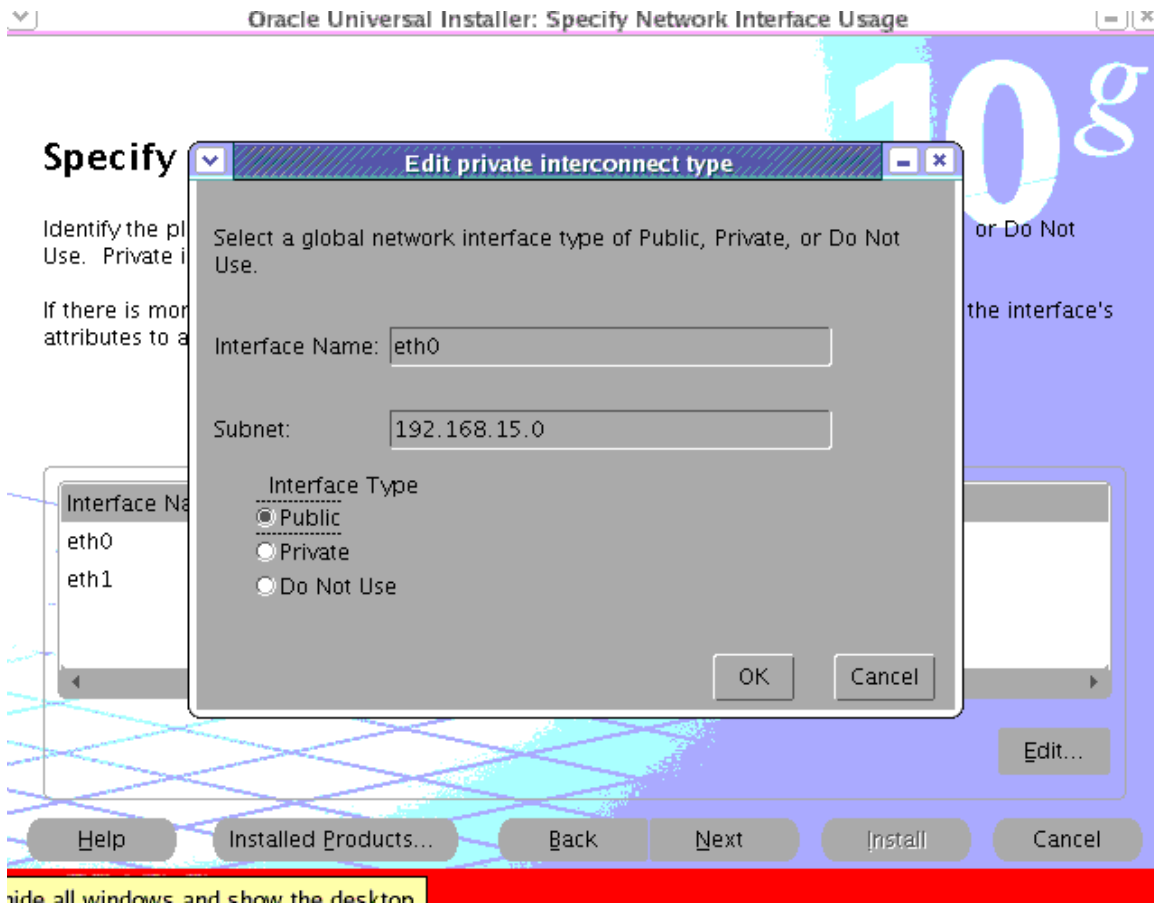
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- Cluster Nodes

Public Node Name	Private Node Name	Virtual Host Name
rac1.com	rac1-priv.com	rac1-vip.com
rac2.com	rac2-priv.com	rac2-vip.com

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Interface Name	Subnet	Interface Type
eth0	192.168.15.0	Public
eth1	192.168.15.0	Private

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Oracle Universal Installer: Specify Oracle Cluster Registry (OCR) Location

## Specify Oracle Cluster Registry (OCR) Location

The Oracle Cluster Registry (OCR) stores cluster and database configuration information. Specify a cluster file system file or a shared raw device containing at least 100MB of free space that is accessible from all of the nodes in the cluster.

**OCR Configuration**

Normal Redundancy  
Choose this option to enable the Oracle Clusterware to manage OCR mirroring. You will need an additional 100 MB of disk space for the mirrored copy.

External Redundancy  
Choose this option if you are using your disk management system to provide OCR redundancy.

Specify OCR Location:

Specify OCR Mirror Location:

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Oracle Universal Installer: Specify Voting Disk Location

## Specify Voting Disk Location

The Oracle Clusterware voting disk contains cluster membership information and arbitrates cluster ownership among the nodes of your cluster in the event of network failures. Specify a cluster file system file or a shared raw device that is accessible by the same name from all of the nodes in the cluster. The Installer requires at least 20MB of free space for the voting disk that it creates.

**Voting Disk Configuration**

Normal Redundancy  
Choose this option to enable the Oracle Clusterware to manage two additional copies of your voting disk. Each additional copy requires 20MB of disk space.

External Redundancy  
Choose this option if you are using your disk management system to provide voting disk redundancy.

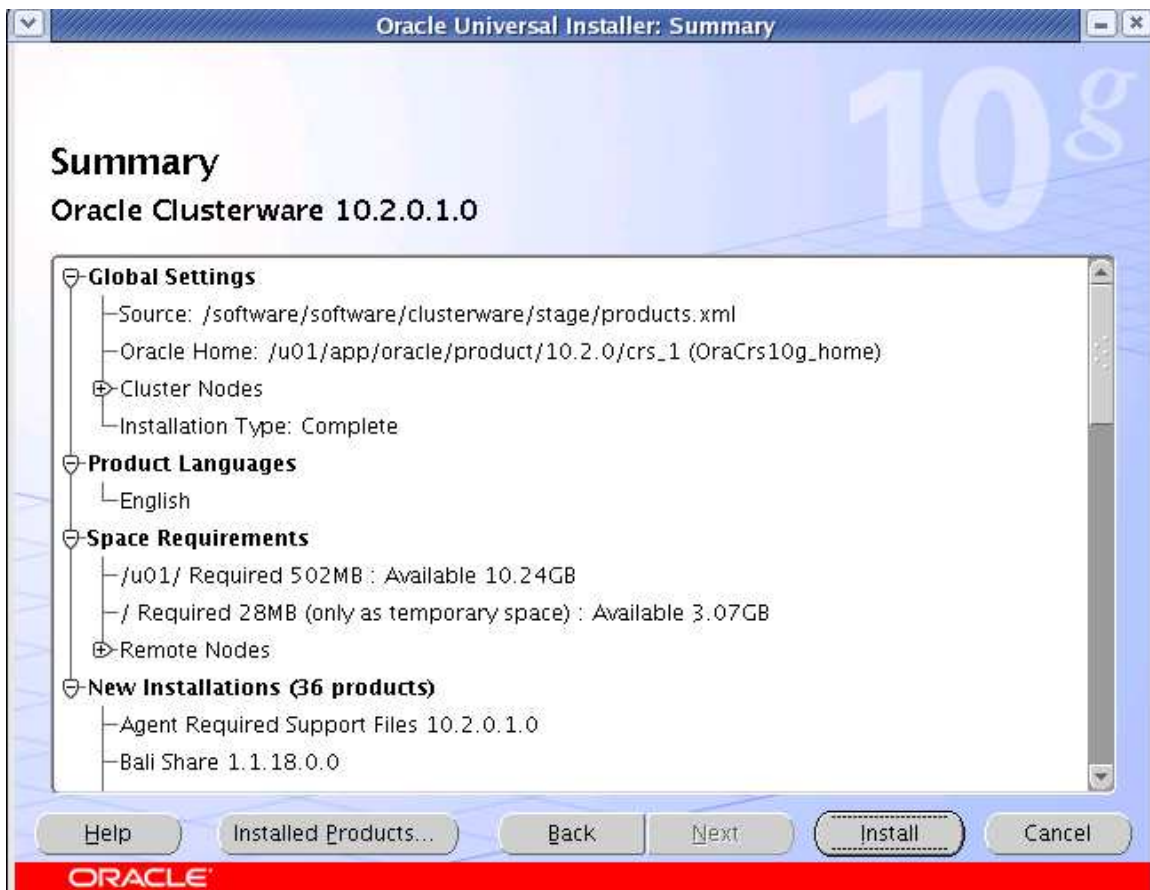
Voting Disk Location:

Additional Voting Disk 1 Location:

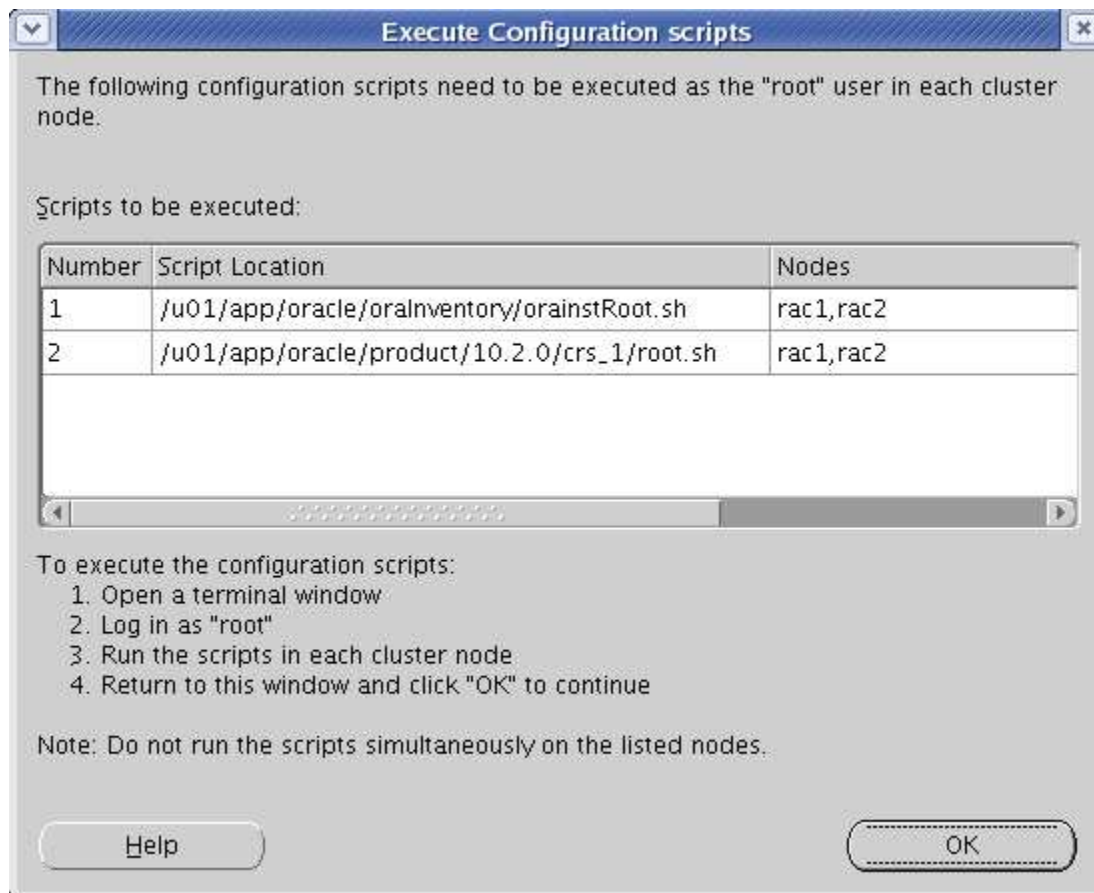
Additional Voting Disk 2 Location:



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On RAC1 then on RAC2

```
[root@rac1 ~]# /u01/app/oracle/oraInventory/orainstRoot.sh
Changing permissions of /u01/app/oracle/oraInventory to 770.
Changing groupname of /u01/app/oracle/oraInventory to oinstall.
The execution of the script is complete
[root@rac1 ~]# ssh rac2
root@rac2's password:
Last login: Thu Sep 17 17:58:01 2009 from rac1.com
[root@rac2 ~]# /u01/app/oracle/oraInventory/orainstRoot.sh
Changing permissions of /u01/app/oracle/oraInventory to 770.
Changing groupname of /u01/app/oracle/oraInventory to oinstall.
The execution of the script is complete
[root@rac2 ~]#
```

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## On RAC1

```
[root@rac1 ~]# /u01/app/oracle/product/10.2.0/crs_1/root.sh
WARNING: directory '/u01/app/oracle/product/10.2.0' is not owned by root
WARNING: directory '/u01/app/oracle/product' is not owned by root
WARNING: directory '/u01/app/oracle' is not owned by root
WARNING: directory '/u01/app' is not owned by root
WARNING: directory '/u01' is not owned by root
Checking to see if Oracle CRS stack is already configured
/etc/oracle does not exist. Creating it now.

Setting the permissions on OCR backup directory
Setting up NS directories
Oracle Cluster Registry configuration upgraded successfully
WARNING: directory '/u01/app/oracle/product/10.2.0' is not owned by root
WARNING: directory '/u01/app/oracle/product' is not owned by root
WARNING: directory '/u01/app/oracle' is not owned by root
WARNING: directory '/u01/app' is not owned by root
WARNING: directory '/u01' is not owned by root
assigning default hostname rac1 for node 1.
assigning default hostname rac2 for node 2.
Successfully accumulated necessary OCR keys.
Using ports: CSS=49895 CRS=49896 EVMC=49898 and EVMR=49897.
node <nodenumber>: <nodename> <private interconnect name> <hostname>
node 1: rac1 rac1-priv rac1
node 2: rac2 rac2-priv rac2
Creating OCR keys for user 'root', privgrp 'root'..
Operation successful.
Now formatting voting device: /ocfs/clusterware/votingdisk
Now formatting voting device: /ocfs/clusterware/votingdisk
Format of 1 voting devices complete.
Startup will be queued to init within 90 seconds.
Adding daemons to inittab
Expecting the CRS daemons to be up within 600 seconds.
CSS is active on these nodes.
    rac1
CSS is inactive on these nodes.
    rac2
Local node checking complete.
Run root.sh on remaining nodes to start CRS daemons.
```

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## On RAC2

```
[root@rac2 ~]# /u01/app/oracle/product/10.2.0/crs_1/root.sh
WARNING: directory '/u01/app/oracle/product/10.2.0' is not owned by root
WARNING: directory '/u01/app/oracle/product' is not owned by root
WARNING: directory '/u01/app/oracle' is not owned by root
WARNING: directory '/u01/app' is not owned by root
WARNING: directory '/u01' is not owned by root
Checking to see if Oracle CRS stack is already configured
/etc/oracle does not exist. Creating it now.

Setting the permissions on OCR backup directory
Setting up NS directories
Oracle Cluster Registry configuration upgraded successfully
WARNING: directory '/u01/app/oracle/product/10.2.0' is not owned by root
WARNING: directory '/u01/app/oracle/product' is not owned by root
WARNING: directory '/u01/app/oracle' is not owned by root
WARNING: directory '/u01/app' is not owned by root
WARNING: directory '/u01' is not owned by root
clscfg: EXISTING configuration version 3 detected.
clscfg: version 3 is 10G Release 2.
assigning default hostname rac1 for node 1.
assigning default hostname rac2 for node 2.
Successfully accumulated necessary OCR keys.
Using ports: CSS=49895 CRS=49896 EVMC=49898 and EVMR=49897.
node <nodenumber>: <nodename> <private interconnect name> <hostname>
node 1: rac1 rac1-priv rac1
node 2: rac2 rac2-priv rac2
clscfg: Arguments check out successfully.

NO KEYS WERE WRITTEN. Supply -force parameter to override.
-force is destructive and will destroy any previous cluster
configuration.
Oracle Cluster Registry for cluster has already been initialized
Startup will be queued to init within 90 seconds.
Adding daemons to inittab
Expecting the CRS daemons to be up within 600 seconds.
CSS is active on these nodes.
    rac1
    rac2
CSS is active on all nodes.
Waiting for the Oracle CRSD and EVMD to start
Oracle CRS stack installed and running under init(1M)
Running vipca(silent) for configuring nodeapps
The given interface(s), "eth0" is not public. Public interfaces should be used to configure virtual IPs.
```

The root.sh script on rac2 invoked the VIPCA automatically but it failed with the error "The given interface(s), "eth0" is not public. Public interfaces should be used to configure virtual IPs." As you are using a non-routable IP address (192.168.x.x) for the public interface, the Oracle Cluster Verification Utility (CVU) could not find a suitable public interface. A workaround is to run VIPCA manually.

As the root user, manually invokes VIPCA on the second node.

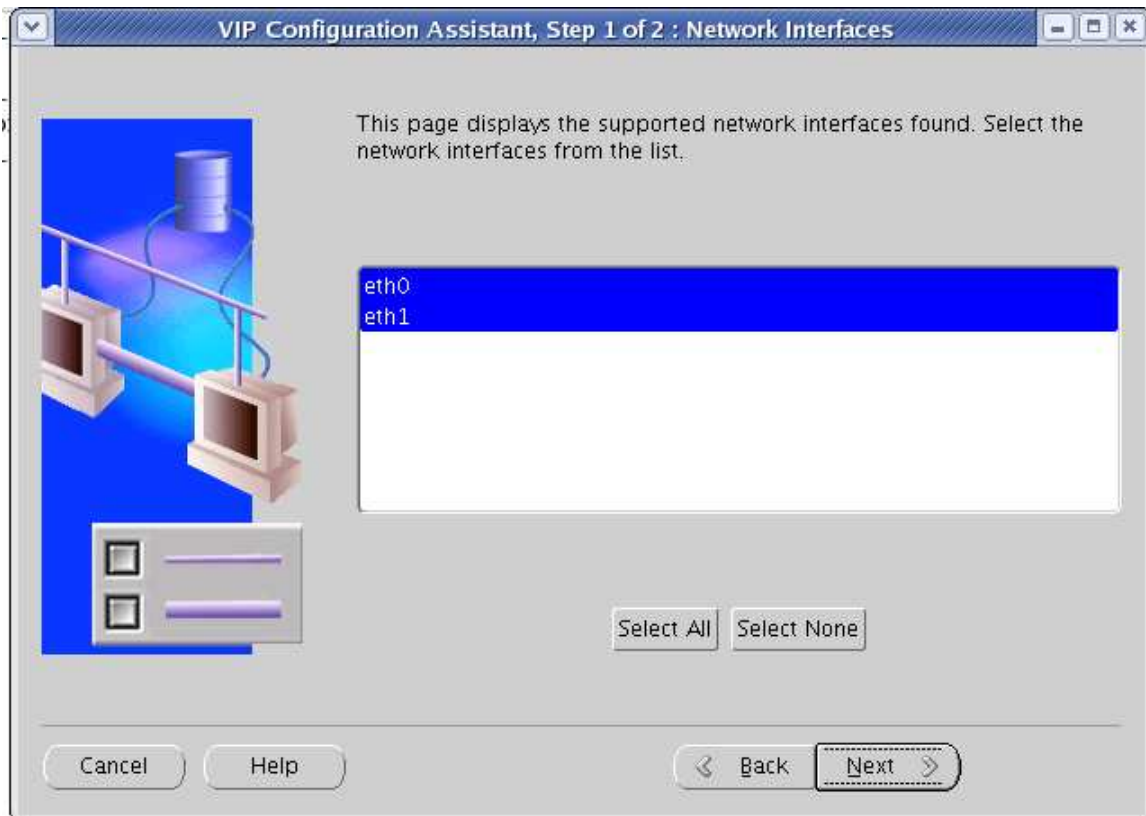
```
# /u01/app/oracle/product/10.2.0/crs_1/bin/vipca
```

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On RAC1

```
[root@rac1 bin]# pwd  
/u01/app/oracle/product/10.2.0/crs_1/bin  
[root@rac1 bin]# ./vipca
```

The VIP Configuration Assistant creates and configures VIP, GSD, and ONS resource applications for each cluster node.



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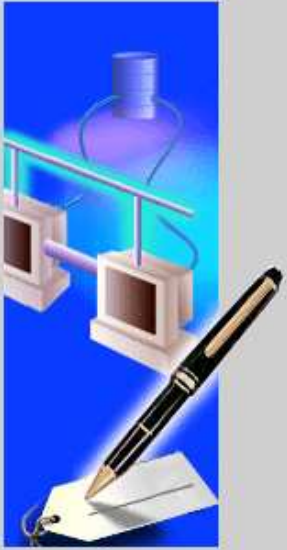
VIP Configuration Assistant, Step 2 of 2 : Virtual IPs for cluster nodes

IP addresses are required for defining virtual IP resource application for each cluster node.

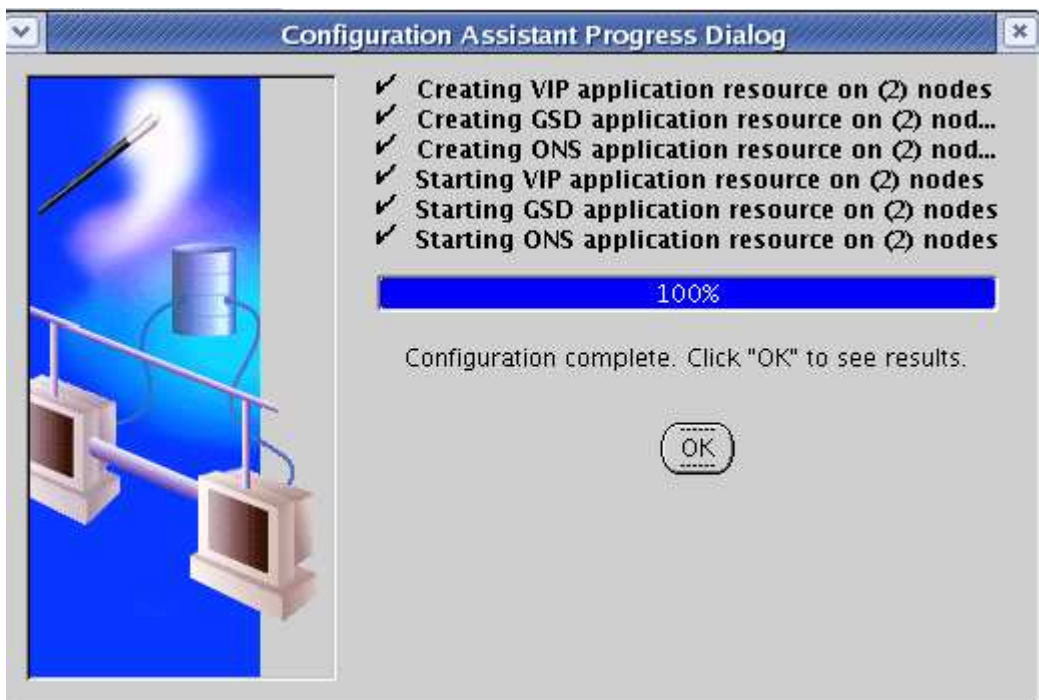
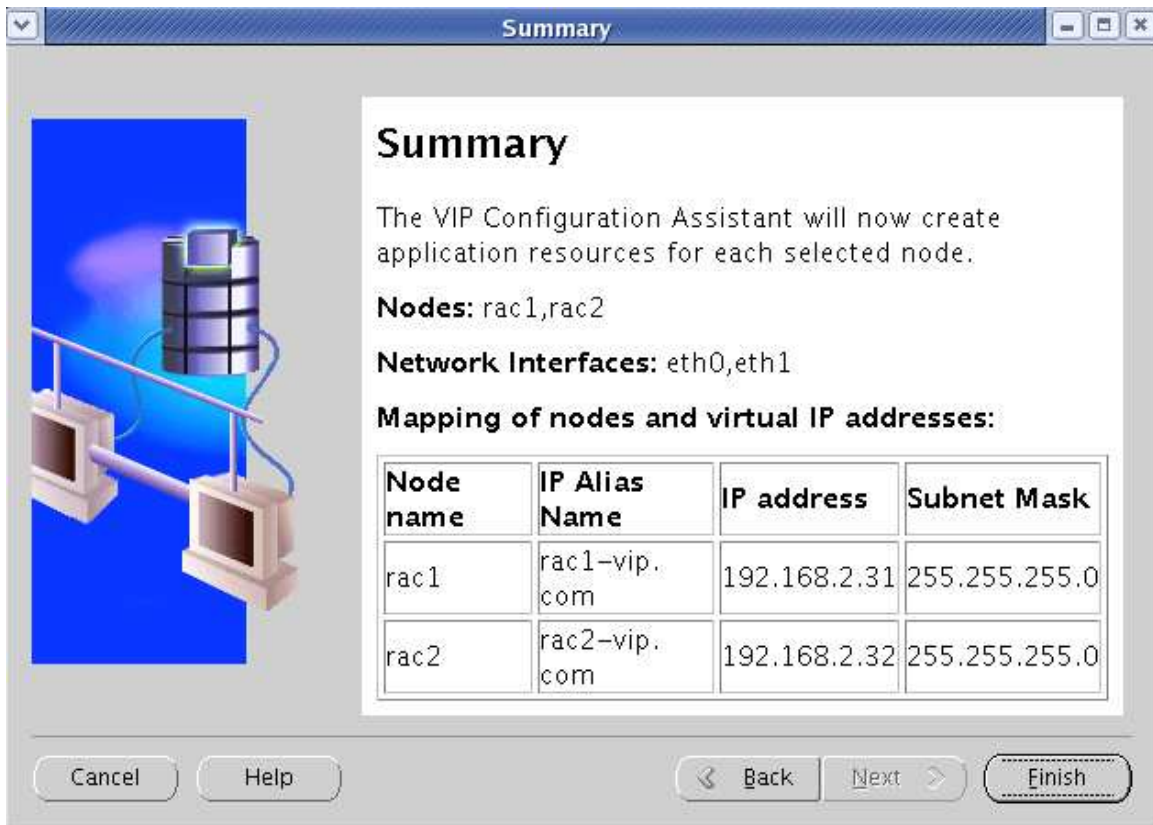
Node name	IP Alias Name	IP address	Subnet Mask
rac1	rac1-vip.com	192.168.2.31	255.255.255.0
rac2	rac2-vip.com	192.168.2.32	255.255.255.0

Clear Clear all

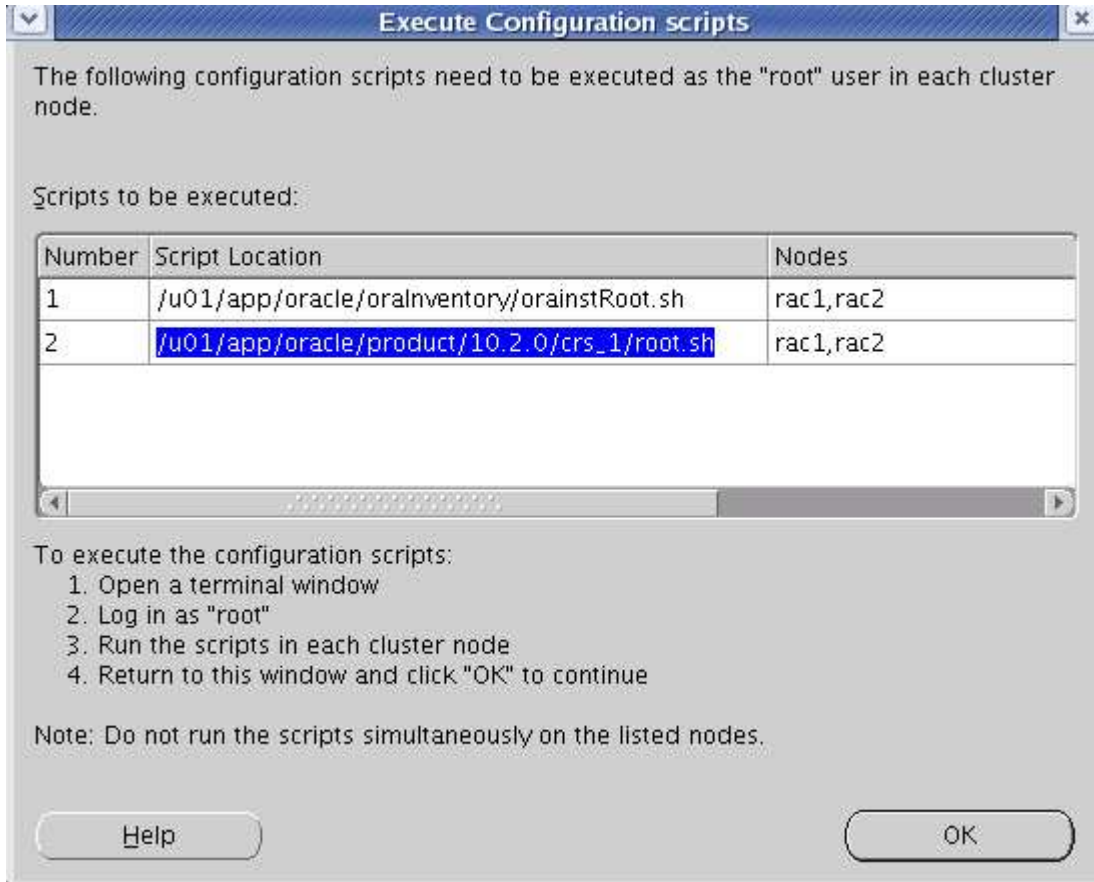
Cancel Help Back Next



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```
[root@rac1 ~]# su - oracle
rac1-> crs_stat -t
Name                Type                Target              State              Host
-----
ora.rac1.gsd        application          ONLINE              ONLINE              rac1
ora.rac1.ons        application          ONLINE              ONLINE              rac1
ora.rac1.vip        application          ONLINE              ONLINE              rac1
ora.rac2.gsd        application          ONLINE              ONLINE              rac2
ora.rac2.ons        application          ONLINE              ONLINE              rac2
ora.rac2.vip        application          ONLINE              ONLINE              rac2
```

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Configuration Assistants: Verify that all checks are successful. The OUI does a Clusterware post-installation check at the end. If the CVU fails, correct the problem and re-run the following command as the oracle user:

```
rac1-> /u01/app/oracle/product/10.2.0/crs_1/bin/cluvfy stage  
-post crsinst -n rac1,rac2
```