Introduction:

This document is meant as a walk through for those looking to setup an Oracle 10gR2 RAC database on a Sun Solaris 10 system using an iSCSI interface to a SAN storage.

Note:

This document should be used in conjunction with the following documents:

- 1. Oracle Clusterware Installation and Real Application Clusters Installation Guide: 10gR2 (10.2)for Solaris Operating System (September 2006: part no. B14205-07)
- 2. Oracle Database Installation Guide for Solaris Operating System (SPARC 64-bit) part no. B15690

Software used:

- 1. Oracle 10g (10.2.0.1)
- 2. Sun Solaris 10

Hardware Used:

- 1. Sun T1000 Servers.
- 2. Equallogic PeerStorage Array
- 3. Riverstone Gigabit switches

Overview:

- 1. Setup iSCSI.
- 2. Create RAW device files for CRS
- 3. Prepare servers for Oracle CRS installation
- 4. Install Oracle CRS
- 5. Install Oracle ASM
- 6. Install Oracle 10g

The installation of the Oracle software can be on the server hard drives or placed on a volume on the SAN. To install the Oracle software onto the SAN, Cluster software will have to be used. Since I do not have a reliable cluster software I am going to do separate installations of the Oracle software on each server. I will then create raw partitions on the SAN. The Oracle Cluster Ready Service (CRS) will access the raw partitions directly. The raw partitions for the database will be controlled by Oracle's ASM. If the Oracle software is going to be placed on the SAN then a regular file system can be used instead of raw partitions.

Setup iSCSI:

Step 1: Verify that the iSCSI packages are installed

pkginfo SUNWiscsiu SUNWiscsir

Step 2: Configure the array

Create and add volume(s) for the Sun server(s). Include the proper access controls (IP Address, iSCSI name, etc.) when creating the volumes.

On the Sun server: **Display Initiator information**

iscsiadm list initiator-node

Use the initiator node information as the initiator name for creating volume access

On the Equallogic iSCSI array:

EQ> create volume volume1 size 2048

Volume is in MB. For gigabytes add GB. ex. 50GB

Volume select *volume_name* access create initiator *initiator_name* or Volume select *volume_name* access create ipaddress *ip_address*

EQ> volume select *volume1* **access create initiator** *iqn.2000-05.com.sun.a2sd-4000.sn00044*

To determine the target name:

EQ> volume select volume_name show

The target name will be listed as ISCSI name: ex. iqn.2001-05.com.equallogic:6....

Note: It is best if there are no unsecured access volumes on the array. The Sun servers will see all volumes configured with their specific access (IP address, iSCSI name, etc.) as well as all unsecured volumes.

Step 3a: Configure Target discovery using ip address

iscsiadm add discovery-address 10.0.0.1:3260
Repeat above for all volumes

Step 3a.1: Enable Target discovery

iscsiadm modify discovery --sendtargets enable

Other commands:

Disable Target Discovery

iscsiadm modify discovery --sendtargets disable

Remove Target discovery

iscsiadm remove discovery-address 10.0.0.1:3260

Step 3b: Configure Target discovery using target name.

iscsiadm add static-config iqn.2001-05.com.equallogic:6...., *ip_address* Repeat above for all volumes

iscsiadm modify discovery --static enable

Other commands:

Disable Target Discovery

iscsiadm modify discovery --static disable

Remove Target discovery

iscsiadm remove static-config iqn.2001-

05.com.equallogic:6....

Step 5: Create the iSCSI device links for the local system

devfsadm -i iscsi

Step 6. Check for iSCSI devices

iscsiadm list target -S

Basic iSCSI Monitoring

Display Initiator information

iscsiadm list initiator-node

Display Target information

iscsiadm list target -S

iscsiadm list discovery-address -v 10.0.0.3

iscsiadm list target-param -v iqn.2001-05.com.equallogic:6....

Create Raw Device Files for CRS

Step 1: Create partitions

Use the format utility:

format

AVAILABLE DISK SELECTIONS: 0. c0t1d0 <SUN72G cyl 14087 alt 2 hd 24 sec 424> /pci@8,600000/SUNW,qlc@4/fp@0,0/ssd@w500000e010685cf1,0 1. c0t2d0 <SUN72G cyl 14087 alt 2 hd 24 sec 424> /pci@8,600000/SUNW,qlc@4/fp@0,0/ssd@w500000e0106e3ba1,0 2. c2t0d0 <EQLOGIC-100E-00-2.2 cyl 546 alt 2 hd 16 sec 63> _/iscsi/disk@0000iqn.2001-05.com.equallogic%3A6-8a0900-deca50901-805ff036ff445ca2volume2FFFF,0 3. c2t4d0 <EQLOGIC-100E-00-2.2 cyl 546 alt 2 hd 16 sec 63> _/iscsi/disk@0000iqn.2001-05.com.equallogic%3A6-8a0900-dcca50901-971ff036ff145ca2volume1FFFF,0

```
Specify disk (enter its number): 2
selecting c2t0d0
[disk formatted]
format> partition
partition> print
partition> modify
Select partitioning base:
0. Current partition table (original)
1. All Free Hog
Choose base (enter number) [0]? 1
Part Tag Flag Cylinders Size Blocks
0 root wm 0 0 (0/0/0) 0
1 swap wu 0 0 (0/0/0) 0
2 backup wu 0 - 2035 1002.09MB (2036/0/0) 2052288
3 unassigned wm 0 0 (0/0/0) 0
4 unassigned wm 0 0 (0/0/0) 0
5 unassigned wm 0 0 (0/0/0) 0
6 usr wm 0 0 (0/0/0) 0
7 unassigned wm 0 0 (0/0/0) 0
Do you wish to continue creating a new partition
table based on above table[yes]? y
Free Hog partition[6]? 7
Enter size of partition '0' [0b, 0c, 0.00mb, 0.00gb]:1.00
Enter size of partition '1' [0b, 0c, 0.00mb, 0.00gb]:
Enter size of partition '3' [0b, 0c, 0.00mb, 0.00gb]:
Enter size of partition '4' [0b, 0c, 0.00mb, 0.00gb]:
Enter size of partition '5' [0b, 0c, 0.00mb, 0.00gb]:
Enter size of partition '6' [0b, 0c, 0.00mb, 0.00gb]:
Part Tag Flag Cylinders Size Blocks
0 root wm 0 0 (0/0/0) 0
1 swap wu 0 0 (0/0/0) 0
2 backup wu 0 - 2035 1002.09MB (2036/0/0) 2052288
3 unassigned wm 0 0 (0/0/0) 0
4 unassigned wm 0 0 (0/0/0) 0
5 unassigned wm 0 0 (0/0/0) 0
6 \text{ usr wm } 0 \ 0 \ (0/0/0) \ 0
7 unassigned wm 0 - 2035 1002.09MB (2036/0/0) 2052288
Okay to make this the current partition table[yes]? yes
Enter table name (remember quotes): "home"
Ready to label disk, continue? y
partition> q
format> verify
format> q
```

Step 2: Initialize the devices

dd if=/dev/zero of=/dev/rdsk/c2t0d0s7 bs=8192 dd if=/dev/zero of=/dev/rdsk/c2t4d0s7 bs=8192

Step 3: Change ownership and permissions

OCR disk device chown root:dba /dev/rdsk/c2t0d0s* chmod 660 /dev/rdsk/c2t0d0s* Voting disk chown oracle:dba /dev/rdsk/c2t4d0s* chmod 660 /dev/rdsk/c2t4d0s*

Prepare Servers for CRS Installation

Note: See the latest Oracle Real Application Clusters Installation and Configuration Guide for the most current information. As of this writing it was Part No. 14205-07. It can be downloaded from http://www.oracle.com/technology/documentation/database10g.html . Along with ssh and

scp, rsh and rcp need to be installed. To install the Oracle cluster software using the GUI interface, you will need to have an X-windows server and client running and configured on your Desktop (ex. Cygwin).

Step 1: Create Users and Groups

Add the user groups dba, oper, oinstall to all nodes

- # /usr/sbin/groupadd -g 500 oinstall
- # /usr/sbin/groupadd –g 501 dba
- # /usr/sbin/groupadd -g 502 oper

Add the oracle user if it doesn't exist to all nodes

/usr/sbin/useradd -u 200 -g oinstall -G dba,oper -d /export/home/oracle -s /bin/ksh oracle -p password

To modify the user if it exists:

/usr/sbin/usermod

All equivalent users and groups must have the same GID (group) on all nodes

Update the file .profile and add the following:

umask 022 PATH=/bin:/usr/bin:/usr/local/bin:/usr/X11R6/bin LD_LIBRARY_PATH=/usr/lib:/usr/X11R6/lib ORA_CRS_HOME=/u01/crs/oracle/product/10.2.0.1/crs1 ORACLE_BASE=/u01/app/oracle ORACLE_HOME=\$ORACLE_BASE/product/10.2.0.1/db1 ORACLE_SID=orcl LD_LIBRARY_PATH=\$ORACLE_HOME/rdbms/lib:\$ORACLE_HOME/lib:\$ORACLE_HOME/jd k/fre/lib/i386:\$ORACLE_HOME/jdk/jre/lib/i386/server:\$LD_LIBRARY_PATH:\$CRS_HOME/lib:\$ CRS_HOME/rdbms/lib PATH=\$ORACLE_HOME/bin:\$PATH:\$ORA_CRS_HOME/bin:/home/oracle export PATH LD_LIBRARY_PATH export ORACLE_BASE ORACLE_HOME ORACLE_SID ORA_CRS_HOME unset USERNAME

Create Oracle user password if not already created:

passwd oracle

Step 2: Install and configure ssh, scp, rsh and rcp

- 1. Login as the oracle user
- 2. Create the directory .ssh

\$ mkdir ~/.ssh \$ chmod 755 ~/.ssh

3. Generate an RSA key. At the prompts accept the default location and enter a pass phrase (not oracle password)
\$ /usr/bin/ssh-keygen -t rsa

A public key is written to ~/.ssh/id_rsa.pub and a private key is written to the file ~/.ssh/id_rsa.

4. Generate a DSA key.

\$ /usr/bin/ssh-keygen -t dsa

A public key is written to ~/.ssh/id_dsa.pub and a private key is written to the file ~/.ssh/id_dsa.

5. Copy the *contents* of the ~/.ssh/id_rsa.pub and ~/.ssh/id_dsa.pub files to the ~/.ssh/authorized_keys file on this node and to the same file on all other cluster nodes.

Note: The ~/.ssh/authorized_keys file on every node must contain the contents from all of the ~/.ssh/id_rsa.pub and ~/.ssh/id_dsa.pub files that you generated on all cluster nodes.

6. Change the permissions on the ~/.ssh/authorized_keys file on all cluster nodes:

\$ chmod 644 ~/.ssh/authorized_keys

7. If you use ssh to log into or run a command on another node, you are prompted for the password that you specified when you created the DSA key. To enable the Installer to use the ssh and scp commands without being prompted for a password enter the following commands:

\$ exec /usr/bin/ssh-agent \$SHELL \$ /usr/bin/ssh-add

8. At the prompts, enter the pass phrase for each key that you generated. If you have configured SSH correctly, you can now use the ssh or scp commands without being prompted for a password.

To test the SSH configuration, enter the following commands:

\$ ssh nodename1 uname -n \$ ssh nodename2 uname -n \$ scp test1 node2:test1

You should see the name of the server displayed without a request for a password. If any node prompts for a password, verify that the ~/.ssh/authorized_keys file on that node contains the correct public keys.

Note: The first time you use SSH to connect to a node from a particular system, you might see a message stating that the authenticity of the host could not be established. Enter yes at the prompt to continue. The node is now added to the ~/.ssh/authorized_hosts file. Connect to each node using the node names and IP addresses so that this prompt will not occur during installation.

9. To ensure that X11 forwarding will not cause the installation to fail, create the ~oracle/.ssh/config file. Put the following text into the file:
 Host *
 ForwardX11 no

10. The installer can now be run from this session. If it isn't repeat step 7 before starting the Installer.

11. Configure rsh and rcp.

a. Create a .rhosts (or /etc/hosts.equiv) file in the oracle home directory of each node. Add node information:

Node1oracle10.4.1.511oracleNode2oracle10.4.1.521oracle

b. If the rsh service is not active, activate it. As root:

svcadm enable svc:/network/shell:default

c. Verify functionality of rsh and rcp by using the same methods as before for ssh and scp

Step 3: Update /etc/system

set semsys:seminfo_semmns=1024 set semsys:seminfo_semvmx=32767 set shmsys:shminfo_shmmax=6442450944 set semsys:seminfo_semmni=256 set semsys:seminfo_semmsl=256 set shmsys:shminfo_shmmni=100

Step 4: Verify OS version.

/bin/isainfo -kv

ie. i386 or SPARC, and 32-bit or 64-bit.

Step 5. Check that OS software patches are installed.

/usr/sbin/patchadd -p | grep patch_number

Step 6. Setup /etc/hosts file.

# Do not remove the following line, or various programs			
# that require	e network functionality will fail.		
127.0.0.1	localhost.localdomain localhost		
10.2.1.211	titanium		
10.2.1.201	copper		
# Private IP	addresses for the rac nodes		
10.5.1.61	rac2-priv1		
10.5.1.51	rac1-priv1		
# Virtual IP	addresses for the rac nodes		
10.2.1.202	rac1-vip		
10.2.1.212	rac2-vip		

Step 7: Create CRS and Database Home directories

CRS Home Directory: /u01/crs/oracle/product/10.2.0.1/crs1 Oracle Home Directory: /u01/app/oracle/product/10.2.0.1/db1

Create a shared folder for the CRS Voting Disk. ex. /u02/crsdata

Create a shared folder for the Oracle database data. ex. /u03/oradata A folder can also be created for archive logs or flash-back files. ex. /u04/archive

Step 8: Verify servers meet hardware and software requirements: check the Guide.

Run the cluvfy (cluster verification utility) utility, which will perform various system checks that will confirm that your system is configured for Oracle Clusterware and Oracle RAC.

\$./runcluvfy.sh stage -pre crsinst -n node1,node2 -verbose

To check for required OS packages listed in Guide. # pkginfo –i SUNWarc SUNWbtool SUNWhea SUNWlibm SUNWlibms

Install Oracle CRS

Step1: Start Installer

1. a. make sure you run the following from Step 3:

\$ exec /usr/bin/ssh-agent \$SHELL \$ /usr/bin/ssh-add

b.set ORACLE HOME=/u01/crs/oracle/product/10.2.0.1/crs1

2. Start the installer

\$ ~/runinstaller &

3. The GUI should appear after a short delay and look similar to this:



4. inventory location

Specify Inv	entory directory and crede	ntials	
You are starting yo installer files. This sets up subdirect product.	our first installation on this host. As part of this in is called the "inventory directory". Within the inv rries for each product to contain inventory data is	nstall, you need to specifi entory directory, the inst and will consume typical	ly a directory for aller automatically ly 150 Kilobytes per
Enter the full math	of the inventory girectory:		
Cutter nie idii patri			
Au01/crs/oracle/or	almventory		Browse
Auth for the pair Auth forstoracle for You can specify an earn leave the field Specify Operating	almentory Operating System group that has write permis blank if you want to perform the above operatio System group hame:	ision to the above invent ns as a Superuser.	Browse
You can specify a can leave the field Specify Operating oinstall	almentory Operating System group that has write permis blank if you want to perform the above operatio System group name:	ision to the above invent ns as a Superuser	Browse
You can specify a can leave the field Specify Operating oinstall	almentory Operating System group that has write permis blank if you want to perform the above operatio System group hame:	ision to the above invent ns as a Superuser	Browse

5. Choose a location for the CRS home

X Oracle	Universal Installer: Specify Home Details	
Spec Destin Enter o	cify Home Details nation relect a name for the installation and the full path where you want to install the pro	Joct Sector
Path:	OraCrs10g_home1	
	Pro	duct Languages)
Help	Installed Products) Back [Next] Installed	Cancel
OR	ACLE	

6. Pre-requisite checks

Oracle Universal Installer: Product-Specific Prerequisite Check	ka	
Product-Specific Prerequisite Checks		
The Installer verifies that your environment meets all of the minimum r configuring the products that you have chosen to install. You must main re flagged with warnings and Rems that require manual checks. For checks, click the item and review the details in the box at the bottom of	equirements nually verify ar details about the window.	for installing and nd confirm the items that performing these
Check removing onacte Home patients spaces	Туре	Status
Checking local Cluster Synchronization Services (CSS) status	Automatic	Succeeded
Checking whether Oracle 9.2 RAC is available on all selected nodes	Automatic	Succeeded
0 requirements to be verified.		Reby Stop
Checking whether Oracle 9.2 RAC is available on all selected nodes Check complete. The overall result of this check is: Passed		
Help Installed Products) Back	Next)	(nstall) Cancel

7. Add the public (server name) and private node names. Recommend doing only one private node name now.

pecify Cluster Configuration ther a name for the cluster and select the nodes to be managed by the Oracle Clusterware secify the name for the public IP address, the name for the private inferconnect, and the na address on the node. suc can use a cluster configuration file to configure your cluster by clicking Use Cluster Configuration File option is harry nodes uster Name [crs Cluster Nodes Public Node Name Virtual Host Name Non neon-vip rgon argon-priv1 argon-priv1 argon-argon gee Cluster Configuration File Edt.		scify Cluster Configuration	Dracle Universal Installer:
ther a name for the cluster and select the nodes to be managed by the Oracle Clusterwarn exity the name for the public IP address, the name for the private interconnect, and the na address on the node. In can use a cluster configuration file to configure your cluster by clicking Use Cluster Con- stead of completing the Cluster Nodes box. The Use Cluster Configuration File option is h any nodes uster Name [crs Cluster Nodes Public Node Name Private Node Name Virtual Host Name reon neon-privit neon-vip agon argon-privit argon-privit Edu. [se Cluster Configuration File.]		figuration	Specify Cluster C
any nodes uster Name [crs Cluster Nodes Soc The Ose Cluster Computation File option is r any nodes Uster Name [crs Cluster Node Name Private Node Name Virtual Host Name neon neon-priv1 neon-vip rgon argon-priv1 ergon-vip Jse Cluster Configuration File.	Oracle Clusterware. For each node onnect, and the name for the virtual og Use Cluster Configuration File	elect the nodes to be managed address, the name for the priva	inter a name for the cluster a pecify the name for the publi- address on the node.
Public Node Name Virtual Host Name Virtual Host Name teon neon-priv1 neon-vip argon argon-priv1 argon-vip Jse Cluster Configuration File.	eon r ne opson is neighun il you nave	Nodes boc me ose cluster o	Cluster Name Crs
seon neon-privi neon-vip argon argon-privi argon-vip Jse Cluster Configuration File.	Virtual Host Name	Private Node Name	Public Node Name
argon argon-privi argon-vip Jse Cluster Configuration File.	neon-vip	neon-privt	neon
Jse Cluster Configuration File.	argon-vip	argon-pm/t	argon
	6dd Edit. Bernove		Use Cluster Configuration F
Help Installed Products) Back Next Installed	ext) install) Cance	Back	Help Installe

7b. secondary window for entering private and virtual node names.

🗙 Modify a node in	the existing cluster	
You can modify the fo Ensure that the modif entries for the same of	lowing attributes of the selected n led entries are unique; they must i dtributes on the other nodes in thi	ode in the cluster. be different from the s cluster.
Eublic Node Name:	neon	
Private Node Name:	neon-privt	
Virtual Host Name:	neon-vip	
		QK Cancel

7c. secondary window to add other nodes.

X Add a new node 1	to the existing cluster	
Specify the name for t interconnect, and the are adding. Ensure to Ready Services or Or adding	he public IP address, the name fr name for the virtual IP address or hal there are no previous versions acle Clusterware initialled on the	or the private In the node that you Is of Oracle Cluster node that you are
Public Node Name:	argon	
Private Node Name:	[argon-priv1	
Virtual Host Name:	argon-vip	
		QK Cancel

8. Choose the Interface type (Public. Private, Do not use) for each network interface.

terface U	age		
global interface	hown in the box I for inter-node tra	below Public, Private, or Do M	lat Use.
issociated with	n interface, then	click Edit and change the inte	inface's
te name with th	additional subne	its.	
Subnet		Interface Type	_
10.2.1.0		Public	
10.5.1.0		Provade	
			Edit

9b. Choose the interface type shown in secondary window.

🗙 Edit private i	nterconnect type	
Select a global n	etwork interface type of Public, Pr	wate, or Do Not Use.
Interface Name:	e1000g0	
Subnet	10.2.1.0	
Public Private	pe	
- 10 Mill 08	-e	OK Cancel

10. Specify the shared file where the Oracle Cluster Registry (OCR) data will be stored. Enter the raw device name of the iSCSI volume.

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. Spe file system file or a shared raw device containing at least 100MB of free space that is accessit the nodes in the cluster.	ecify a cluster ble from all of
OCR Configuration	
C Normal Redundancy	
Choose this option to enable the Oracle Clusterware to manage OCR mirroring. You will need an add	tional 100 MB of
ass space for the memores copy.	
External Redundancy Choose this option if you are using your disk management system to provide CCR redundancy.	
Specify QCR Location: (/devirdskit:210d0s7	
Specify OCR Mirror Location	
Help Installed Products) Back Next) Install	Cancel

11. Enter the Voting Disk file location.



12. The OUI will now show a summary page before installation.



13. The installation begins.

Install	
Installing Oracle Clusterware 18.2.0.1.0	
¹² Installation in progress	
Link pending	
Setup pending	
Remote operations pending	
Configuration pending	
Putraction files to 'ADI Asservacie-brooksch10 2.0.1 Asse1'	
Extracting files to 'Au01/crs/oracle/product/10.2.0.1/crs1' 8%	
Extracting files to 'A/01/crs/oracle/product/10.2.0.1/crs1' 8%	
Extracting files to 'A01/crs/oracle/product/10.2.0.1/crs1' 8% Stop installation You can find a log of this install session at A01/crs/oracle/orainventory/logs/installActions/2007-03-22_03-22	-OEPM log
Extracting files to 'A01/crs/oracle/product/10.2.0.1/crs1' 8% Stop installation You can find a log of this install session at A01/crs/oracle/oral/wentory/logs/installActions2007-03-22_03-22 Help Installe/CProducts. B	-OGPMing

14. The OUI will now display a request to run root.sh

Execut	e Configuration scripts	
The follow Scripts to	ing configuration scripts need to be executed as the "ro be executed:	of user in each cluster node.
Number	Script Location	Nodes
1	/u01/crs/oracle/oralnventory/orainstRoot.sh	neon,argon
2	Au01/crs/oracle/product/10.2.0.1/crs1/root.sh	neon,argon
[4]		P
To execute 1. Open 2. Log in 3. Run t 4. Retur	a the configuration scripts: a terminal window h as "root" he scripts in each cluster node n to this window and click"OV" to continue	
Vote: Do r	not run the scripts simultaneously on the listed nodes.	
Ы	elp)	ОК

15. Run the root.sh scripts on each node (as root). On the first node the output will look similar to the picture below.

./root.sh

WARNING: directory '/u01/crs/oracle/product/10.2.0.1' is not owned by root WARNING: directory '/u01/crs/oracle/product' is not owned by root WARNING: directory '/u01/crs/oracle' is not owned by root WARNING: directory '/u01/crs' is not owned by root WARNING: directory '/u01' is not owned by root Checking to see if Oracle CRS stack is already configured

Setting the permissions on OCR backup directory Setting up NS directories Oracle Cluster Registry configuration upgraded successfully WARNING: directory '/u01/crs/oracle/product/10.2.0.1' is not owned by root WARNING: directory '/u01/crs/oracle/product' is not owned by root WARNING: directory '/u01/crs/oracle' is not owned by root WARNING: directory '/u01/crs' is not owned by root WARNING: directory '/u01' is not owned by root 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: neon neon-priv1 neon node 2: argon argon-priv1 argon Creating OCR keys for user 'root', privgrp 'root'... Operation successful. Now formatting voting device: /dev/rdsk/c2t4d0s7 Format of 1 voting devices complete. Startup will be queued to init within 30 seconds. Adding daemons to inittab Expecting the CRS daemons to be up within 600 seconds. CSS is active on these nodes. neon CSS is inactive on these nodes. argon Local node checking complete.

Run root.sh on remaining nodes to start CRS daemons.

16. The OUI now shows a screen that indicates the starting of the CRS services.

Configuration Assistants		
he following configuration assistants will configure and st	art the components y	rou selected earlier.
Tool Name	Status	Туре
Oracle Clusterware		
Coracle Notification Server Configuration Assistant	Succeeded	Recommended
C Oracle Private Interconnect Configuration Assistant	Succeeded	Recommended
Oracle Cluster Verification Utility	Failed (see detail	Is.) Recommended
		Betry
	1000 CO.CO.	STATE STATE STATE
etails (see full log at AuO1/craioracle/orainventon/logslins)	tailActions2007-03-2	2_03-22-06PM.log):
Details (see full log at /u01/croioracle/oral/wenton/logs/inst The "/u01/croioracle/product#10.2.0.1/crs1/cfgtoollogs/conf commands that failed, were skipped or were cancelled. Th assistants outside of OUI. Note that you may have to updat	tailActions2007-03-2 IgToolFailedComma Is file may be used to e this script with pas	2_03-22-06PM log): nds" script contains all o run these configuration swords (if any) before

17. The installation is now complete.



Note: The cluvfy utility had difficulty with raw partitions and was not able to successfully verify all parameters.

Install Oracle ASM

Create ASM Disks for Oracle

1. Setup the array volumes and iSCSI targets, as mentioned in Setup iSCSI.

Note: If reusing volumes previously used for ASM , the first 10 blocks need to be reformatted. ex. dd if=/dev/zero of=/dev/rdsk/c2t0d0s7 bs=1024 count=10

- 2. Start the Database Configuration Assistant (DBCA)
- \$. \$ORACLE_HOME/bin/dbca &

X Oracle Universal Installer: Welcome	
Welcome	
The Oracle Universal Installer guides you through the installatio Oracle products.	n and configuration of your
Click "Installed Products" to see all installed products.	
	Deinstall Products
	About Qracle Universal Installer
Help (Installed Products) Back Ne	ext) (Install) (Cancel)
ORACLE	

3. Same page as the database install

X Oracle Universal Installer: Select Installation Type	
Select Installation Type	10 ^g
What type of installation do you want?	
Oracle Database 10g Enterprise Edition, the first database designed for the grid, is scalability, performance, high availability and security features required to run the applications.	s a self-managing database that has the most demanding, mission critical
C Standard Edition (1.79GB) Oracle Database 10g Standard Edition is ideal for workgroups, departments and s looking for a lower-cost offering.	mall-to-medium sized businesses
Coustom	
Enables you to choose individual components to install.	
	Product Languages
Help Installed Products Back Ne	xt Install Cancel
ORACLE	

4. Choose a separate install location for the ASM software.

🗙 Oracle	Universal Installer: Specify Home Details	
Spe Destin	cify Home Details	
Enter o Na <u>m</u> e:	select a name for the installation and the full path where you want to install the pro OraASM10g_home1	duct.
Path:	/u01/asm/oracle/product/10.2.0.1/asm1	Browse)
Help	Installed Products Back Next Inst	all Cancel

5. Choose the cluster nodes

X Oracle	e Universal Installer: Specify Hardware Cluster Installation Mode
Spe Clus Sele proc	cify Hardware Cluster Installation Mode ster Installation ect nodes (in addition to the local node) in the hardware cluster where the installer should install ducts that you select in this installation.
	Node Name
12	neon
	argon
	Select All Deselect All
C Loc Sele part	al Installation ect this option if you want to perform a single node non-cluster installation even though the local node is of a hardware cluster.
Help	o) Installed Products) Back Next) Install) Cancel)
OR	ACLE

6. Same prerequisite checks for the database

)racle Universal Installer: Product-Specific Prerequis	iite Checks			
Product-Specific Prerequisite Check The Installer verifies that your environment meets all of the m configuring the products that you have chosen to install. You are flagged with warnings and items that require manual che checks, click the item and review the details in the box at the	ks ninimum requirements f must manually verify ar ecks. For details about j bottom of the window.	for in nd co perfo	stalling and nfirm the items rming these	that
Check	Type		Status	
Checking physical memory requirements	Automatic	R	Succeeded	4
Checking available swap space requirements	Automatic	R	Succeeded	
Validating ORACLE_BASE location (if set)	Automatic	12	Succeeded	
1 warnings, 0 requirements to be verified.			Retry	top
Checking kernel parameters Checking for BIT_SIZE=64; found BIT_SIZE=64. Passed Checking for noexec_user_stack=1; found no entry.Failed <	<<<			
Help Installed Products Bac	k Next	(ns	tall) Ca	nce
ORACLE				

7. Choose the ASM install

X Oracle Universal Installer: Select Configuration Option	
	$\cap g$
Select Configuration Option	10
Select the configuration that suits your needs. You can choose either to create a database or Automatic Storage Management (ASM) for managing database file storage. Alternatively, you install just the software necessary to run a database, and perform any database configuratio C create a database	to configure can choose to n later.
Configure Automatic Storage Management (ASM)	
Specify ASM SYS Password:	
C Install database goftware only	
Help Installed Products Back Next Install	Cancel
ORACLE	

8. Available unused raw disks will be shown. Choose the ones to be included.

onf	igure Automatic Storage Manageme	nt	
oecify (Disk Group characteristics and select disks.		
	New Data		
sk Gro	up Name: DATA		
C Hig	h C Normal External		
Add D Can	0isks didate Disks ← All Disks		-
Select	Disk Path (devirdskir2t5d0s7	512e (MB)	CANDIDATE
	Jdevirdskic2t6d0s7	102393	CANDIDATE
		Change Di	sk Discovery Path

9. Install summary page

X Oracle Universal Installer: Summary	_ 🗆 🛛
Summary Oracle Database 10g 10.2.0.1.0	s
Source: /export/home/oracle/install/database/stage/products.xml	100
-Oracle Home: /u01/asm/oracle/product/10.2.0.1/asm1 (OraASM10g_home1)	
€-Cluster Nodes	
Installation Type: Standard Edition	
English	
Space Requirements	
-/ Required 1.80GB : Available 19.92GB	
-/tmp/ Required 131MB (only as temporary space) : Available 14.04GB	
⊕ Remote Nodes	
-Agent Required Support Files 10.2.0.1.0	
-Assistant Common Files 10.2.0.1.0	
Help Installed Products Back Next Install	Cancel

10. Install

X Oracle Universal Installer: Install	III III III III III III III III III II
Install Installing Oracle Database 10g 18.2.0.1.8 Installation in progress Link pending Setup pending Remote operations pending Configuration pending	
1%	
Stop installation	
Belp Installed Broducts Back D	eit Install Cancel

11. Window to prompt you to run the root.sh scripts

X Execut	e Configuration scripts	
The follow Scripts to	ving configuration scripts need to be executed as the "i be executed:	root" user in each cluster node.
Number	Script Location	Nodes
1	/u01/asm/oracle/product/10.2.0.1/asm1/root.sh	neon,argon
To execute 1. Open 2. Log in 3. Run t 4. Retur	e the configuration scripts: a terminal window n as "root" he scripts in each cluster node n to this window and click "OK" to continue	Þ
Ш	elp)	ОК

12. Install summary



Install Oracle 10g Software

1. Start page



2. Choose Oracle version



3. Enter Oracle database home

Oracle	Universal Installer: Specify Home Details		
Spe	cify Home Details		
Desti	lation		
Enter o	select a name for the installation and the full path where you want to install the p	roduct.	
Name:	OraDb10g_home1	*	
Path:	/u01/app/oracle/product/10.2.0.1/db1		Browse_

4. choose nodes



5. System variable checks

Oracle Universal Installer: Product-Specific Prerequi	site Checks		
Product-Specific Prerequisite Chec The Installer verifies that your environment meets all of the r configuring the products that you have chosen to install. You are flagged with warnings and items that require manual ch checks, click the item and review the details in the box at the	ks ninimum requirements musit manually verify ar ecks. For details about bottom of the window	for installing and Id confirm the items to performing these	hat
Check	Type	Status	
Checking kernel parameters	Automatic	Vser Verified	
Checking physical memory requirements	Automatic	D Succeeded	
Checking available swag space requirements	Automatic	Succeeded	e
1 warnings, 0 requirements to be verified		Retry Sto	p
Check complete. The overall result of this check is: Passed			
Checking kernel parameters Checking for BIT_SIZE=64; found BIT_SIZE=64. Passed			0
Help Installed Products_) Ba	tk Next	Inistall Can	ciel
ORACLE			

6. Choose type of install

V Oracle Universal Installer: Select Configuration Option	
Select Configuration Option	
Select the configuration that suits your needs. You can choose either to create a database or Automatic Storage Management (ASM) for managing database file storage. Atternatively, you install just the software necessary to run a database, and perform any database configuration	to configure can choose to n later.
⊂ <u>©</u> reate a database	
Configure Automatic Storage Management (ASM)	
Specify ASM SYS Password Confirm ASM SYS Password	
Install database Software only	
	>
Help Installed Products_) Back Neid Installed	Cancel)

7. Summary page of install components.

X Oracle Universal Installer: Summary	
Summary Oracle Database 10g 10.2.0.1.0	
⊖ Global Settings	1
Source: /export/home/oracle/install/database/stage/products.xml	
-Oracle Home: /u01/app/oracle/product/10.2.0.1/db1 (OraDb10g_home1)	
B-Cluster Nodes	
Installation Type: Standard Edition	
Product Languages	
English	
🕀 Space Requirements	
-/ Required 1.80GB : Available 18.09GB	
-/fmp/ Required 131MB (only as temporary space) : Available 13.800B	
B-Remote Nodes	
New Installations (106 products)	
-Agent Required Support Files 10.2.0.1.0	
-Assistant Common Files 10.2.0.1.0	
Help Installed Products Back Next	(Install) Cancel

8. Install monitor

Oracle Universal Installer: Install	
Install	
Installing Oracle Database 10g 10.2.0.1.0	
Copying files for "Sun JDK 64 bit 1.4.2.0.8 *	
Link pending	
Setup pending	
Remote operations pending	
Configuration pending	
copying Talym.so2"	
31%	
(Stop installation	
You can find a log of this install session at: A01/crs/oracle/oraliventory/logs/InstallActions2007-03-26_10-48-50AM log	
Help) (Installed Products.) Back	Next Install Cancel
ORACLE	

- 9. Create VIP
- a. The VIPCA utility should start automatically once the install has completed.



b. The network interfaces will be shown.

X VIP Configuration Assis	tant, Step 1 of 2 : Network Interfaces		
	This page displays the supported network interfaces found. Select the network interfaces from the list		
	#1000g0		
	Select All Select None		
Cancel Help			

c. Enter the desired virtual IP addresses

	IP addresses are cluster node	required for defining	virtual IP resource	application for each
	Node name	IP Alias Name	IP address	Subnet Mask
A DESCRIPTION OF	neon	neon-vip	10.2.1.202	255.255.255.0
	argon	argon-vip	10.2.1.212	255 255 255.0
Ŀ				

d. A summary page of your input will be shown before the process starts.



e. VIPCA will create vip addresses.



f. If the VIP creation is successful a summary page will be shown.

Configuration Res	ults		
Configurati	on Results		
The VIP Configura	ation Assistant has succe	essfully created resou	urce aplications for each
Nodes: neon,arg	on		
Network Interfac	ces: e1000g0		
Aapping of node	es and virtual IP addres	ises:	
Node name	IP Alias Name	IP address	Subnet Mask
neon	neon-vip	10.2.1.202	255 255 255 0
argon	argon-vip	10.2.1.212	255.255.255.0

Check that the VIP address has been created. On Solaris use ifconfig.

ifconfig -a

You should see results similar to this:

```
lo0: flags=2001000849<UP,LOOPBACK,RUNNING,MULTICAST,IPv4,VIRTUAL> mtu 8232 index 1
```

inet 127.0.0.1 netmask ff000000

e1000g0: flags=1000843<UP,BROADCAST,RUNNING,MULTICAST,IPv4> mtu 1500 index 2 inet 10.2.1.201 netmask fffff00 broadcast 10.2.1.255 ether 0:14:4f:2c:f6:d4

e1000g0:1: flags=1040843<UP,BROADCAST,RUNNING,MULTICAST,DEPRECATED,IPv4> mtu 1500 index 2

inet 10.2.1.202 netmask fffff00 broadcast 10.2.1.255

The public node is e1000g0 and the VIP is multiplexed (e1000g0:1) with the public node.

If VIP was not setup automatically by the Database Install then go ahead and use the \$ORA_CRS_HOME/bin/vipca utility to create the vip.

\$ORA_CRS_HOME/bin/vipca &

10. Window to request the running of root.sh script



11. End of Install window

Oracle Universal Installer: End of Installation	
End of Installation	
The installation of Oracle Database 10g was successful.	
Please remember	
The following J2EE Applications have been deployed and are accessible at the listed below. ISQL*Plus URL: http://neon.5560/isqlplus ISQL*Plus DBA URL: http://neon.5560/isqlplus/dba	ne URLs 🔺
Help Installed Products) Back Next Ins	tarr J (Egit)

Note: Make a copy of this page since the location of this information is not included on the window. However, the portnumber information is available at \$ORACLE_HOME/install/portlist.ini