Oracle RAC Install Oracle Database 10g Release 2 (patchset 10.2.0.3) with Microsoft Windows 2000/2003 32bit / 64bit Using RAW for Oracle Clusterware files and ASM for Oracle Database files

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	Oracle Database 10gR2 patchset 10.2.0.3

This is a draft document.

It is complete although it is under constant change. Please check back from time to time to get the most recent version.

I welcome feedback to help improve this document. If you have used this document to install an Oracle Database 10g RAC on Windows cluster and you think the paper can be improved. Please let me know. You can email me at philip.newlan@oracle.com

Please note I cannot offer support for installation of Oracle RAC on Windows. Please log a support TAR if you need support.

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# **Change Control**

# **Change Date**

Author	Date	Version	Change Reason	Distribution List
philip.newlan	30-SEP-05	Draft 0.1	Initial Review	
philip.newlan	15-NOV-05	Draft 0.2	After Support feedback	
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philip.newlan	13-MAR-06	Draft 0.4	RAC.US Feedback	
philip.newlan	01-MAY-06	Draft 0.5	Support Feedback	
Philip.newlan	14-NOV-06	Draft 0.6	Better Schematics	

# **Change Detail**

Release	Change
Draft 0.5	Added information on issues when using non-routable IP Addresses
Draft 1.0	Added Appendix on how to add more OCR & vote devices
Draft 1.4	Added patch to 10.2.0.3
Draft 1.5	Added cleanup after a failed install (Appendix I)
Draft 1.53	Added info about HBA caching & fixed typo

# Items to be added to this paper

The following topics will be added over the coming months

Coping with Firewalls

# 0. Introduction

What you need to know...

For those of you starting a RAC install for the first time. All this will be new. For those of you with 9i RAC on Windows experience there are some new concepts & features that make the RAC install easy.

- Cluster Verification Utility: aka cvu or cluvfy, this utility checks the state of your cluster at various stages of the install, from pre-Oracle software install all the way through to post cluster database setup. It should catch Operating System setup issues prior to the install that would have otherwise caused an unnecessary install failure. See Appendix I for more details on cluvfy.
- Automatic Storage Management: ASM is used in this document as the method of storage for the database files (not the Oracle Home). It can provide Automatic striping mirroring, Volume Management. The other two previous methods of data-file storage still exist; OCFS & RAW although this document does not cover these.
- Virtual IP (VIP): VIPs are used to provide a secondary IP for the main network adapter for the node, this is the adapter that clients connect to gain access to the database. They exist to improve the performance of detection of node failure by clients.

Software required for install:

- Base Oracle 10gR2 (10.2.0.1) DVD
- 10.2.0.3 patchset

# Install steps

To summarise the install steps are:

- Pre-reqs. to make sure the cluster is setup OK.
- Stage all the software on one node, typically Node1
- Prepare the Shared Disk
- Install the Oracle Clusterware (using the push mechanism to install on the other nodes in the cluster)
- Patch the Oracle Clusterware layer to 10.2.0.3
- Install Oracle ASM Software only Home
- Patch the Oracle ASM Software Home to 10.2.0.3
- Create Node Specific Network Listeners
- Create ASM Instances and initial ASM disk group
- Install Oracle RAC Database Software only Home
- Patch the Oracle RAC Database Software Home to 10.2.0.3
- Create RAC database



The following is a schematic of the software & hardware layout of a 2node RAC cluster when completed

This document details one method of installing a 2 node Oracle 10gR2 RAC cluster on Windows.

**NTFS\_RAW\_ASM:** The Oracle Cluster, ASM & Oracle Database Homes are established on the local disk of each of the RAC nodes. The files required by Oracle Clusterware are on RAW file-systems. The database data-files are on ASM.

It should be noted that there are 3 other popular installation configurations. This document does not cover these methods:

- NTFS\_RAW\_RAW: The Oracle Cluster, ASM & Oracle Database Homes are established on the local disk of each of the RAC nodes. The files required by Oracle Clusterware are on RAW file-systems. The database data-files are also on RAW.
- NTFS\_OCFS\_OCFS: The Oracle Cluster, ASM & Oracle Database Homes are established on the local disk of each of the RAC nodes. The files required by Oracle Clusterware are on OCFS. The database data-files are also on OCFS.
- OCFS\_OCFS\_OCFS: The Oracle Cluster, ASM & Oracle Database Homes are established in a shared Oracle Home on the Oracle Cluster File System. The files required by Oracle Clusterware are on OCFS. The database data-files are also on OCFS.

There are other possible combinations although Oracle recommends one of the above methods



# 1. Prepare the cluster

This installation routine presumes that you have a 2 node Windows cluster. There are a number of items, which require checking before the install commences.

• User Accounts

o cluvfy stage -post hwos will check this

- Installing using Remote desktop client.
- Environment Variables
- Networking

o cluvfy stage -post hwos will check this

- Remote Registry Connect
- Disk Layout
  - o cluvfy stage -post hwos will check this
- Stopping Services that might impact the installation process
- Enable Automounting of disks on Windows 2003

o cluvfy stage -post hwos will check this

- Time sync
- Run CVU

It is essential that these items are checked and are configured correctly before the install commences.

### **User Accounts**

The install will be done using the local Administrator account. The local admin username and password must be the same on both nodes. If you must use a domain account then you must ensure that the domain user is explicitly declared as a member of the local Administrators on each node in the cluster

### Installing Using Windows Remote Desktop Client

If you must use the MS Terminal Services Client it is essential that you invoke the mstsc.exe application with the **/console** parameter which connects to the console session of the specified Windows Server.

# **Environment Variables**

Make sure that both the TEMP and TMP environment variables for both the Logged in user & the LocalSystem account are set to point at sensible directories. e.g.

TEMP=C:\TEMP TMP=C:\TEMP. Also you should ensure that you do not have an ORACLE\_HOME environment variable set.

### Networking

Networking for the Oracle Database with RAC changed slightly with the first release of Oracle Database 10g RAC.

### **Network Assumptions**

The network IP address for the Virtual IPs used by Oracle Clusterware must be in the same subnet as the public Adapter IP address.

There is a class of network address that is known as non-routable. The following table indicates the addresses that are known as non-routable.

Address Class Range	Network Address Range
А	10.0.0.0 - 10.255.255.255
В	172.16.0.0 -172.31.255.255
С	192.168.0.0 - 192.168.255.255

The Oracle installer assumes that the **public** IP address ranges **will not** be in range of what is sometimes known as non-routable addresses.

The Oracle installer assumes that the **private** interconnect IP addresses **will** be in what is sometimes known as non-routable address range.

If your public address must be from the non-routable range then you must ensure that the subnets used for the Public and Private Networks are different. Even after selecting different subnets the installer will have issues when using non-routable addresses for the public/vip interface. These issues can be worked around and will be discussed in this document.

Oracle RAC still requires a minimum of 2 networks cards per node, 1 for the public interface and one for the cluster interconnect.

The 2 nodes are visible to the 'outside world' via network cards. These cards are known as the public interface. Each of these cards will have a public IP address, which must be static IP addresses which will typically be resolved via DNS. This is the address that should be returned when you ping either of the nodes. The 2 nodes should also be connected to each other (via a private switch not a crossover cable). These cards are known as the private interface cards. Each of these cards will have a private IP address, which is also a static address. Normally IP resolution for the private interconnect is handled via an entry in the %SystemRoot%\system32\drivers\etc\hosts file.

Oracle RAC 10g introduces the concept of Virtual IP's (VIPs). There should be one additional IP address allocated per node. This additional VIP should not be bound physically to the public adapter or registered in DNS or the hosts file as an IP for the local hostname. Instead a new node name should be created, typically this is nodename-vip, and this value registered in DNS if available or the local hosts files. These Virtual IPs are the addresses clients will use to connect to the Oracle RAC instances when the install completes and one of the final steps is that vipca is run . Note the new Virtual IP should be in the same network subnet as the public IP.

# Confirming the Network is configured correctly

It is important to confirm that networking is configured correctly before commencing install. There are a series of 'ping' tests that should be completed, and then the network adapter binding order should be checked.

## **Network Ping tests**

You should ensure that the public IP addresses are static and resolve correctly and that the private addresses are of the form 'nodename-priv' and resolve on both nodes via the hosts file.

• Public Ping test

Pinging Node1 from Node1 should return Node1's public IP address Pinging Node2 from Node1 should return Node2's public IP address Pinging Node1 from Node2 should return Node1's public IP address Pinging Node2 from Node2 should return Node2's public IP address

Private Ping test

Pinging Node1 private from Node1 should return Node1's private IP address Pinging Node2 private from Node1 should return Node2's private IP address Pinging Node1 private from Node2 should return Node1's private IP address Pinging Node2 private from Node2 should return Node2's private IP address

If any of the above tests fail you should fix name/address resolution by updating the DNS or local hosts files on each node before continuing.

### Network Adapter naming and binding order

You must check the network adapter binding order. In the Control Panel double click on the Network (or Network & Dialup) Connections icon.

The list of adapters is displayed, you can use this dialog to rename the adapters if required. You rename the adapter by right clicking on it and selecting rename from the popup list. Remember that the public adapter should have exactly the same name on all nodes in the cluster and that the adapter used for the interconnect should have the same name on all the nodes in the cluster. You should avoid overly long adapter names and not use any special characters (spaces, periods, dashes etc) in the adapter name . Some customers choose to name the adapters PublicLAN and PrivateLan to avoid confusion

Advanced Settings	? ×
Adapters and Bindings Provider Order	
Connections are listed in the order in which they are accessed by DNS and other network services.	
Connections:	
Local Area Connection Local Area Connection 2 (Remote Access connections)	î J
Bindings for Local Area Connection: ♥ 💭 File and Printer Sharing for Microsoft Networks ♥ 🐨 Internet Protocol (TCP/IP) ♥ 🚍 Client for Microsoft Networks ♥ 🍞 Internet Protocol (TCP/IP)	Ŷ
ОК	Cancel

You must confirm the network adapter binding order on all the nodes in the cluster. Select the menu item 'Advanced->Advanced settings...' this will load a dialog box with 2 tabs. On the 'Adapters & Bindings TAB' you must ensure that the public adapter is listed first and the private adapter is listed second. If they are not in this order: select the public adapter and use the up arrow button to the right of the 'Connections' list box to move the public adapter to the top of the list.

It is very important to confirm this on all nodes in the cluster.

# Net Use Test

Software gets distributed between the nodes via copying to the remote nodes from the local node. You should ensure that this procedure would be successful by testing the net use command

On node1 issue the following command:

net use \* \\<node2name>\c\$

This should return success

On node2 issue the following command:

net use \* \\<node1name>\c\$

# (where <node1name> and <node2name> are the actual node names)Disable Media Sense

You should disable DHCP media sense. See Appendix J

### **Remote Registry Connect**

There is sometimes an issue during the install when Oracle attempts to update the registry on a remote node. You should check that this is possible. From the node you are installing from

- Start the registry editor : regedit.exe
- Click File->Connect Network Registry...
- In the 'Enter the object name...' edit box enter the name of the other node in the cluster (e.g. node2) and click OK
- Wait for the node to appear in the registry tree. If this works then Remote registry connect is working and you can continue. If this fails then you probably have a policy set to disallow this. You need to change this policy.
- When done you can right click on the node in the regedit tree and select disconnect.

## Disk Layout

It is assumed that the two nodes have local disk primarily for the operating system and the local Oracle Homes. The Oracle Clusterware software also resides on the local disks on each node. The 2 nodes must also share some central disks.

At least 2 empty partitions are required for the Oracle Clusterware install.

If the disk system used to provide the shared physical disk does not provide some form of RAID protection then Oracle recommends that you use the built in mirroring capabilities provided by Oracle Clusterware for the required Clusterware RAW partitions

Required partitions	Size (min)	No. required using external mirroring	No. required using Oracle mirroring
Oracle Cluster Registry	100Mb *	1	2
Oracle Voting Disk	20Mb *	1	3

\* see text

\* The above disk sizes are the minimum. It is suggested to add at least 20% to the sizes (24Mb & 120Mb) to allow for 'rounding issues' when creating the partitions.

If you choose to use Oracle mirroring you should ensure that the partitions created for the mirrors are on separate physical devices.

You should use either DISKPART (only available on Windows 2003) or DiskManager (available on Windows 2000 & 2003) to create the partitions.

The following example assumes that you are using external redundancy so you will need to create only 1 of each type of partition to be used by Oracle Clusterware. It also assumes you are using Diskmanager.

If at a later date you wish to add more OCR or vote devices please see Appendix M in this document.

### Enable Automounting of disks when running Windows 2003

Windows 2003 does not automatically mount RAW disks and make them visible

You must enable automounting.

On both nodes

From a command prompt run the diskpart utility

At the diskpart prompt type:

AUTOMOUNT ENABLE

📾 C:\WINDOWS\system32\cmd.exe - diskpart	
Microsoft DickPost vession E 2 2700	
MICPOSOFT DISKRAPT VEPSION 5.2.3770	
ADD - Add a mirror to a simple volume.	
ACTIVE – Marks the current basic partition as activ	e.
ASSIGN - Assign a drive letter or mount point to th	e selected volume.
AUTOMOUNT – Enables and disables automatic mounting of	basic volumes.
BREAK – Break a mirror set.	
CLEAN – Clear the configuration information, or al	l information, off the 📃
disk.	
CONVERT - Converts between different disk formats.	
CREATE - Create a volume or partition.	
DELETE - Delete an object.	
DEIHIL - Provide details about an object.	
EXII – Exit DiskPart	
EXIEND - Extend a volume.	+ * + *
uri - Hssigns attributes to the selected uri par	tition.
IMPOPT - Importo a diak group	
INFORM - Imports a disk group.	100
LIST - Prints out a list of objects	146.
ONLINE - Online a disk that is currently marked as	offline
REM - Does nothing. Used to comment scripts.	
REMOVE - Remove a drive letter or mount point assig	nment.
REPAIR - Repairs a RAID-5 volume with a failed memb	er.
RESCAN - Rescan the computer looking for disks and	volumes.
RETAIN - Place a retained partition under a simple	volume.
SELECT - Move the focus to an object.	
DISKPART> automount enable	
Automatic mounting of new volumes enabled.	
DISKPART >	<b>•</b>

After running DISKPART it is recommended that you reboot both nodes. You should only need to run diskpart again should you reinstall the Windows OS from scratch.

### Disable Host Bus Adapter Node Local Caching

Caching for the shared disk subsystem can be problematic for RAC. RAC assumes that when a write request from the Oracle code to the OS returns with 'success' then the block written will be available to be read from another node if required.

Some Host Bus Adapter (HBA) cards have disk I/O cache on the card local to the node. If this is enabled then this can cause RAC database failures. If your 'node-local' HBAs support this feature then you must disable it. This is typically managed through either the device manager for Windows 2003 or a proprietary software module from the HBA vendor.

Some storage subsystems also have cache at the SAN 'end' – as long as this cache is shared then it is OK (with a few provisos) for this cache to be enabled for both read and write.

This SAN cache should be shared and visible to all nodes in the cluster

There must be some form of battery back up to guarantee that a write will not be lost should the SAN suffer an abrupt power failure.

On Node1 logged in as someone with Adminstrator privileges Click  ${\tt START->RUN}$  and type diskmgmt.msc

👼 Disk Manager	ment					
Action View		] 😫 🛛 😰				
Volume	Layout	Туре	File System	Status	Capacity	Free Sp
□Local Disk (C:)	Partition	Basic	NTFS	Healthy (S	74.52 GB	67.93 (
L .				_		
•						•
Sectors Contraction Contractico Contractic	Local Disk (C:) 74.52 GB NTFS Healthy (System)					
🐼 Disk 1						
Dynamic 34.18 GB Online	34.18 GB Unallocated					
	Primaru Partition					- <u>·</u>
	- may - andor					



In this case there are 2 disks visible to the node. Disk 0 is a local attached disk and contains the Operating System. Disk 1 is located on a highly available shared storage array and is visible to all nodes in the cluster.

The Disk1 above is currently in Dynamic Mode, Oracle Clusterware requires that the disk be in Basic Mode. So right click on the Disk 1 logo and select Convert to Basic. You should check this on both nodes in the cluster

The DiskManagement console should now look like this:

😽 Disk Manager	nent					_ 🗆 🗵
Action View		1 😫 🗍	2 🖻 😼			
Volume	Layout	Туре	File System	Status	Capacity	Free St
ELocal Disk (C:)	Partition	Basic	NTFS	Healthy (S	74.52 GB	67.93 (
				_		
<b>▲</b>						<u> </u>
mini-lu o						
Basic	Local Disk (C:)					
74.52 GB	74.52 GB NTFS					
Online	[Healthy (System)					
🗇Disk 1						
Basic 34,18 CB	04.10.00					
Online	Unallocated					
						<b></b>
Unallocated	Primary Partition					

Figure 2

Right click in the Disk area on Disk1 and choose to create a new partition.

The New Partition Wizard launches



# Click Next



Select the Extended partition radio button and click Next



Select the partition size to fill the disk

Click Next

Create Partition Wizard		×
	Completing the Create Partition Wizard You have successfully completed the Create Partition Wizard. You specified the following settings: Partition type: Extended Partition Disk 5 Selected: Disk 1 Partition size: 35001 MB To close this wizard, click Finish.	
	< Back Finish Cance	.

The wizard will create the extended partition

Click Finish

😸 Disk Manager	ment					<u> </u>
<u>A</u> ction ⊻iew		😫  ] 🔮	e 😼			
Volume	Layout	Туре	File System	Status	Capacity	Free Sp
Docal Disk (C:)	Partition	Basic	NTFS	Healthy (S	74.52 GB	67.93 (
•						•
-						
Basic	Local Disk (C)					
74.52 GB	74.52 GB NTF5					
Online	Healthy (System)					
@Disk 1						
Basic						
34.17 GB Opline	34.17 GB					
	Tillee opace					<b>_</b>
Primary Partition	n 📕 Extended Partition	Free Space	e			
1						

We need to create 2 logical drives for Oracle Clusterware so right click in the extended partition and click create partition. The first partition will be used by Oracle Clusterware as the voting disk.

The New Partition Wizard launches

Create Partition Wizard		×
	Welcome to the Create Partition Wizard This wizard helps you create a partition on a basic disk.	
	A basic disk is a physical disk that contains primary partitions, extended partitions, and logical drives. A basic disk may also contain volumes created with Windows NT 4.0 and earlier. You can also use MS-DDS to gain access to partitions on basic disks. To continue, click Next.	
	< <u>₿</u> ack [ <u>Next&gt;</u> ] Cancel	

# Click Next



Select the radio button to create a logical drive and click Next

reate Partition Wizard Specify Partition Size How big do you want the partiti	on to be?
Choose a partition size that is sr	maller than the maximum disk space.
Maximum disk space:	34993 MB
Minimum disk space:	7 MB
Amount of disk space to use:	20 - MB
	< <u>B</u> ack <u>N</u> ext > Cancel

Enter 24 for the amount of disk space to be used by this partition and click Next

Assign Drive Letter or Pal You can assign a drive let	<b>h</b> er or drive path to a p	artition.		
C Assign a drive letter: Mount this volume at a	E: T	pports drive ; <u>Br</u> owse	paths: 	
		< <u>B</u> ack	<u>N</u> ext >	Cance

Select the Do not assign ... radio button and click Next

Specif	ly whether you want to format this partition.	
۲	Do not format this partition	
0	Format this partition with the following settings:	
	Formatting <u>File system to use:</u>	
	Allocation unit size: Default	
	Volume label: New Volume	
	Refere a Quick Format     Example file and folder compress	ion

Select the Do not format ... radio button and click Next



Click Finish to Create the first partition.

👼 Disk Managem <u>- 🗆 ×</u> <u>A</u>ction <u>V</u>iew + → | 🛍 🖬 | 🔮 🚯 🗙 📓 Volume File System Layout Туре Status Capacity Free Sp 24 MB Partition Basic Healthy 24 MB ■Local Disk (C:) NTES 74.52 GB Partition Basic Healthy (S... 67.93 • Þ ٠ 🗇 Disk 0 Basic 74.52 GB Online Local Disk (C:) 74.52 GB NTFS Healthy (System) 🗇Disk 1 Basic 34,17 GB Online 24 MB Healthy 34.15 GB Free Space 📕 Primary Partition 📕 Extended Partition 🧧 Free Space 📒 Logical Drive

We now need to create an additional partition for the Oracle Clusterware – Oracle Cluster Registry

Right click in the Free Space section of Disk1 and select Create Partition.



Click Next

Oracle 10gR2 RAC Install for Windows2000/2003 32 bit / 64bit

Create Partition Wizard
Select Partition Type You can specify what type of partition to create.
Select the type of partition you want to create: C Brimary partition C Concernent of the time C C C C Concernent of the time C C C C C C C C C C C C C C C C C C C
< <u>Back</u> <u>N</u> ext> Cancel

Select the radio button to create a logical drive and click Next

Specify Partition Size How big do you want the partitic	in to be?
Choose a partition size that is sm	aller than the maximum disk space.
Maximum disk space:	34970 MB
Minimum disk space:	7 MB
Amount of disk space to use:	100 🛨 ME
	Z Back Next Car

Enter 120 for the size of the partition and click Next.

Create Partition Wizard	×
Assign Drive Letter or Path You can assign a drive letter or drive path to a partition.	
Assign a drive letter:     E:     E:     Browse      Do not assign a drive letter or drive path	
< <u>B</u> ack Next >	Cancel

Select the Do not assign ... radio button and click Next

Format P You c	artition an customize the formatting of the partition.
Specif	y whether you want to format this partition.
۲	Do not format this partition
0	Format this partition with the following settings:
	Formatting
	Volume label: New Volume
	Petrom a guick Format     Enable file and folder compression

Select the Do not format ... radio button and click Next

Create Partition Wizard		x
	Completing the Create Partition Wizard You have successfully completed the Create Partition Wizard. You specified the following settings: Partition type: Logical Drive Disks Selected: Disk 1 Partition size: 100 MB Drive letter or path: None File System: None Allocation Unit Size: Default To close this wizard, click Finish.	
	< <u>B</u> ack Finish Cancel	

Click Finish to Create the first partition

😽 Disk Manager	nent					
Action View	] ← →   🛍	📧   🔮	🔹 📓			
Volume	Layout	Туре	File System	Status	Capacity	Free St
	Partition	Basic		Healthy	24 MB	24 MB
	Partition	Basic		Healthy	102 MB	102 ME
💷 Local Disk (C:)	Partition	Basic	NTFS	Healthy (S	74.52 GB	67.93 (
•						Þ
Cisk 0 Basic 74.52 GB Online	Local Disk (C:) 74.52 GB NTFS Healthy (System)	)				
CDisk 1 Basic 34.17 GB Online	24 MB 1 Healthy	02 MB lealthy	34.05 GB Free Space			
Primary Partition	Extended Part	ition 📘 Free S	õpace 🔽 Logical Dri	ve		

As we are going to use ASM for our database files now is a good time to create the additional partitions required by ASM

## Oracle 10gR2 RAC Install for Windows2000/2003 32 bit / 64bit

👼 Disk Manager	nent					
<u>A</u> ction <u>V</u> iew		•   😫	🕼 👪			
Volume	Layout	Туре	File System	Status	Capacity	Free Sp
0	Partition	Basic		Healthy	24 MB	24 MB
	Partition	Basic		Healthy	102 MB	102 ME
Disk (C:)	Partition	Basic	NTES	Healthy (S	74.52 GB	67.93 (
•						►
Contemporary Conte	Local Disk (C:) 74.52 GB NTF5 Healthy (System)					
Contraction Contractic Con	24 MB 102 Healthy Healthy	2 MB althy	34.05 GB Free Space			
Primary Partition	n 📕 Extended Partiti	on 🔽 Free S	Space 🗧 Logical Driv	/e		

Right click in the free space area on Disk 1 and create 3 more partitions each of size 4096Mb. When complete the disk manager layout for disk one should look like this:

😽 Disk Manage	ment					
Action ⊻iew	] ← →   📾	📧   🔮	🔹 👪			
Volume	Layout	Туре	File System	Status	Capacity	Free 🔺
	Partition	Basic		Healthy	24 MB	24 N
	Partition	Basic		Healthy	102 MB	102
	Partition	Basic		Healthy	4.00 GB	4.00
17	D	D		11	4.00.00	1.00
						<u> </u>
mini-t- o						<b>▲</b>
Basic 74.52 GB Online	Local Disk (C:) 74.52 GB NTFS Healthy (System)	1		Prin	hary Partition	
CPDISK 0 Basic 74.52 GB Online CPDISK 1 Basic 34.17 GB Online	Local Disk (C:) 74.52 GB NTF5 Healthy (System) 24 102 MI 4 He Health H	1.00 GB Healthy	4.00 GB Healthy	Prin 4.00 GB Healthy	22.05 GB Free Space	
Carbisk 0 Basic 74.52 GB Online Carbisk 1 Basic 34.17 GB Online Primary Partitio	Local Disk (C:) 74.52 GB NTF5 Healthy (System) 24 102 MI 4 Health 4 Health 4	1.00 GB Healthy	4.00 GB Healthy pace Logical D	Prin 4.00 GB Healthy Drive	22.05 GB Free Space	

There are now 5 partitions

Required partitions	Size (min)	No. required using external mirroring	No. required using Oracle mirroring
Oracle Cluster Registry	20Mb	1	2
Oracle Voting Disk	100Mb	1	3
Oracle ASM Disk0	4096Mb	n/a	n/a
Oracle ASM Disk1	4096Mb	n/a	n/a
Oracle Flashback Disk0	4096Mb	n/a	n/a

You must check that the partitions can be seen on the other node and that they do not have a drive letter assigned on either node. If the partitions do have letters assigned used diskmgmt.msc to remove the letters. On Windows 2003 a reboot of the 'other' node will be required for this new partition to become visible. Or you can use an Oracle provided tool to rescan the partitions. You should run this tool on the 'other' nodes in the cluster.

## **Stopping Services**

There can be issues with some of the services which may already be running on the cluster nodes. Typically a Microsoft Service: Distributed Transaction Coordinator (MSDTC) can interact with Oracle software during install. It is recommended that this service is stopped and set to 'manual' start using 'services.msc' on both nodes.

If, after completing the install, the MS DTC service is required it can be restarted and set to auto start.

This is particularly important when, in the future, you patch the Oracle software.

### Time Sync

There is a general requirement for Oracle RAC that the time all the nodes is the same. Typically this can be achieved using Network Time Server protocol. At the very least you should ensure that the system clocks on all nodes are as close as possible.

#### Run the CVU stage check

Now you can run the CVU to check the state of the cluster prior to the install of the Oracle Software. CVU can be run from the installation media. It can be found in \clusterware\cluvfy directory of the installation DVD.

Note when running the CVU you may see a message 'The system cannot find the file specified.' This can be ignored.

If you are using non-routable IP addresses for the public IP's then cluvfy will fail with an error **Could not find a suitable set of interfaces for VIPs**. You can ignore this error only if your public IP address is in the non-routable range.

D:\>cd clusterware\cluvfy D:\clusterware\cluvfy>**runcluvfy stage -post hwos -n iwinrca01,iwinrca02** The system cannot find the file specified.

Performing post-checks for hardware and operating system setup

Checking node reachability... Node reachability check passed from node "iwinrca01".

Checking user equivalence... User equivalence check passed for user "Administrator".

Checking node connectivity...

Node connectivity check passed for subnet "139.185.150.0" with node(s) iwinrca02,iwinrca01. Node connectivity check passed for subnet "10.10.10.0" with node(s) iwinrca02,iwinrca01.

Suitable interfaces for VIP on subnet "139.185.150.0": iwinrca02 Local Area Connection:139.185.150.55 iwinrca01 Local Area Connection:139.185.150.54

Suitable interfaces for the private interconnect on subnet "10.10.10.0": iwinrca02 Local Area Connection 2:10.10.10.3 iwinrca01 Local Area Connection 2:10.10.10.2

Node connectivity check passed.

Checking shared storage accessibility...

Disk Partition	Sharing Nodes (2 in count)
\Device\Harddisk1\Partition1	iwinrca02 iwinrca01
Disk Partition	Sharing Nodes (2 in count)
\Device\Harddisk1\Partition2	iwinrca02 iwinrca01
Disk Partition	Sharing Nodes (2 in count)
\Device\Harddisk1\Partition3	iwinrca02 iwinrca01
Disk Partition	Sharing Nodes (2 in count)
\Device\Harddisk1\Partition4	iwinrca02 iwinrca01
Disk Partition	Sharing Nodes (2 in count)
\Device\Harddisk1\Partition5	iwinrca02 iwinrca01
Shared storage check was successful on	nodes "iwinrca02, iwinrca01".

Post-check for hardware and operating system setup was successful.

# 2. Staging the Software

It is recommended that you stage the required software onto a local drive on Node 1 of your cluster.

Important. Ensure that you use only 32 bit versions of the Oracle Software on a 32bit OS and 64 bit versions of the Oracle Software on a 64bit OS

A suggested stage is as follows

• Oracle 10g Release 2 EE (10.2.0.1) (1 DVD or 2 CD's)

C:\stage\10gR2\clusterware C:\stage\10gR2\database

• Patch sofware

C:\stage\10203\Disk1

# 3. Installing the Oracle Clusterware Layer

In this section you will install the Oracle Clusterware Layer. The Oracle Clusterware Layer is the layer used by Oracle to create a RAC cluster database.

## Run the CVU stage check

CVU can be used to check the readiness of the cluster pre and post each stage.

C:\>cd C:\stage\10gR2\clusterware C:\stage\10gR2\clusterware\cluvfy>runcluvfy stage -pre crsinst -n iwinrca01,iwinrca02 The system cannot find the file specified. Performing pre-checks for cluster services setup Checking node reachability... Node reachability check passed from node "iwinrca01". Checking user equivalence... User equivalence check passed for user "Administrator". Checking administrative privileges... Checking node connectivity ... Node connectivity check passed for subnet "139.185.150.0" with node(s) iwinrca02, iwinrca01. Node connectivity check passed for subnet "10.10.10.0" with node(s) iwinrca02, iwinrca01. Suitable interfaces for VIP on subnet "139.185.150.0": iwinrca02 Local Area Connection:139.185.150.55 iwinrca01 Local Area Connection:139.185.150.54 Suitable interfaces for the private interconnect on subnet "10.10.10.0": iwinrca02 Local Area Connection 2:10.10.10.3 iwinrca01 Local Area Connection 2:10.10.10.2 Node connectivity check passed. Checking system requirements for 'crs'... Operating system version check passed. Operating system patch check passed for "1". Total memory check passed. Swap space check passed. System architecture check passed. Free disk space check passed. System requirement passed for 'crs' Pre-check for cluster services setup was successful.

### Install the Oracle Clusterware Layer

The installer is invoked by running: C:\stage\logR2\clusterware\setup.exe You will be presented with a welcome screen



Click Next

Oracle (	Universal Installer: Specify Home Details	
Spec Destir	cify Home Details	
Enior ol Na <u>m</u> e:	elect a name for the installation and the full path where you want to install the pre OraCr10g_home	
P <u>a</u> th:	C:\oracle\product\10.2.0\crs	Browse )
	Pro	iduct Languages)
Help	Installed Products Back Next Inst	all Cancel
OR		

Enter the name and location of the Oracle Home Click Next

Dracle Universal Installer: Product-Specific Prerequisite Checks				-02
Product-Specific Prerequisite Checks				
The Installer verifies that your environment meets all of the minimum configuring the products that you have chosen to install. You must ma are flagged with warnings and items that require manual checks. For checks, click the item and review the details in the box at the bottom c	requirements f anually verify an details about p f the window.	for in Id co Derfo	stalling and nfirm the item: rming these	s that
Check	Туре		Status	
Checking local Cluster Synchronization Services (CSS) status	Automatic		Succeeded	
Checking for invalid environment variables	Automatic		Succeeded	
				D
			Retry	Stop
0 requirements to be verified.				
Checking for invalid environment variables Check complete. The overall result of this check is: Passed				
Help Installed Products Back	Next	Ins	tall ) C	ancel

The installer then runs some Prerequisite Checks. If you have already run the CVU command then this should pass with no warning. If warnings are displayed you should correct those before continuing Click Next

Oracle Universal Installer: Sp	ecify Cluster Configuration	<u>_   </u> ×
Specify Cluster C	configuration	
Enter a name for the cluster a specify the name for the publi IP address on the node.	nd select the nodes to be managed c IP address, the name for the privat	by the Oracle Clusterware. For each node, te interconnect, and the name for the virtual
You can use a cluster configu instead of completing the Clu many nodes. Cluster Name: crs	ration file to configure your cluster b ster Nodes box. The Use Cluster Co	y clicking Use Cluster Configuration File onfiguration File option is helpful if you have
Public Node Name	Private Node Name	Virtual Host Name
iwinrca01	iwinrca01-priv	iwinrca01-vip
Use Cluster Configuration F	ille	Add
	d <u>Products</u> ) <u>B</u> ack	Next Install Cancel

Now we specify the names of the Nodes and the networks to be used by RAC Highlighted should be the first node in the cluster, the node you are running the installer from.

Oracle defaults the Public node name to the node name for the current node. It adds a '-priv' suffix to the interconnect address and a '-vip' suffix to the virtual IP address name. At this point in time you should be able to ping both the public & private node names as displayed in this box (from all nodes in the proposed cluster). Trying to ping the vip should fail at this point in time

Click Edit to add additional Nodes to the cluster

🚖 Add a new node to	the existing cluster	×
Specify the name for 1 interconnect, and the adding. Ensure that t Services or Oracle Cl	he public IP address, the name for the private name for the virtual IP address on the node that you a here are no previous versions of Oracle Cluster Read usterware installed on the node that you are adding.	re y
Public Node Name:	iwinrca02	
Private Node Name:	iwinrca02-priv	
⊻irtual Host Name:	iwinrca02-vip	
	<u>Q</u> K <u>C</u> anc	el

Enter the public, private and VIP names for the other node Click OK

becify Cluster Configuration         ter a name for the cluster and select the nodes to be managed by the Oracle Clusterware. For each nod acify the name for the public IP address, the name for the private interconnect, and the name for the virtual address on the node.         u can use a cluster configuration file to configure your cluster by clicking Use Cluster Configuration File tead of completing the Cluster Nodes box. The Use Cluster Configuration File option is helpful if you have no expression.         user Nodes.         uster Nodes         ublic Node Name       Private Node Name         uprca01       Iwinrca01-priv         winrca02       Winrca02-priv         se Cluster Configuration File.       Add         Eatl       Remove	Dracle Universal Installer: Sp	becify Cluster Configuration	
ter a name for the cluster and select the nodes to be managed by the Oracle Clusterware. For each nod cify the name for the public IP address, the name for the private interconnect, and the name for the virtu- address on the node. u can use a cluster configuration file to configure your cluster by clicking Use Cluster Configuration File tead of completing the Cluster Nodes box. The Use Cluster Configuration File option is helpful if you have ny nodes. Ister Name crs Cluster Nodes ublic Node Name Private Node Name Virtual Host Name vinca01 Iwinca02-priv viprca01 dinca02 Iwinca02-priv viprca02 se Cluster Configuration File	Specify Cluster C	Configuration	
u can use a cluster configuration file to configure your cluster by clicking Use Cluster Configuration File tead of completing the Cluster Nodes box. The Use Cluster Configuration File option is helpful if you have ny nodes. Ister Name Crs Cluster Nodes Ublic Node Name Private Node Name Virtual Host Name vinca01 Iwinca01-priv viprca01 vinca02 Iwinca02-priv viprca02 se Cluster Configuration File	Enter a name for the cluster a specify the name for the publi IP address on the node.	and select the nodes to be managed ic IP address, the name for the privat	l by the Oracle Clusterware. For each node, te interconnect, and the name for the virtual
Ister Nodes Cluster Node S Ublic Node Name Private Node Name Virtual Host Name vinrca01 Iwinrca01-priv viprca01 vinrca02 kvinrca02-priv viprca02 se Cluster Configuration File Eemove	You can use a cluster configunt nstead of completing the Clu	iration file to configure your cluster by ister Nodes box. The Use Cluster Co	y clicking Use Cluster Configuration File onfiguration File option is helpful if you have
See Cluster Configuration File     Private Node Name     Virtual Host Name	Qluster Name: crs		
vinrca01 ivvinrca01-priv viprca01 vinrca02 ivvinrca02-priv viprca02 se Cluster Configuration File <u>Add Edit</u> Remove	Public Node Name	Private Node Name	Virtual Host Name
vinrca02 ivvinrca02-priv viprca02 se Cluster Configuration File	iwinrca01	iwinrca01-priv	viprca01
se Cluster Configuration File	iwinrca02	iwinrca02-priv	viprca02
	Use Cluster Configuration F	File	Add Edit Remove
Help Installed Products Back Next Install Cano	Help	d Products Back	Next   Install   Cance

The list shows all the network names that will be configured for the Oracle Clusterware Click Next

If you get an error indicating '**Nodes are not clusterable**' This is probably caused by the network being set up incorrectly. Review the network setup details in Section2 of this document.

	y Network Interface Usage		
Specify Network Inf	erface Usage		
Identify the planned use for each Private interfaces are used by Ora	global interface shown in the buccle Clusterware for inter-node	ox below:Public, Private, or Do Not U traffic.	Jse.
If there is more than one subnet a attributes to associate the interfac	essociated with an interface, the ce name with the additional sub	en click Edit and change the interfac onets.	e's
( <u></u>			
Interface Name	Subnet	Interface Type	
Interface Name Local Area Connection	Subnet 139.185.150.0	Public	
Interface Name Local Area Connection Local Area Connection 2	Subnet 139.185.150.0 10.10.10.0	Public Private	
Interface Name Local Area Connection Local Area Connection 2	Subnet 139.185.150.0 10.10.10.0	Interface Type Public Private	
Interface Name Local Area Connection Local Area Connection 2	Subnet 139.185.150.0 10.10.10.0	Interface Type Public Private	Fdit
Interface Name Local Area Connection Local Area Connection 2	Subnet 139.185.150.0 10.10.10.0	Interface Type Public Private	F Edit
Local Area Connection Local Area Connection 2	Subnet 139.185.150.0 10.10.10.0 oducts	Interface Type Public Private	Edit

Using the network names provided the installer determines which sub-nets will be used for the public and private network connections. The information displayed here is usually correct. If incorrect, click the Edit button to select the correct Interface type. If both adapters are identified as Private then you should select the public adapter from the list and then click the edit button and change it's type to 'Public' Do not continue past this screen until you have at least 1 public and 1 private adapter.

Click Next

Just	er Config	uration S	storage		
Below is Dracle Cl are alread Disk. n additio ormat typ	a list of available uster Registry (( dy redundant, yo n you may speci ne, and a drive le	e shared disks DCR) and Clus u should speci fy which disks tter to mount th	on the cluster. Des ter Synchronization fly two partitions for you wish to format le formatted disk.	signate which disks Services (CSS) Voti the OCR and three j with the Oracle Clus	should be used for storing the ng disk. Unless your disks partitions for the CSS Voting ter File System (CFS), the
Avalia	Partition #	Size (MB)	Format Type	Drive Letter	Usage
Disk#			Denis	N/A	None
Disk# 1	1	24	N d00		
Disk# 1 1	1	24 102	Raw	N/A	None
Disk# 1 1 1	1 2 3	24 102 4095	Raw Raw	N/A N/A	None None
Disk# 1 1 1 1	1 2 3 4	24 102 4095 4095	Raw Raw Raw	N/A N/A N/A	None None None
Disk# 1 1 1 1 1	1 2 3 4 5	24 102 4095 4095 4095 4095	Raw Raw Raw Raw	N/A N/A N/A N/A	None None None None
Disk# 1 1 1 1	1 2 3 4	24 102 4095 4095	Raw Raw Raw	N/A N/A N/A	None None None

Next we need to select the storage that will be used by Oracle Clusterware. The first storage item in this list is the 24Mb partition we created at the beginning. Highlight it Click Edit

≜ Specify Disk Co	nfiguration	X	][
Specify configura	tion information for the	selected partition.	
Designate wheth partition. In additi you plan to store drive letter which	er you want to place the on, if you choose to for the data or software on will be used to mount t	e OCR, the CSS Voting Disk,or both on the mat the partition with CFS, indicate whether the partition, and select and available he partition once formatted.	
Disk	1		
Partition	1		
Size(in MB)	24		
- Usage		Format partition with CES ——	
Place OCR(Pr	imary) on this partition	Cuse partition for gata storage	
Place OCR(Mi	rror) on this partition	C Use partition for software storage	
✓ Place Voting D	)isk on this Partition	Assign Drive Letter B:	
		<u>Q</u> K Cancel	

Now we tell the installer the type of the partition. Check the 'Place the Voting Disk on this Partition' checkbox Click OK

Just	er Config	uration S	torage		
elow is racle Cl re alrea iisk. n additio prmat br	a list of available uster Registry (i dy redundant, yo n you may speci ie, and a drive le	e shared disks DCR) and Clus u should speci fy which disks tter to mount th	on the cluster. Des ter Synchronization fy two partitions for you wish to format e formatted disk.	signate which disks Services (CSS) Vot the OCR and three with the Oracle Clus	should be used for storing the ing disk. Unless your disks partitions for the CSS Voting ter File System (CFS), the
and the					
- Availal	Partition #	Size (MB)	Format Type	Drive Letter	Usage
- <b>Availal</b> Disk#	Partition #	Size (MB)	Format Type Raw	Drive Letter	Usage Voting Disk
- Availal Disk# 1	Partition #	Size (MB) 24 102	Format Type Raw Raw	Drive Letter N/A N/A	Usage Voting Disk None
Availal Disk# 1 1 1	Partition # 2 3	Size (MB) 24 102 4095	Format Type Raw Raw Raw	Drive Letter N/A N/A N/A	Usage Voting Disk None None
Availal Disk# 1 1 1 1	Partition # 1 2 3 4	Size (MB) 24 102 4095 4095	Format Type Raw Raw Raw Raw	Drive Letter N/A N/A N/A N/A N/A	Usage Voting Didk None None None
- Availal Disk # 1 1 1 1 1	Partition # 1 2 3 4 5	Size (MB) 24 102 4095 4095 4095	Format Type Ram Ram Raw Raw Raw Raw	Drive Letter N/A N/A N/A N/A N/A N/A N/A N/A	Usage Votino Didk None None None None

The first partition now has a usage type 'Voting Disk' Select the second partition, the 102Mb partition Click Edit

Specify Disk Configuration	×
Specify configuration information for the	selected partition.
Designate whether you want to place the partition. In addition, if you choose to for you plan to store the data or software or drive letter which will be used to mount t	e OCR, the CSS Voting Disk,or both on the mat the partition with CFS, indicate whether the partition, and select and available the partition once formatted.
Disk 1	
Partition 2 Size(in MB) 102	
- Lleage	Format partition with CES
Place OCR(Primary) on this partition	Use partition for gata storage
Place OCR(Mirror) on this partition	C Use partition for software storage
Place Voting Disk on this Partition	Assign Drive Letter B:
	QK Cancel

Now we tell the installer the type of the second partition. Check the 'Place the OCR (Primary) on this Partition' checkbox Click OK

Dracle Ur	iversal Installe	r: Cluster Conf	iguration Storage		
	• -				
Clust	er Config	uration s	storage		
Below is Dracle Cl are alread Disk. n additio format typ	a list of availablı uster Registry (i dy redundant, yc n you may spec ie, and a drive la ela Dicko	e shared disks OCR) and Clus iu should spec ify which disks stter to mount th	on the cluster. De ter Synchronization ify two partitions for you wish to format ne formatted disk.	signate which disks Services (CSS) Voti the OCR and three with the Oracle Clus	should be used for storing the ing disk. Unless your disks partitions for the CSS Voting ter File System (CFS), the
Disk#	Partition #	Size (MB)	Format Type	Drive Letter	Usage
1	1	24	Raw	N/A	Voting Disk
1	2	102	Raw	N/A	OCR Primary
1	3	4095	Raw	N/A.	None
1	4	4095	Raw	N/A	None
1	5	4095	Raw	N/A	None
4				Z.	D
					Edit
Help	) (Ins	talled <u>P</u> roducts	i)	ack Next	Install Cancel

The usage type for the second partition has changed to OCR primary The other partitions will be used later during the ASM and database install Click Next

Warning	×
If your disks are not external recommends that you provio the Oracle Cluster Registry of a disk failure on the partition OCR Mirror will be used and failing.	ly redundant, Oracle Je an additional location for (OCR) Mirror. In the event of 1 you chose for the OCR, the I prevent your cluster from
Click 'Help' for more informatio Click 'OK' to continue.	n.
Help	ок )

The installer warns that you should create more than 1 OCR partition. In our case the partition has been created on highly available disk so we can ignore this warning Click OK



The installer warns that you should create more than 1 Voting partition. In our case the partition has been created on highly available disk so we can ignore this warning Click OK



A summary screen appears Click Install

Oracle Universal Installer: Install	103
Installing Oracle Clusterware 10.2.0.1.0	The Self-Managing Database • Automatic performance diagnosis • Guided application and SL fuming • Proactive space management
You can find a log of this install session at: C:Program FilestOracleUnventoryVogsVinstallActions2005-09-29_03-49-24PMJog	
Help (Installed Eroducts) Eack Ne	ext (Install) Cancel

The Oracle Custerware software is installed onto both nodes in the cluster

То	iol Name	Status	Туре
Or	acle Clusterware		
🔲 Or	acle Clusterware Configuration Assistant	In progress	Recommended
🖾 Or	acle Notification Server Configuration Assistant	Pending	Recommended
🔽 Or	acle Private Interconnect Configuration Assistant	Pending	Recommended
🖂 Vir	rtual Private IP Configuration Assistant	Pending	Recommended
(4)			<b></b>
			Eetry Sto
Details	(see full log at C)Program Files)Oracle)Inventor/log	e)inctall&ctione200	5 00 20 02 40 24PM log):

At the end of the Oracle Clusterware software install a number of Configuration assistants are run automatically. Some of these, especially the first one 'Oracle Clusterware Configuration Assistant', will take some time...

)ra	cle Universal Installer: Configuration Assistants		40	
C c	onfiguration Assistants	art the components y	ou selected earlier.	
	Tool Name	Status	Туре	
Î	Oracle Clusterware			-
Г	Oracle Clusterware Configuration Assistant	Succeeded	Recommended	
Г	Oracle Notification Server Configuration Assistant	Succeeded	Recommended	
Г	Oracle Private Interconnect Configuration Assistant	Succeeded	Recommended	
	Virtual Private IP Configuration Assistant	In progress	Recommended	
			[	Ð
			Retry S	Stop
Det	ails (see full log at C:\Program Files\Oracle\Inventory\log	gs\installActions2006	5-09-29_03-49-24PM.log	<b>)</b> ):
Cre Sta Sta Sta	eating GSD application resource on (2) nodes eating ONS application resource on (2) nodes rting VIP application resource on (2) nodes rting GSD application resource on (2) nodes rting ONS application resource on (2) nodes.			
ŀ	telp (Installed Broducts) B	ack Next	) (Install) (Ca	ance
C	DRACLE			

Finally the Configuration assistants create a number of Oracle Clusterware managed resources, including the VIPs

If you are using non-routable addresses for the public adapter then the Virtual IP configuration assistant will fail at this stage. If this happens ignore the error and continue to the end of the clusterware install. After the Oracle Clusterware install completes you can rerun the vipca command to reconfigure this. To re run vipca run the vipca.bat file from the Oracle clusterware bin directory. Follow the prompts for VIPCA to select the appropriate interface for the public network, and assign the VIPs for each node when prompted. Manually running VIPCA with the same IPs should complete successfully.


At the end of the install click Exit



In the confirmation screen click Yes

Congratulations The base 10.2.0.1 Oracle Clusterware has been installed successfully

## Patching of the Oracle Clusterware Home

You should now patch the Clusterware home to the latest release levels

At this point in time the Oracle Clusterware should be up on both nodes in the cluster. Oracle Clusterware support rolling upgrades. The software is installed from the patch into a staging area in the Clusterware home on each node and then, in turn a script is run to patch that node to the latest version.

#### Install the Latest patch

At the time of this document the latest patch for Oracle on Windows was 10.2.0.3, you should download that patch from Metalink and stage on node1, Notice, at this point that you have not stopped any Oracle Services

The installer is invoked by running: C:\stage\10203\Disk1\setup.exe

	rsal Installer: Welcon	ne			_	-   □
Welcom	e					
The Oracle Oracle proc	Universal Installer lucts.	guides you thro	ough the inst	allation and	configuration of your	
Click "Instal	led Products" to	see all installed	products.			
>						
~						
					Deinstall Products	
				Abou	Deinstall Products	) ar)
				Abou	Deinstall Products t Oracle Universal Installe	ər)

You will be presented with a welcome screen

#### Click Next

	Universal Installer: Specify Home Details	
Spe	cifv Home Details	
Desti	nation	
Enter t Na <u>m</u> e:	It select a name for the installation and the full path where you wa	ant to install the produc
P <u>a</u> th:	C:\oracle\product\10.2.0\crs	Browse )

In the name Drop Down Listbox – ensure that the Clusterware home is selected. The Path should then show the directory for the Clusterware home

Click Next

Gracle Universal Installer: Specify Hardware Cluster Installation Mode	_ 🗆 🗙
Specify Hardware Cluster Installation Mode	
6 Oliveter lastellation	
Cluster installation Select nodes (in addition to the local node) in the hardware cluster where the installer should install	
products that you select in this installation.	
Node Name	
I winrca01	
l⊯ iwinrca02	
>	
Select All Desels	ect All )
C Local Installation	
Select this option if you want to perform a single node non-cluster installation even though the local i nart of a hardware cluster	node is
Help Installed Products Back Next Install C	ancel
ORACLE	

This screen lists the nodes in the cluster

## Click Next



Click Install

Oracle 10gR2 RAC Install for Windows2000/2003 32 bit / 64bit

Draft Release 1.53 August 2007

🙀 Oracle Universal Installer: Install	
Install	108
Transming Oracle Database 10g Release 2 Patch Set 2 10.2.0.3.0     Poinstall successful     Install pending     Setup pending     Remote operations pending     Configuration pending	Oracle Database 10g: The Database for the Grid • Virtualization at every layer • Policy-based provisioning • Resource pooling
0%	
( <u>Stop installation</u> )	1
You can find a log of this install session at: C:\Program Files\Oracle\Inventory\logs\InstallActions2007-06-20_08-38-24AM.log	
Help Installed Products Back Next	Install Cancel
ORACLE	

The installer will stage the patch into a directory on each of the nodes in the cluster



At the end there is a process that moves the replacement binaries to the correct locations

Click Exit



Click Yes

As the patch is applied in a rolling basis you do this on each node in turn

On node1

First we can see the Oracle Services currently running

```
C:\oracle\product\10.2.0\crs\BIN>net start | findstr Oracle
Oracle Object Service
OracleClusterVolumeService
OracleCRService
OracleCSService
OracleEVMService
```

Next we must stop all of the services – which must be done in the following order

```
C:\oracle\product\10.2.0\crs\BIN>net stop OracleCRService
The OracleCRService service was stopped successfully.
C:\oracle\product\10.2.0\crs\BIN>net stop OracleEVMService
The OracleEVMService service was stopped successfully.
C:\oracle\product\10.2.0\crs\BIN>net stop OracleCSService
The OracleCSService service is stopping.
The OracleCSService service was stopped successfully.
C:\oracle\product\10.2.0\crs\BIN>net stop "Oracle Object Service"
The Oracle Object Service service was stopped successfully.
C:\oracle\product\10.2.0\crs\BIN>net stop OracleClusterVolumeService
The OracleClusterVolumeService service is stopping.
The OracleClusterVolumeService service was stopped successfully.
```

I also check to make sure the MSDTC Service is stopped

```
C:\oracle\product\10.2.0\crs\BIN>net stop MSDTC
The Distributed Transaction Coordinator service is stopping.
The Distributed Transaction Coordinator service was stopped successfully.
```

Now you can run the script to move the patch files to the correct location

```
C:\oracle\product\10.2.0\crs\install>patch102.bat
Successful validation check of Oracle CRS services status
Failed to patch all the files in the ORA CRS HOME C:\oracle\product\10.2.0\crs
Please ensure that all processes running from the home have been
stopped.
```

You can see that the patch failed as not all Oracle Processes were stopped. You can use a tool like listdlls.exe<sup>1</sup> to see which DLLs are still in use. If you look in task manager you will probably see 2 ons.exe processes still running. You can kill these from within task manager and try again. Note, on the first node this patch could take at least 3 minutes to run, specifically the EVM startup may appear slow.

```
C:\oracle\product\10.2.0\crs\install>patch102.bat
Successful validation check of Oracle CRS services status
Successful binary patch of the C:\oracle\product\10.2.0\crs
Successful cleanup of patch subdirectory
C:\oracle\product\10.2.0\crs\inventory\Templates\install\patch102\BIN\cluvfy.ba
at
-> C:\oracle\product\10.2.0\crs\inventory\Templates\BIN\cluvfy.bat
C:\oracle\product\10.2.0\crs\inventory\Templates\BIN\gsd.bat
-> C:\oracle\product\10.2.0\crs\inventory\Templates\BIN\gsd.bat
C:\oracle\product\10.2.0\crs\inventory\Templates\BIN\gsd.bat
C:\oracle\product\10.2.0\crs\inventory\Templates\BIN\gsd.bat
C:\oracle\product\10.2.0\crs\inventory\Templates\BIN\gsdctl.bat
C:\oracle\product\10.2.0\crs\inventory\Templates\BIN\gsdctl.bat
C:\oracle\product\10.2.0\crs\inventory\Templates\BIN\gsdctl.bat
```

<sup>1</sup> ListDLLs is available from the <u>http://www.sysinternals.com</u> website

t -> C:\oracle\product\10.2.0\crs\inventory\Templates\BIN\gsdstop.bat C:\oracle\product\10.2.0\crs\inventory\Templates\install\patch102\BIN\instOrac le .key -> C:\oracle\product\10.2.0\crs\inventory\Templates\BIN\instOracle.key C:\oracle\product\10.2.0\crs\inventory\Templates\install\patch102\BIN\localcon fi g.bat -> C:\oracle\product\10.2.0\crs\inventory\Templates\BIN\localconfig.bat C:\oracle\product\10.2.0\crs\inventory\Templates\install\patch102\BIN\racgwrap .b at.sbs C:\oracle\product\10.2.0\crs\inventory\Templates\BIN\racgwrap.bat.sbs C:\oracle\product\10.2.0\crs\inventory\Templates\install\patch102\BIN\srvctl.b at -> C:\oracle\product\10.2.0\crs\inventory\Templates\BIN\srvctl.bat C:\oracle\product\10.2.0\crs\inventory\Templates\install\patch102\BIN\usrvip.b at -> C:\oracle\product\10.2.0\crs\inventory\Templates\BIN\usrvip.bat  $\verb|C:\oracle\product\10.2.0\crs\inventory\Templates\install\patch102\BIN\vipca.ba$ -> C:\oracle\product\10.2.0\crs\inventory\Templates\BIN\vipca.bat C:\oracle\product\10.2.0\crs\inventory\Templates\install\patch102\cv\remenv\ex ec task.bat -> C:\oracle\product\10.2.0\crs\inventory\Templates\cv\remenv\exectask. bat C:\oracle\product\10.2.0\crs\inventory\Templates\install\patch102\evm\admin\co nf evm.auth ->C:\oracle\product\10.2.0\crs\inventory\Templates\evm\admin\conf\evm .auth C:\oracle\product\10.2.0\crs\inventory\Templates\install\patch102\evm\admin\co nf \evmdaemon.conf ->  $\verb|C:\oracle\product\10.2.0\crs\inventory\Templates\evm\admin\co$ nf\evmdaemon.conf C:\oracle\product\10.2.0\crs\inventory\Templates\install\patch102\evm\admin\co nf  $\ensuremath{\complexim}$ C:\oracle\product\10.2.0\crs\inventory\Templates\evm\admin\co nf\evmlogger.conf C:\oracle\product\10.2.0\crs\inventory\Templates\install\patch102\install\preu pd ate.bat -> C:\oracle\product\10.2.0\crs\inventory\Templates\install\preupdate.ba C:\oracle\product\10.2.0\crs\inventory\Templates\install\patch102\opmn\conf\on config -> C:\oracle\product\10.2.0\crs\inventory\Templates\opmn\conf\ons.config 16 File(s) copied Successful startup of OracleCSService Successful startup of OracleEvmService Successful startup of OracleCRService clscfg: EXISTING configuration version 3 detected. clscfg: version 3 is 10G Release 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: iwinrca01 iwinrca01-priv iwinrca01 Creating OCR keys for user 'administrator', privgrp ''... Operation successful. clscfg -upgrade completed succssfully Successful upgrade of this node to Oracle Cluster Ready Services 10203

The patch has been applied successfully; you can see that the Oracle Clusterware has been restarted on node1. At this point in time Node1 is running 10.2.0.3 Oracle Clusterware and node2 is running 10.2.0.1 Oracle Clusterware.

Yu must repeat the patching exercise on node2

#### On node2

First we can see the Oracle Services currently running

```
C:\oracle\product\10.2.0\crs\BIN>net start | findstr Oracle
Oracle Object Service
OracleClusterVolumeService
OracleCRService
OracleCSService
OracleEVMService
```

Next we must stop all of the services - which must be done in the following order

```
C:\oracle\product\10.2.0\crs\BIN>net stop OracleCRService
The OracleCRService service was stopped successfully.
C:\oracle\product\10.2.0\crs\BIN>net stop OracleEVMService
The OracleEVMService service was stopped successfully.
C:\oracle\product\10.2.0\crs\BIN>net stop OracleCSService
The OracleCSService service is stopping.
The OracleCSService service was stopped successfully.
C:\oracle\product\10.2.0\crs\BIN>net stop "Oracle Object Service"
The Oracle Object Service service was stopped successfully.
C:\oracle\product\10.2.0\crs\BIN>net stop OracleClusterVolumeService
The OracleClusterVolumeService service is stopping.
The OracleClusterVolumeService service was stopped successfully.
```

I also check to make sure the MSDTC Service is stopped

C:\oracle\product\10.2.0\crs\BIN>**net stop MSDTC** The Distributed Transaction Coordinator service is stopping. The Distributed Transaction Coordinator service was stopped successfully.

Once again use taskmgr to ensure that the ons.exe processes are not running.

Now you can run the script to move the patch files to the correct location

```
C:\oracle\product\10.2.0\crs\install>patch102.bat
Successful validation check of Oracle CRS services status
Successful binary patch of the C:\oracle\product\10.2.0\crs
Successful cleanup of patch subdirectory
C:\oracle\product\10.2.0\crs\inventory\Templates\install\patch102\BIN\cluvfy.b
at
 -> C:\oracle\product\10.2.0\crs\inventory\Templates\BIN\cluvfy.bat
C:\oracle\product\10.2.0\crs\inventory\Templates\install\patch102\BIN\gsd.bat
->
 C:\oracle\product\10.2.0\crs\inventory\Templates\BIN\gsd.bat
C:\oracle\product\10.2.0\crs\inventory\Templates\install\patch102\BIN\gsdctl.b
at
 -> C:\oracle\product\10.2.0\crs\inventory\Templates\BIN\gsdctl.bat
\verb|C:\oracle\product\10.2.0\crs\inventory\Templates\install\patch102\BIN\gsdstop.
ba
t -> C:\oracle\product\10.2.0\crs\inventory\Templates\BIN\gsdstop.bat
C:\oracle\product\10.2.0\crs\inventory\Templates\install\patch102\BIN\instOrac
le
.key -> C:\oracle\product\10.2.0\crs\inventory\Templates\BIN\instOracle.key
C:\oracle\product\10.2.0\crs\inventory\Templates\install\patch102\BIN\localcon
fi
g.bat -> C:\oracle\product\10.2.0\crs\inventory\Templates\BIN\localconfig.bat
C:\oracle\product\10.2.0\crs\inventory\Templates\install\patch102\BIN\racgwrap
.b
at.sbs ·
C:\oracle\product\10.2.0\crs\inventory\Templates\BIN\racgwrap.bat.sbs
C:\oracle\product\10.2.0\crs\inventory\Templates\install\patch102\BIN\srvctl.b
at
 -> C:\oracle\product\10.2.0\crs\inventory\Templates\BIN\srvctl.bat
C:\oracle\product\10.2.0\crs\inventory\Templates\install\patch102\BIN\usrvip.b
at
 -> C:\oracle\product\10.2.0\crs\inventory\Templates\BIN\usrvip.bat
C:\oracle\product\10.2.0\crs\inventory\Templates\install\patch102\BIN\vipca.ba
-> C:\oracle\product\10.2.0\crs\inventory\Templates\BIN\vipca.bat
```

C:\oracle\product\10.2.0\crs\inventory\Templates\install\patch102\cv\remenv\ex
ec task.bat ->
C:\oracle\product\10.2.0\crs\inventory\Templates\cv\remenv\exectask.
bat
C:\oracle\product\10.2.0\crs\inventory\Templates\install\patch102\evm\admin\co
nf
(evm.autn ->
auth
C:\oracle\product\10.2.0\crs\inventory\Templates\install\patch102\evm\admin\co
nf
\evmdaemon.conf ->
C:\oracle\product\10.2.0\crs\inventory\Templates\evm\admin\co
nf\evmdaemon.conf
C:\oracle\product\10.2.0\crs\inventory\Templates\install\patch102\evm\admin\co
IL Newnlogger conf ->
C:\oracle\product\10.2.0\crs\inventory\Templates\evm\admin\co
nf\evmlogger.conf
C:\oracle\product\10.2.0\crs\inventory\Templates\install\patch102\install\preu
pd
ate.bat ->
+
C:\oracle\product\10.2.0\crs\inventory\Templates\install\patch102\opmn\conf\on
s.
config ->
C:\oracle\product\10.2.0\crs\inventory\Templates\opmn\conf\ons.config
16 File(s) copied
Successful startup of OracleCSService
Successful startup of Oracle/RService
clscfg: EXISTING configuration version 3 detected.
clscfg: version 3 is 10G Release 2.
Successfully accumulated necessary OCR keys.
Using ports: CSS=49895 CRS=49896 EVMC=49898 and EVMR=49897.
node <nodenumber>: <nodename> <private interconnect="" name=""> <hostname></hostname></private></nodename></nodenumber>
node 2: iwinfacu2 iwinfcau2-priv iwinfcau2
Operation successful.
clscfg -upgrade completed successfully
Successful upgrade of this node to Oracle Cluster Ready Services 10203

## Latest Bundle Patch

You can optionally now apply the latest bundle patch on top of 10.2.0.3

#### Installation of OPMD

Note : this utility is not normally required, only install if you experience startup issues of the Oracle Clusterware layer on reboot of a node.

On some systems where either the shared disk subsystem or network drivers are 'slow' to load, The Oracle Clusterware processes can be started by the OS before the required storage or network devices are fully initialized. This causes the Clusterware layer to fail on startup.

To get around this issue Oracle provides a utility OPMD. exe  $\,$  which can be found in recent patchsets^2  $\,$ 

<sup>&</sup>lt;sup>2</sup> Note the X86\_64 10.2.0.3 patchest had an incorrect version of this utility. If you are running on this platform obtain the OPMD.exe uility from a previous patchest.

To install you must run the opmd utility from the Clusterware Home\bin directory

```
c:\oracle\product\10.2.0\crs\BIN>opmd -install
OpmdInstall: OPM service successfully installed
OpmdFixupService: Oracle Object Service set to manual startup and added to
list
OpmdFixupService: OracleCSService set to manual startup and added to list
OpmdFixupService: OracleCRService set to manual startup and added to list
OpmdFixupService: OracleCRService set to manual startup and added to list
```

This will set the following Windows services to manual start

- · Oracle Object Service
- OracleCRService
- OracleCSService
- · OracleEVMService

It then becomes the job of the new service: "Oracle Process Manager" to start the Clusterware services

Remember to install this utility on all nodes in the cluster

#### Run the CVU stage check to confirm the clusterware install

The Oracle Installer runs CVU on completion of the Oracle Clusterware Install, you can optionally choose to run the CVU stage check manually from a command line.

C:\>cd C:\stage\10gR2\clusterware\cluvfy C:\>runcluvfy stage -post crsinst -n iwinrca01,iwinrca02 The system cannot find the file specified. Performing post-checks for cluster services setup Checking node reachability... Node reachability check passed from node "iwinrca01". Checking user equivalence... User equivalence check passed for user "Administrator". Checking Cluster manager integrity... Checking CSS daemon... Daemon status check passed for "CSS daemon". Cluster manager integrity check passed. Checking cluster integrity... Cluster integrity check passed Checking OCR integrity... Checking the absence of a non-clustered configuration. All nodes free of non-clustered, local-only configurations. Uniqueness check for OCR device passed. Checking the version of OCR... OCR of correct Version "2" exists. Checking data integrity of OCR... Data integrity check for OCR passed. OCR integrity check passed. Checking CRS integrity... Checking daemon liveness... Liveness check passed for "CRS daemon". Checking daemon liveness... Liveness check passed for "CSS daemon". Checking daemon liveness... Liveness check passed for "EVM daemon". Checking CRS health... CRS health check passed. CRS integrity check passed. Checking node application existence... Checking existence of VIP node application (required) Check passed. Checking existence of ONS node application (optional) Check passed. Checking existence of GSD node application (optional) Check passed. Post-check for cluster services setup was successful.

## 4. Install ASM Software Home an patch to the latest release level

C:>cd C:\stage\10.2\clusterware\cluvfy In this step we will C:>runcluvfy stage -pre dbinst -n iwinrca01,iwinrca02 -r 10gR2 The system cannot find the file specified. establish the 10.2.0.1 Homes to be used by Performing pre-checks for database installation ASM as Software only Checking node reachability ... homes Node reachability check passed from node "iwinrca01". We will then patch to Checking user equivalence... 10.2.0.3 User equivalence check passed for user "Administrator". Checking administrative privileges... Checking node connectivity... Node connectivity check passed for subnet "139.185.150.0" with node(s) iwinrca02, iwinrca02. Node connectivity check passed for subnet "10.10.10.0" with node(s) iwinrca02, iwinrca01. Suitable interfaces for VIP on subnet "139.185.150.0": iwinrca02 Local Area Connection:139.185.150.202 Local Area Connection:139.185.150.55 iwinrca01 Local Area Connection:139.185.150.201 Local Area Connection:139.185.150.54 Suitable interfaces for the private interconnect on subnet "10.10.10.0": iwinrca02 Local Area Connection 2:10.10.10.3 iwinrca01 Local Area Connection 2:10.10.10.2 Node connectivity check passed. Checking system requirements for 'database'... Operating system version check passed. Operating system patch check passed for "1". Total memory check passed. Swap space check passed. System architecture check passed. Free disk space check passed. System requirement passed for 'database' Checking CRS integrity... Checking daemon liveness... Liveness check passed for "CRS daemon". Checking daemon liveness... Liveness check passed for "CSS daemon". Checking daemon liveness.. Liveness check passed for "EVM daemon". Checking CRS health... CRS health check passed. CRS integrity check passed. Checking node application existence... Checking existence of VIP node application (required) Check passed. Checking existence of ONS node application (optional) Check passed. Checking existence of GSD node application (optional) Check passed. Pre-check for database installation was successful.

## Install the Oracle Database Software Home for ASM

The installer is invoked by running:

C:\stage\10gR2\database\setup.exe You will be presented with a welcome screen

Oracle Universal In	staller: Welcome			. <u> _ </u> ×
Welcome				
The Oreale Univ	reel lesteller quides :	ioù throùich tho ii		
Oracle products.	rsai installer guides y	ou through the ir	istaliation and configuration of your	
Click "Installed Pl	oducts" to see all in	istalled products.		
			Deinstall Products	
			About Oracle Universal Installe	r )
		~		
Help	Installed Products	Back	Next (Instail) Can	cel
OBACLE'				

If you click on the Installed Products button you will see that the Oracle Clusterware software has been registered in the Oracle Software Inventory

Inventory
Contents Environment
You have the following Oracle products installed:
⊖ □ OraCr10g_home
- Cluster Nodes
iwinrca01
iuinroo00
Location: Not Available Bhow empty homes. If you want to remove Oracle software, please check the items and click "Remove". To see the languages installed and other details of a component select
the component and then click "Details".
Details Remove
Help Save As Close

Click Close to return to the Welcome screen



## Click Next



We are going to install an Oracle Home to host the ASM instances. Select the Enterprise Edition radio button Click Next

💥 Oracle I	Universal Installer: Specify Home Details	×
<b>Spec</b>	cify Home Details	
Enter of	r select a name for the installation and the full path where you want to install the produ	u .
тчаше.	UraASM1Ug_nome1	
P <u>a</u> th:	C:loraclelproductl10.2.0lasm_1	Bro <u>w</u> se )
Help	Installed Products Back Next Install	Cancel
OR	ACLE	

The ASM home must be a different home than the Oracle Clusterware Home Enter a name for the home

Enter a location for the home Click Next

Specify Hardware Cluster Installation Mode         Cluster Installation         Select nodes (in addition to the local node) in the hardware cluster where the installer should install products that you select in this installation.         Node Name         Image: Im	Oracle	Universal Installer: Specify Hardware Cluster Installation Mode	
Specify Hardware Cluster Installation Mode  Cluster Installation Select nodes (in addition to the local node) in the hardware cluster where the installer should install products that you select in this installation.  Node Name Invince01  Cluster Installation Select All Deselect All Deselect All Deselect All Deselect this option if you want to perform a single node non-cluster installation even though the local node is part of a hardware cluster.  Help Installed Products Back Next Install Cancel			
Cluster Installation Select nodes (in addition to the local node) in the hardware cluster where the installer should install products that you select in this installation. Node Name Node Name Node Name Ninrca01 Select All Deselect All Local Installation Select this option if you want to perform a single node non-cluster installation even though the local node is part of a hardware cluster. Back Next Install Cancel	Spe	cify Hardware Cluster Installation Mode	
Select nodes (in addition to the local node) in the hardware cluster where the installer should install products that you select in this installation.  Node Name Minrca01  Local Installation Select All Deselect All Deselect All Elep Installed Products Back Next Install Cancel	Clus	ter Installation	
Node Name         Minrca01         Image: Select All Deselect All	Sele	ct nodes (in addition to the local node) in the hardware cluster where the installer should install uct that you select in this installation	
Node Name         Winrca01         Image: Minrca02         Belect All         Deselect All         Deselect All         Select this option if you want to perform a single node non-cluster installation even though the local node is part of a hardware cluster.         Help       Installed Products       Back       Next       Install       Cancel	prou	utis inatyou selettin ins instanation.	
Winrca01         Image: Minrca02         Select All         Deselect All         Select this option if you want to perform a single node non-cluster installation even though the local node is part of a hardware cluster.         Help       Installed Products         Back       Next         Installed Products       Back		Node Name	
	12	iwinrca01	
Belect All       Deselect All         C Local Installation       Select this option if you want to perform a single node non-cluster installation even though the local node is part of a hardware cluster.         Help       Installed Products         Back       Next         Installed Products       Back		iwinrca02	
Select All         Deselect All           C Local Installation         Select this option if you want to perform a single node non-cluster installation even though the local node is part of a hardware cluster.           Help         Installed Products         Back         Next         Install         Cancel			
C Local Installation     Select All     Deselect All     Deselect All     Deselect All     Deselect All     Select this option if you want to perform a single node non-cluster installation even though the local node is     part of a hardware cluster.     Back     Next     Installed Products     Back     Next     Install     Cancel			
Select All       Deselect All         C Local Installation       Select this option if you want to perform a single node non-cluster installation even though the local node is part of a hardware cluster.         Help       Installed Products         Back       Next			
C Local Installation Select this option if you want to perform a single node non-cluster installation even though the local node is part of a hardware cluster. Help Installed Products Back Next Install Cancel	~	Belect All Desele	ct All )
Select this option if you want to perform a single node non-cluster installation even though the local node is part of a hardware cluster.           Help         Installed Products         Back         Next         Install         Cancel	C Loca	al Installation	
Help     Installed Products     Back     Next     Install     Cancel	Sele	ct this option if you want to perform a single node non-cluster installation even though the local n	ode is
Help Installed Products Back Next Install Cancel	part	of a hardware cluster.	>
Help Installed Products Back Next Install Cancel			
Help Installed Products Back Next Install Cancel			
	Help	installed Products	ancei

The Oracle Installer determines that the Oracle Clusterware layer is installed. It presents a list of all the nodes in the Oracle Cluster Ensure the Cluster Installation radio button is selected Click the Select All button Click Next

Product-Specific Prerequisite Checks The Installer verifies that your environment meets all of the minimum configuring the products that you have chosen to install. You must ma are flagged with warnings and items that require manual checks. For here key city the item and review the details in the here at the hottone	requirements t anually verify ar details about p	for ins nd cor perfor	stalling and nfirm the iten ming these	ns tha
Check	Type		Status	
Checking for Oracle Home incompatibilities	Automatic		Succeeded	
Checking Oracle Clusterware version	Automatic		Succeeded	
• • • • • • • • • • • • • • • • • • •				D
			Retry	Stop
0 requirements to be verified.				
Checking Oracle Clusterware version Check complete. The overall result of this check is: Passed			.==	6

The installer runs a series of checks on the environment. If you have successfully run the CVU at the beginning of this stage then this should be OK Click Next

Oracle Universal Installer: Select Configuration Option	_ 🗆 🗙
Select Configuration Ontion	
Select Conliguration Option	
Select the configuration that suits your needs. You can choose either to create a Automatic Storage Management (ASM) for managing database file storage. Alter install just the software necessary to run a database, and perform any database	database or to configure matively, you can choose to e configuration later.
⊂ <u>C</u> reate a database	
C Configure Automatic Storage Management (ASM)	
Specify ASM SYS Password:	
Confirm ASM SVS Password:	
Install database Software only	
Help Installed Products Back Next	Install Cancel
ORACLE	

We will install the software first and then patch to the latest release before configuring ASM in this new home Select the Install database Software only button

Click Next



## At the summary screen Click Install

Oracle Universal Installer: Install	
Install	
Installing Oracle Database 10g 10.2.0.1.0	
🖌 Install successful	On-Time, Complete
✓ Setup successful	Business Intelligence
Remote operations in progress	Change data capture     SOL Medal alours
Configuration pending	SQL Model clause
Copying Oracle home 'C:loracle'product\10.2.0\asm_1' to remote 75% Stop installation	nodes 'iwinrca02'.
You can find a log of this install session at: C:¥rogram Files\Oracle\Inventory\logs\InstallActions2005-09-30	_03-07-26PM.log
Help Installed Products	Back Next Install Cancel
ORACLE	

The Oracle ASM Home software for the ASM home is installed onto both nodes

tart the components y	ou selected earlier.
Status	Туре
Succeeded	Recommended
In progress	Recommended
igs\installActions2006	<u>Retry</u> St 5-09-30_03-07-26PM.log)
	status Status Succeeded In progress



At the end of the install a report screen is displayed Click Exit

🗽 Exit	X
	Do you really want to exit?
	Yes No

Click Yes

Congratulations The base 10.2.0.1 Oracle ASM Home has been installed successfully

#### Patching of the ASM Home

You should now patch the ASM home to the latest release levels

#### Install the Latest patch

At the time of this document the latest patch for Oracle on Windows was 10.2.0.3, you should download that patch from Metalink and stage on node1The installer is invoked by running:

C:\stage\10203\Disk1\setup.exe



You will be presented with a welcome screen

Click Next

oracle I	Jniversal Installer: Specify Home Details	
Spec <sub>Destir</sub>	rify Home Details	
Entero	select a name for the installation and the full path where you want to in-	stall the product
Na <u>m</u> e:	OraASM10g_home1	
P <u>a</u> th:	C:\oracle\product\10.2.0\asm_1	Bro <u>w</u> se )
Help	Installed Products Back Next	Install Cancel

In the name Drop Down Listbox – ensure that the ASM home you just installed is selected. The Path should then show the directory for the ASM home

### Click Next

This screen lists the nodes in the cluster

On a fit all and using Objection in stalls from March	
Specify Hardware Cluster Installation Mode	
Cluster Installation	
Select nodes (in addition to the local node) in the hardware cluster where the installer sho	ould install
products that you select in this installation.	
Node Name	
Robertame	
I WITI Cauz	
Select All	Deselect All
Select All	Deselect All
© Local Installation	Deselect All
Select All     Select All     Select this option if you want to perform a single node non-cluster installation even though     set of a flexibure a durfur.	Deselect All )
Select All C Local Installation Select this option if you want to perform a single node non-cluster installation even though part of a hardware cluster.	Deselect All )
Select All © Local Installation Select this option if you want to perform a single node non-cluster installation even though part of a hardware cluster.	Deselect All ) In the local node is
Select All Local Installation Select this option if you want to perform a single node non-cluster installation even though part of a hardware cluster.	Deselect All ) In the local node is
Select All     Select All     Select this option if you want to perform a single node non-cluster installation even though     part of a hardware cluster.     Help     Installed Products     Back     Next     Install	Deselect All ) In the local node is

Click Next

Oracle 10gR2 RAC Install for Windows2000/2003 32 bit / 64bit



Click Install

Oracle Universal Installer: Install	×
Install	
Installing Oracle Database 10g Release 2 Patch Set 2 10.2.0.3.0	
✓ Deinstall successful	Oracle Database 10g:
Install pending	The Database for the Grid
Setup pending	Virtualization at every layer     Policy, based provisioning
Remote operations pending	· Policy-based provisioning
0%	
(Stop installation)	1
You can find a log of this install session at: C:Program Files/Oracle/InvertoryVogsVinstallActions2007-06-20_08-	38-24AM.log
Help ) (Installed Products) Bac	k Next (Install ) Cancel )





At the end of the install a report screen is displayed Click Exit



Click Yes

You can optionally now apply the latest bundle patch on top of 10.2.0.3

# 5. Create the RAC Database Listeners and the ASM Instances

#### Create the listeners

From the ASM\_HOME/bin directory run the netca.bat command

C:\oracle\product\10.2.0\asm\_1\bin>**netca** 



Make sure Cluster configuration is selected Click Next

Oracle Net Configuration Assistant: Re	eal Application Clusters, Active Nodes	×
	Select the nodes to configure Nodes(s): manrac1 manrac2 Select all nodes Deselect all nodes	
Cancel Help	🔇 Back Next 📎	

Make sure all the nodes are selected

Click Next

Draft Release 1.53 August 2007

Oracle Net Configuration Assistant: ¥	Velcome	×
	Welcome to the Oracle Net Configuration Assistant. This tool will take you through the common configuration steps, listed below. Choose the configuration you would like to do: Listener configuration Naming Methods configuration Local Net Service Name configuration Directory Usage Configuration	
Cancel Help	S Back Next >	

Select Listener configuration Click Next

C Reconfigure
O Delete
C Rename

## Select Add Click Next

Oracle Net Configuration Assistant	E Listener Configuration, Listener Name For remote connections to be made to your Oracle database you must have at least one Oracle Net listener. Enter the name of the listener you want to create: Listener name:	×
Cancel Help	🕓 Back 🛛 Next >>)	

Make sure the Listener name is "LISTENER" Click Next

Draft Release 1.53 August 2007



Select the appropriate Network Protocol Click Next

Oracle Net Configuration Assis	tant: Listener Configuration, TCP/IP Protocol	×
	Which TCP/IP port number should the listener use? The port number selected should not be used by any other software on this computer.	
	Use the standard port number of 1521	
	C Use another port number: 1521	
Cancel Help	<u> </u>	

Use the default port 1521 Click Next

Oracle Net Configuration Assistant:	Listener Configuration, More Listeners?	×
	Would you like to configure another listener? No Yes	
Cancel Help	🛞 Back Next 📎	

Select No Click Next



Click Next

Oracle Net Configuration Assistant	: Welcome	×
	Welcome to the Oracle Net Configuration Assistant. This tool will take you through the common configuration steps, listed below. Choose the configuration you would like to do: Clustener configuration Naming Methods configuration Cluscal Net Service Name configuration Clinectory Usage Configuration	
Cancel Help	C Back Next D Einish	

Click Finish

#### Stamp the disks for ASM

We use a tool called asmtoolg to stamp the disks that ASM will use C:\oracle\product\10.2.0\asm\_1\BIN>**asmtoolg.exe** 

asmtool operation This wizard will step through the process of configuring new disks for use in an Automatic Storage Management (ASM) disk group. On Windows, new disks must be stamped with this tool or the command line version before they are available for use in the ASM instance.
You may add, update, or delete the stamps from disk partitions using this tool.           Image: Add or change label           Image: Delete labels
< Back Next > Cancel

#### The asmtool launches

As there are no disks currently labeled the tool only offers the option to Add or Change a label

Click Next

M link name	Device	Size (MB)	Status
	\Device\Harddisk0\Partition1	76308	NTES
	\Device\Harddisk1\Partition1	23	Oracle raw device file
	\Device\Harddisk1\Partition3	4094	Candidate device
	\Device\Harddisk1\Partition4	4094	Candidate device
	\Device\Harddisk1\Partition5	4094	Candidate device
	21 11 2 2 5 5 7		
porato sta			

asmtool lists all the visible partitions

In this case the first partition \Device\Harddisk0 is the local C drive The next 2 partitions are the partitions used by the Oracle Clusterware The next 3 are available 'Candidate devices' Select the first 2 candidate devices Ensure the Generate stamps with this prefix checkbox is set And the prefix is set to the value DATA Click Next Oracle 10gR2 RAC Install for Windows2000/2003 32 bit / 64bit



The asmtool then lists the partitions and the changes it is about to make Click Next



Click Finish

Run the asmtoolg again to stamp the FLASH disks C:\oracle\product\10.2.0\asm\_1\BIN>asmtoolg.exe

Click the Stamp Disks button again

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## Oracle 10gR2 RAC Install for Windows2000/2003 32 bit / 64bit

asmtool operation	×
This wizard will step through the process of configuring new disks for use in an Automatic Storage Management (ASM) disk group. On Windows, new disks must be stamped with this tool or the command line version before they are available for use in the ASM instance.	
You may add, update, or delete the stamps from disk partitions using this tool.	
Add or change label	
C Delete labels	
	_
< <u>B</u> ack. <u>N</u> ext > Cancel	1

## Click Next

ASM link name	Device	Size (MB)	Status		
	\Device\Harddisk0\Partition1	76308	NTFS		
	\Device\Harddisk1\Partition1	23	Oracle raw device file		
	\Device\Harddisk1\Partition2	101	Oracle raw device file		
ORCLDISKDATAO	\Device\Harddisk1\Partition3	4094	Stamped ASM device		
ODCIDICKDATA1	Powise Verddield Powiikies 4	4004	Champed ACM device		
	\Device\Harddisk1\Partition5	4094	Unstamped ASM device		
Generate stamps with this prefix FLASH					

Select the final disk device

Ensure the Generate stamps with this prefix checkbox is set And the prefix is set to the value FLASH Click Next

### Oracle 10gR2 RAC Install for Windows2000/2003 32 bit / 64bit



## Click Next



Click Next

### Run dbca to create the ASM instances

C:\oracle\product\10.2.0\asm\_1\BIN>**dbca** 



#### Select Oracle RAC database Click Next

Database Configuration As	sistant, Step 1 of 4 : Operations	<u>_0</u> ;
	Select the operation that you want to perform:	
	C Create a Database	
	C Configure Database Options	
	C Delete a Database	
	C Manage Templates	
	C Instance Management	
	C Services Management	
	Configure Automatic Storage Management	
* 취		
analysis December 1		
Cancel Help	) C Back Next	»)

Select the configure ASM radio button Click Next



## Click Select All Click Next



Enter 'oracle' for the sys password and confirm sys password fields Select the IFILE radio button Click Next



Click OK



ASM creation will take a short while



Now we get to create the ASM diskgroups Click Create New

Oracle Universal Installer: Configure Automatic Storage Management	9	
Configure Automatic Storage Management		
Specify Disk Group characteristics and select disks.		
Disk Group Name: DATA		
Redundancy C High C Normal External		
Add Disks	C All Disk	(S
Select Disk Path	Size (MB)	Status
V.NORCLDISKDATA0	4094	CANDIDATE
M.NORCLDISKDATA1	4094	CANDIDATE
II. NORCLDISKFLASH0	4094	CANDIDATE
Stamp Disk	s Change D	isk Discovery Path
	et ) Inc	tall Canca

Enter 'DATA' for the Disk Group name Select External Redundancy Select the first 2 disks Click Next



Creating the disk group takes a short while

DBCA then displays a list of the currently existing ASM diskgroups. Before we continue we need to create an additional disk group for the Flashback Area.

	Using the / choose to performed — Availab	ASM Disk Groups create a new dis on the set of noo le Disk Groups	s page you can vi k group or add di les selected in th	ew and manag sks to an existi le previous pag	e existing disk g ng disk group. <i>A</i> le.	roups. You can All operations will be
	lounde		0	Energy Office	-	0
_	9 0	DATA	3318	3221	EXTERN	MOUNTED (2/2)
And	Note: Fre	e (MB) reflects th	e free space ava	iable by taking	mirroring into ac	ccount.
	C	e New add Di	المستعلا المناء	Max		

## Click Create New

Create Disk Grou	ıp				×	
Disk Group Name:	FLASH					
Redundancy —						
CHigh	O N	lormal		External		
<ul> <li>Select Member D</li> <li>Show Candidate</li> </ul>	isks tes C Show All					
		Houdor Otatao	ACMINANTO	0120 (110)		
N.NORCLD	ISKFLASH0	PROVISIONED		4094		
Note: If you don't see disks which you believe should be available, you may need to change the disk discovery path.           Stamp Disks         Change Disk Discovery Path						
		OK Canc	el Help)			

in the Disk group name field type FLASH Select the Redundancy -> external radio button check the box next to the name of the disk you wish to add to this diskgroup Click OK



DBCA will now create the FLASH diskgroup



Click Next

Database 0	onfiguration Assistant
Ŭ	Do you want to perform another operation?
	(Yes No



We have now installed ASM and created the required ASM diskgroups

## **6**. Install Oracle Database Home & Patch to the latest version

Next we will create the Oracle Home for the RAC database.

#### Install base 10.2.0.1 Release

#### The installer is invoked by running:

C:\stage\10gR2\database\setup.exe

Oracle Universal Installer: Welcome	- C
117 1 (Markane	
Welcome	
The Oracle Universal Installer guides you through th Oracle products.	e installation and configuration of your
Click "Installed Products" to see all installed produ	cts.
	Deinstall Products
	About Oracle Universal Installer
Help Installed Products	ck Next Install Cancel
Help Installed Products	ck Next Install Cancel
Help Installed Products Ba	ok Next Install Cancel
Help Installed Products Ba ORACLE Next Oracle Universal Installer: Select Installation Type	ck Next Install Cancel
Help Installed Products) Ba ORACLE Next Oracle Universal Installer: Select Installation Type	ck Next Install Cancel
Help     Installed Products     Ba       ORACLE         Next   Oracle Universal Installer: Select Installation Type       Select Installation Type	ck Next Install Cancel
Help     Installed Products     Data       ORACLE         Next       Oracle Universal Installer: Select Installation Type       Select Installation Type       Oracle Database 10g 10.2.0.1.0	ck Next Install Cancel
Help       Installed Products       Data         ORACLE       Next       Oracle Universal Installer: Select Installation Type         Select Installation Type       Oracle Database 10g 10.2.0.1.0	ck Next Install Cancel
Help     Installed Products     Ba       ORACLE         Next         Oracle Universal Installer: Select Installation Type         Select Installation Type       Oracle Database 10g 10.2.0.1.0         When the products of the product of	ck Next Install Cancel
Help       Installed Products       Ba         ORACLE       Oracle Universal Installer: Select Installation Type         Oracle Universal Installer: Select Installation Type       Oracle Database 10g 10.2.0.1.0         Video System Finisher Edition (631MB)       Oracle Database 10g Enterprise Edition, the first database design	ek Next Install Cancel
Heip       Installed Products       Ba         ORACLE       Select Installation Type         Oracle Universal Installer: Select Installation Type       Oracle Database 10g 10.2.0.1.0         Whethype of installation of Control of Simple       Control of Simple         Oracle Database 10g 10.2.0.1.0       Control of Simple         Whethype of installation of Control of Simple       Control of Simple         Scalability, performance, high availability and security features re applications.       Control of Simple	ed for the grid, is a self-managing database that has the quired to run the most demanding, mission critical
Heip       Installed Products       Data         ORACLE       Oracle Universal Installer: Select Installation Type         Oracle Universal Installer: Select Installation Type       Oracle Database 10g 10.2.0.1.0         What bype of installation de yournet?       • Enterprise Edition (631MB)         Oracle Universite Light Enterprise Edition (631MB)       • Standard Edition (630MB)	ed for the grid, is a self-managing database that has the quired to run the most demanding, mission critical
Heip       Installed Broducts       Ba         ORACLE       Select Installation Type         Oracle Universal Installer: Select Installation Type         Oracle Database 10g 10.2.0.1.0         Mathematical Edition (631MB)         Oracle Database 10g 10.2.0.1.0         Oracle Database 10g 20.0.0.0         Oracle Database 10g 20.0.0.0.0         Oracle Database 10g 20.0.0.0.0         Oracle Database 10g Standard Edition is ideal for workgroups, de looking for a lower-cost offering.	ek Next Install Cancel
Help       Installed Broducts       Data         ORACLE       Oracle Universal Installer: Select Installation Type         Oracle Universal Installer: Select Installation Type       Oracle Database 10g 10.2.0.1.0         Oracle Database 10g 10.2.0.1.0       (?         • Enterprise Edition (631MB)       Oracle Database 10g Enterprise Edition (631MB)         Oracle Database 10g Standard Edition is ideal for workgroups, de looking for a lower-cost offering.         • Personal Edition (631MB)	ek Next Install Cancel
Help       Installed Products       Data         ORACLE       Oracle Universal Installer: Select Installation Type         Oracle Universal Installer: Select Installation Type       Oracle Universal Installer: Select Installation Type         Oracle Database 10g 10.2.0.1.0       Mast type of installation de youwert?         Enterprise Edition (631MB)       Oracle Database 10g range edutority features re applications.         C standard Edition (630MB)       Oracle Database 10g Standard Edition is ideal for workgroups, de looking for a lower-cost offering.         C Personal Edition (631MB)       Supports single user development and deployment that require fu Oracle Standard Edition 10g.	ek Next. Install Cancel
Help       Installed Products       Data         ORACLE       Oracle Universal Installer: Select Installation Type         Oracle Universal Installer: Select Installation Type       Data         Select Installation Type Oracle Database 10g 10.2.0.1.0       Mass type of installation de youwert?         • Enterprise Edition (631MB)       Oracle Database 10g standard Edition is ideal for workgroups, de looking for a lower-cost offering.         • Personal Edition (631MB)       Supports single user development and deployment that require fu oracle Single user development and deployment that require fu	ek Next. Install Cancel
Help       Installed Products       Data         ORACLE       Oracle Universal Installer: Select Installation Type         Dracle Universal Installer: Select Installation Type         Oracle Database 10g 10.2.0.1.0         What type of installation G31MB)         Oracle Database 10g 10.2.0.1.0         What type of installation (631MB)         Oracle Database 10g Interprise cation, the first database design scalability, performance, high availability and security features re applications.         © Standard Edition (630MB)         Oracle Database 10g Standard Edition is ideal for workgroups, de looking for a lower-cost offering.         © Personal Edition (631MB)         Supports single user development and deployment that require fu Oracle Standard Edition 10g.         © Qustom         Enables you to choose individual components to install.	ed for the grid, is a self-managing database that has the guired to run the most demanding, mission critical spartments and small-to-medium sized businesses
Help       Installed Broducts       Dead         ORACLE       ORACLE         Next       Drade Universal Installer: Select Installation Type         Oracle Database 10g 10.2.0.1.0       Select Installation Type (Compared Database 10g 10.2.0.1.0)         What type of installer: Select Installation Type         Oracle Database 10g 10.2.0.1.0         What type of installation (631MB)         Oracle Database 10g Standard Edition is ideal for workgroups, de looking for a lower-cost offering.         Oracle Database 10g Standard Edition is ideal for workgroups, de looking for a lower-cost offering.         Oracle Standard Edition (631MB)         Supports single user development and deployment that require fur Oracle Standard Edition (631MB)         Supports single user development and deployment that require fur Oracle Standard Edition (631MB)         Supports single user development and deployment that require fur Oracle Standard Edition (631MB)         Supports single user development and deployment that require fur Oracle Standard Edition (631MB)         Supports single user development and deployment that require fur Oracle Standard Edition (631MB)         Bubble you to choose individual components to install.	ek Next Install Cancel
Help       Installed Broducts       Dealer         ORACLE       Sector       Sector       Sector         Drace Universal Installer: Select Installation Type       Dealer       Sector         Select Installation Type Oracle Database 10g 10.2.0.1.0       Sector       Sector         What type of installation (631MB)       Oracle Database 10g 10.2.0.1.0       Sector       Sector         Oracle Database 10g 10.2.0.1.0       Sector	ed for the grid, is a self-managing database that has the quired to run the most demanding, mission critical partments and small-to-medium sized businesses It compatibility with Oracle Enterprise Edition 10g and Product Languages

We are going to install an Oracle Home to host the RAC instances. Select the Enterprise Edition radio button Click Next

	oniversal installer. Specify nome becaus		
Spec Destin	cify Home Details		
Enter or Name:	r select a name for the installation and the full pain where you want to OverDividia, homeal	o instair the produ	
Path:	Claradalaradud10.2.0kh 1		-

The DB home must be a different home than the Oracle Clusterware Home and, as installed here as separate homes for ASM and database, should be different to the ASM home

Enter a name for the home Enter a location for the home Click Next

Gracle Universal Installer: Specify Hardware Cluster Installation Mode	
Specify Hardware Cluster Installation Mode	
Cluster Installation	
Select nodes (in addition to the local node) in the hardware cluster where the installer sho products that you select in this installation.	uld install
Node Name	
iwinrca01	
🗹 iwinrca02	
Select All	Deselect All )
C Local Installation	• — — — — — — — — — — — — — — — — — — —
Select this option if you want to perform a single node non-cluster installation even though	the local node is
part of a hardware cluster.	
Help Installed Products Back Next Install	Cancel
ORACLE	

The Oracle Installer determines that the Oracle Clusterware layer is installed. It presents a list of all the nodes in the Oracle Cluster Ensure the Cluster Installation radio button is selected Click the Select All button Click Next
The Installer verifies that your environment meets all of the minimum configuring the products that you have chosen to install. You must ma are flagged with warnings and items that require manual checks. For checks, click the item and review the details in the box at the bottom o	requirements f inually verify an details about p if the window.	or in: d coi ierfoi	stalling and nfirm the item rming these	s tha
Check	Туре		Status	
Checking for Oracle Home incompatibilities	Automatic		Succeeded	
Checking Oracle Clusterware version	Automatic	4	Succeeded	
(d)				D
			Retry	Stop
0 requirements to be verified.				
Checking Oracle Clusterware version Check complete. The overall result of this check is: PasSed				
				2

The installer runs a series of checks on the environment. If you have successfully run the CVU at the beginning of this stage then this should be OK Click Next

	ng Database		-
Jpgrade an Existing Datat	oase		
ou may upgrade one of the databases listed ession. You may additionally upgrade Autor le Real Application Clusters (RAC) databass etails on the requirements for upgrading a F	l below to Oracle Databasi natic Storage Managemeni es listed may be marked a RAC database to Release :	a 10g Release 2 dur (ASM) to Release 2 s not upgradable. Si 2.	ing this install as well. Some se help for more
o you want to perform an upgrade now?			
<sup>€</sup> №			
● No ← Yes ● Upgrade an existing database			
Yes     Upgrade an existing database     Select Oracle Home	SID	Uses ASM	Upgradable
No     Yes     Upgrade an existing database     Belect Oracle Home     Upgrade ASM instance running fromC:	SID NORACLEYPRODUCT110.2	Uses ASM	Upgradable

Click Next

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🗽 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 to Automatic Storage Management (ASM) for managing database file storage. Alternatively, you c install just the software necessary to run a database, and perform any database configuration	) configure an choose to later.
⊂ <u>C</u> reate a database	
Configure <u>A</u> utomatic Storage Management (ASM)	
Specify ASM SYS Password:	
Confirm ASM SYS.Password:	
Install database goftware only	
Help Installed Products Back Next Install	Cancel
ORACLE	

We will install the software first and then patch to the latest release before configuring the RAC Database in this new home

Select the Install database Software only button Click Next



At the summary screen Click Install

Oracle Universal Installer: Install	103
Installing Oracle Database 10g 10.2.0.1.0 Installation in progress Setup pending Remote operations pending Configuration pending Extracting files to 'C' koracle/koroduct10.0.2 (Wab. 1)	Oracle Database 10g: The Database for the Grid • Virtualization at every layer • Policy-based provisioning • Resource pooling
1%	
You can find a log of this install session at: C.Yprogram Files\Oracle\Inventory\logs\installActions2005-09-30_03-41-13PM.log	

The Oracle RAC Database software for the RAC Database home is installed onto both nodes



At the end of the install a report screen is displayed Click Exit



Click Yes

Congratulations The base 10.2.0.1 Oracle RAC Database Home has been installed successfully

### Patching of the RAC Database Home

You should now patch the RAC Database home to the latest release levels

### Install the Latest patch

At the time of this document the latest patch for Oracle on Windows was 10.2.0.3, you should download that patch from Metalink and stage on node1The installer is invoked by running:

C:\stage\10203\Disk1\setup.exe

You will be presented with a welcome screen



Click Next

Oracle Universal Installer: Specify Home Details	
Specify Home Details	
Na <u>m</u> e: OraDb10g_home1	
Path: C:toracletproduct(10.2.0tdb_1	🗶 Browse )
Help Installed Products Back	Next Install Cancel
ORACLE'	

In the name Drop Down Listbox – ensure that the RAC Database home you just installed is selected. The Path should then show the directory for the RAC home

Click Next

oraci	e Universal Installer: Specify Hardware Cluster Installation Mode
Sn	acify Hardware Cluster Installation Mode
op	seny mardware chuster instanation mode
@ CI	uster Installation
Se pri	lect nodes (in addition to the local node) in the hardware cluster where the installer should install oducts that you select in this installation.
	Node Name
E.	2 iwinrca01
	r winrcau2
	Select All Deselect All
● L <u>o</u>	cal Installation
Se pa	lect this option if you want to perform a single node non-cluster installation even though the local node is rt of a hardware cluster.

This screen lists the nodes in the cluster

Click Next

Oracle 10gR2 RAC Install for Windows2000/2003 32 bit / 64bit



### Click Install

oracle oniversal installer. Install	
Install	
Installing Oracle Database 10g Release 2 Patch Set 2 10.2.0.3.0	
Deinstall successful Install pending	Oracle Database 10g: The Database for the Grid
Setup pending	Virtualization at every layer
Remote operations pending	Policy-based provisioning
Configuration pending	Resource pooling
0%	_
(Stop installation)	1
Stop installation You can find a log of this install session at: C:Program Files/Oracle/Inventoryllogs/installActions2007-06-20_08-38-24AP	A log
Stop installation         You can find a log of this install session at:         C:Program Files/OracleUnventorylogsUnstallActions2007-06-20_08-38-24AF         Help       Installed Products         Back	Mlog Next (nstall Cancel





At the end of the install a report screen is displayed Click Exit



Click Yes

You can optionally now apply the latest bundle patch on top of 10.2.0.3

# 7. Create RAC Database using dbca

### Run dbca to create the RAC Database instances

### C:\oracle\product\10.2.0\db\_1\BIN>**dbca**



Click Next



Select the Create a Database Radio Button

Click Next

Database Configuration Assi	stant, Step 2 of 4 : Node Selection	<u>_     ×</u>
Database Configuration Assi	stant, Step 2 of 4 : Node Selection Select the nodes for which you want to manage ASM diskgroups. The local nod always be used, whether or not it is selected. manrac1 manrac2	e "manrac1" will Select All
Cancel Help	Back Next 3	>) <mark>.</mark>

Click Select All

### Click Next

	Select	Template	Includes Datafile
	0	Custom Database	No
	0	Data Transitouse	100
	9	General Purpose	Yes
	0	Transaction Drassacing	Vee
Naportzijskomme Naportzijskomme Naportzijskomme			

The assistant then asks which type of database you require Select the General Purpose radio button Click Next



The database requires a global name and a SID prefix In the Global Database name field type orcl The dbca will auto fill the SID prefix field with the same value Click Next

Database Configuration Ass	istant, Step 3 of 14 : Management Optio	ns	
	Each Oracle database may be manag Control or locally using the Oracle Eni management option that you would lii Configure the Database with Entr	ged centrally using the Oracle Enterprise Manage terprise Manager Database Control. Choose the ce to use to manage this database. arprise Manager	r Grid
		management	
	Management Convice	No Arente Found	
Thursdanian in the second	Use Database Control for Database	base Management	
	Enable Email Notifications		
Navel Marrier Marine Marrier Marine Marrier	Outgoing Mail (SMTP) Server.		
And and a second	Email Address:		
North Statement	Enable Daily Backup		
Mary Statistics of Alexandrometer Mary Statistics of Alexandrometer Mary Statistics of Alexandrometer Mary Statistics of Alexandrometer Alexa	Backup Start Time:	02 00 C AM C PM	
	OS Usemame:		
	Password:		
Cancel Help	)	🔇 Back Next 🔊	

DBCA now needs to know how you will manage the database Check the Configure the Database with Enterprise Manager checkbox And

Select the Use Database Control for Database Management radio button Click Next

Password: Confirm Password	*****	
C Use Different Pas	swords	
User Name	Password	Confirm Password
SYS		
SYSTEM		
DBSNMP		
SYSMAN		

Select the Use the same password for all accounts radio button In the password field type 'oracle' In the confirm password field type 'oracle' Click Next



We are going to use ASM to store the datafiles for this RAC database Select the Automatic Storage Management radio button Click Next

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	Avail	able Disk Groups —				
	001001		OLC (MD)	1100 (00)	recountrainty	onne
		DATA	8188	8093	EXTERN	MOUNTED (2/2)
		FLASH	4094	4001	EXTERN	MOUNTED (2/2)
Managering Marine Mar						
And						

**IMPORTANT** make sure you check the DATA diskgroup and uncheck the FLASH diskgroup

Click Next

Database Configuration Assi	stant, Step 7 of 13 : Database File Locations	_ 🗆 🗵
	Specify locations for the Database files to be created:	
	C Use Database File Locations from Template	
	C Use Common Location for All Database Files	215 - T2
	Database Files Location:	Browse)
Numerica Control of Co	Use Oracle-Managed Files	
Nacrossian and Statement	Database Area: +DATA	Browse
Hansteine Borgener Versteine Versteine Versteine Hansteine Machine Mac	Multiplex Redo Logs and Control Files)  If you want to specify different locations for any database files, pick either of t options and use the Storage page to specify each location.	he above
Cancel Help	(File Location	m Variables)

We will use Oracle Managed files for the filenames in this database Select the Use Oracle managed Files radio button Click Next

	Specify Flash Recovery Area	abase:	, and is also required for
Horizontal Horizontal	automatic backup using Enter recovery files be located on phy Flash Recovery Area: Flash Recovery Area Size:	orise Manager. Oracle recommend ysically different disks for data prot 2048 (Edit Archive Mode Paramete	s that the database files and action and performance. Browse) M Bytes T rs)
Cancel Help		3 Back	File Location Variables)

We are going to set up a flash recovery area for this RAC database Check the Specify Flash Recovery Area check box

Click the Browse button next to the Flash Recovery Area edit box

	Disk Group Name	Size (MB)	Free (MB)	Redundancy	State	
0	FLASH	4094	4001	EXTERN	MOUNTED (2/2) MOUNTED (2/2)	

Select the radio button next to the FLASH diskgroup Click OK



Click Next

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We will add the Sample Schemas to this database Check the Sample Schemas checkbox Click Next



We will not create any additional services at this point in time Click Next

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Memory (	Sizing	Character Sets	Connection Mode
Typical - Allocate	memory as a per	entage of the total ph	ysical memory (2039
Percentage: 4	0 🗍 Show M	emory Distribution )	
C Custom			
Shared Memory	Management: (	🛛 Automatic 🔿 Manua	ſ
SGA Size	[	81	M Bytes
PGA Size:	[	93	M Bytes
🥪 parame	tero, ir any.		
🥣 parame	iero, il ariy.		

We will accept the defaults for the database memory Click Next

Database Configuration Assis	tant, Step 12 of 13 : Database Storage
Controlfile - Datafiles Controlfile - Datafiles Controlfile - Datafiles - Redo Log Groups	Database Storage         Are the Arabase Storage page, you can specify storage parameters for the database cancents. This page displays a tree listing and summary view (multi-column lists) to allow you
Create Delete	File Location Variables)
Cancel Help	( Back Next >)

We will accept the defaults for the datafile locations Click Next



Ensure the Create Database checkbox is selected Click Finish

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	or	:		
Common Options				
Option	Selected			
Oracle JVM	true			
Oracle Data Mining	true			
Oracle Text	true			
Oracle XML DB	true			
Oracle Intermedia	true			
Oracle OLAP	true			
Oracle Spatial	true			
Oracle Ultra Search	false			
Oracle Label Security	false			
Sample Schemas	false			
Enterprise Manager Repository	true			
Oracle Database Extensions for .NET	false			

A screen confirming the options is displayed Click OK

Ħ	Copying database files     Creating and starting Oracle instance     Creating (ulster database views     Completing Database Creation
	Clone database creation in progress
	Clone database creation in progress
	Clone database creation in progress 0% Log files for the current operation are located at: Characleproducth 0.2.0tdb_tLcgtoollogeldbcalorci

DBCA will now create the RAC database



A progress screen is displayed



After the database is created a confirmation screen is displayed Click Exit



DBCA then starts both of the instances on the cluster



On completion a summary screen is displayed Click Exit



At the confirmation Dialog click Yes

Your RAC database install is complete

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# 8. Appendix A Troubleshooting Setup

If you have run the CVU and it has returned an error in the post hwos stage

	Re-run the cluvfy command in verbo	ose mode	
	C:> <b>runcluvfy stage -post hwos -n</b> : The system cannot find the file sp	<pre>iwinrca01,iwinrca02 -verbose pecified.</pre>	
	Performing post-checks for hardway	re and operating system setup	
Check 1	Checking node reachability Check: Node reachability from node Destination Node	e "iwinrca01" <i>Reachable?</i>	
	iwinrca01 iwinrca02 Result: Node reachability check pa	<i>yes</i> <i>yes</i> assed from node "iwinrca01".	
Check 2	Checking user equivalence Check: User equivalence for user ' Node Name	"Administrator" Comment	
	<i>iwinrca02</i> <i>iwinrca01</i> Result: User equivalence check pas	passed passed ssed for user "Administrator".	
Check 3	Checking node connectivity		
	Interface information for node "in Interface Name	winrca02" IP Address	Subnet
	Local Area Connection Local Area Connection 2	139.185.150.55 10.10.10.3	139.185.150.0 10.10.10.0
	Interface information for node "in Interface Name	winrca01" IP Address	Subnet
	Local Area Connection Local Area Connection 2	139.185.150.54 10.10.10.2	139.185.150.0 10.10.10.0
	Check: Node connectivity of subnet Source	t "139.185.150.0" Destination	Connected?
	<pre>iwinrca02:Local Area Connection iwinrca02:Local Area Connection iwinrca02:Local Area Connection iwinrca02:Local Area Connection iwinrca02:Local Area Connection iwinrca01:Local Area Connection Result: Node connectivity check pa iwinrca02,iwinrca01.</pre>	<pre>iwinrca02:Local Area Connection iwinrca01:Local Area Connection iwinrca01:Local Area Connection iwinrca01:Local Area Connection iwinrca01:Local Area Connection iwinrca01:Local Area Connection assed for subnet "139.185.150.0"</pre>	n yes n yes n yes n yes n yes n yes with node(s)
	Check: Node connectivity of subnet Source	t "10.10.10.0" Destination	Connected?
	iwinrca02:Local Area Connection Result: Node connectivity check pa iwinrca02,iwinrca01.	2 iwinrca01:Local Area Connect assed for subnet "10.10.10.0" wit	ion 2 yes th node(s)
	Suitable interfaces for VIP on sub iwinrca02 Local Area Connection:12 Connection:139.185.150.55 iwinrca01 Local Area Connection:12 Connection:139.185.150.54	bnet "139.185.150.0": 39.185.150.202 Local Area 39.185.150.201 Local Area	
	Suitable interfaces for the privat iwinrca02 Local Area Connection 2	te interconnect on subnet "10.10. :10.10.3	.10.0":

iwinrca01 Local Area Connection 2:10.10.10.2

Result: Node connectivity check passed.

Check 4

```
Checking shared storage accessibility...
```

Disk Partition	Sharing Nodes (2 in count)
\Device\Harddisk1\Partition1	iwinrca02 iwinrca01
Disk Partition	Sharing Nodes (2 in count)
\Device\Harddisk1\Partition2	iwinrca02 iwinrca01
Disk Partition	Sharing Nodes (2 in count)
\Device\Harddisk1\Partition3	iwinrca02 iwinrca01
Disk Partition	Sharing Nodes (2 in count)
\Device\Harddisk1\Partition4	iwinrca02 iwinrca01
Disk Partition	Sharing Nodes (2 in count)
\Device\Harddisk1\Partition5	iwinrca02 iwinrca01

Shared storage check was successful on nodes "iwinrca02,iwinrca01".

Post-check for hardware and operating system setup was successful.

If you have access to Oracle Metalink <u>http://metalink.oracle.com</u> then the following notes might assist in networking issue : 338924.1 and Note# 316583.1

# 9. Appendix B Post Oracle Clusterware Install: Oracle Cluster Registry Information

NAME=**ora.iwinrca01.gsd** TYPE=application

After the Oracle Clusterware has been installed the following resources will have been configured to be managed by Oracle Clusterware. If you have access to Oracle Metalink <u>http://metalink.oracle.com</u> then a new crs\_stat script is available: 436067.1

C:\oracle\produ	act\10.2.0\crs\E	BIN>crs_	stat -t	- <b>v</b>		
Name	Туре	R/RA	F/FT	Target	State	Host
oraa01.gsd oraa01.ons oraa01.vip oraa02.gsd oraa02.ons oraa02.vip	application application application application application application	0/5 0/3 0/0 0/5 0/3 0/0	0/0 0/0 0/0 0/0 0/0 0/0	ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE	ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE	iwinrca01 iwinrca01 iwinrca01 iwinrca02 iwinrca02 iwinrca02

The Oracle Clusterware definition of the 6 resources added as part of the Oracle Clusterware install is as follows:

ACTION SCRIPT=C:\oracle\product\10.2.0\crs\bin\racgwrap.bat ACTIVE\_PLACEMENT=0 AUTO\_START=1 CHECK\_INTERVAL=600 DESCRIPTION=CRS application for GSD on node FAILOVER\_DELAY=0 FAILURE\_INTERVAL=0 FAILURE THRESHOLD=0 HOSTING MEMBERS=iwinrca01 OPTIONAL\_RESOURCES= PLACEMENT=restricted REQUIRED RESOURCES RESTART\_ATTEMPTS=5 SCRIPT\_TIMEOUT=600 START\_TIMEOUT=0 STOP\_TIMEOUT=0 UPTIME THRESHOLD=7d USR\_ORA\_ALERT\_NAME= USR\_ORA\_CHECK\_TIMEOUT=0 USR\_ORA\_CONNECT\_STR=/ as sysdba USR\_ORA\_DEBUG=0 USR\_ORA\_DISCONNECT=false USR\_ORA\_FLAGS= USR\_ORA\_FLAGS= USR ORA IF= USR ORA INST NOT SHUTDOWN= USR ORA LANG USR ORA NETMASK= USR ORA OPEN MODE= USR\_ORA\_OPI=false USR\_ORA\_PFILE= USR\_ORA\_PRECONNECT=none USR ORA SRV= USR ORA START TIMEOUT=0 USR\_ORA\_STOP\_MODE=immediate USR\_ORA\_STOP\_TIMEOUT=0 USR\_ORA\_VIP= NAME=ora.iwinrca01.ons TYPE=application ACTION SCRIPT=C:\oracle\product\10.2.0\crs\bin\racgwrap.bat ACTIVE\_PLACEMENT=0 AUTO START=1 CHECK\_INTERVAL=600 DESCRIPTION=CRS application for ONS on node FAILOVER\_DELAY=0 FAILURE\_INTERVAL=0 FAILURE\_THRESHOLD=0 HOSTING\_MEMBERS=iwinrca01 OPTIONAL RESOURCES= PLACEMENT=restricted REQUIRED RESOURCES= RESTART ATTEMPTS=3

SCRIPT\_TIMEOUT=600 START\_TIMEOUT=0 STOP\_TIMEOUT=0 STOP\_TIMEOUT=U UPTIME\_THRESHOLD=7d USR\_ORA\_ALERT\_NAME= USR\_ORA\_CHECK\_TIMEOUT=0 USR\_ORA\_CONNECT\_STR=/ as sysdba USR\_ORA\_DEBUG=0 USR\_ORA\_DISCONNECT=false USR\_ORA\_FLAGS= USR\_ORA\_IF= USR\_ORA\_INST\_NOT\_SHUTDOWN= USR ORA LANG= USR\_ORA\_NETMASK= USR\_ORA\_OPEN\_MODE= USR\_ORA\_OPI=false USR\_ORA\_PFILE= USR\_ORA\_PRECONNECT=none USR\_ORA\_SRV= USR\_ORA\_START\_TIMEOUT=0 USR\_ORA\_STOP\_TIMEOUT=0 USR\_ORA\_STOP\_TIMEOUT=0 USR\_ORA\_VIP= NAME=ora.iwinrca01.vip TYPE=application ACTION\_SCRIPT=C:\oracle\product\10.2.0\crs\bin\racgwrap.bat ACTIVE\_PLACEMENT=1 AUTO\_START=1 CHECK\_INTERVAL=60 DESCRIPTION=CRS application for VIP on a node FAILOVER\_DELAY=0 FAILURE\_INTERVAL=0 FAILURE\_THRESHOLD=0 HOSTING MEMBERS=iwinrca01 OPTIONAL RESOURCES= PLACEMENT = favoredREQUIRED RESOURCES= RESTART\_ATTEMPTS=0 SCRIPT\_TIMEOUT=60 START\_TIMEOUT=0 STOP\_TIMEOUT=0 UPTIME\_THRESHOLD=7d USR ORA ALERT NAME= USR ORA CHECK TIMEOUT=0 USR\_ORA\_CONNECT\_STR=/ as sysdba USR\_ORA\_DEBUG=0 USR\_ORA\_DISCONNECT=false USR\_ORA\_FLAGS= USR\_ORA\_IF=Local Area Connection USR\_ORA\_INST\_NOT\_SHUTDOWN= USR\_ORA\_LANG= USR\_ORA\_NETMASK=255.255.255.0 USR\_ORA\_OPEN\_MODE= USR\_ORA\_OPI=false USR ORA PFILE= USR ORA PRECONNECT=none USR ORA SRV= USR\_ORA\_START\_TIMEOUT=0 USR\_ORA\_STOP\_MODE=immediate USR\_ORA\_STOP\_TIMEOUT=0 USR\_ORA\_VIP=139.185.150.201 NAME=ora.iwinrca02.gsd TYPE=application ACTION SCRIPT=C:\oracle\product\10.2.0\crs\bin\racgwrap.bat ACTIVE\_PLACEMENT=0 AUTO\_START=1 CHECK\_INTERVAL=600 DESCRIPTION=CRS application for GSD on node FAILOVER\_DELAY=0 FAILURE\_INTERVAL=0 FAILURE\_THRESHOLD=0 HOSTING MEMBERS=iwinrca02 OPTIONAL RESOURCES= PLACEMENT=restricted

REQUIRED\_RESOURCES= RESTART\_ATTEMPTS=5 SCRIPT\_TIMEOUT=600 START\_TIMEOUT=0 STOP\_TIMEOUT=0 UPTIME THRESHOLD=7d

UPTIME THRESHOL=7d USR\_ORA\_ALERT\_NAME= USR\_ORA\_CHECK\_TIMEOUT=0 USR\_ORA\_CONNECT\_STR=/ as sysdba USR\_ORA\_DEBUG=0 USR\_ORA\_DISCONNECT=false USR\_ORA\_FLAGS= USR\_ORA\_FLAGS= USR\_ORA\_INST\_NOT\_SHUTDOWN= USP\_ORA\_INST\_NOT\_SHUTDOWN= USR\_ORA\_LANG= USR\_ORA\_NETMASK= USR ORA OPEN MODE= USR ORA OPI=false USR\_ORA\_PFILE= USR\_ORA\_PRECONNECT=none USR\_ORA\_SRV= USR\_ORA\_START\_TIMEOUT=0 USR ORA STOP MODE-immediate USR\_ORA\_STOP\_TIMEOUT=0 USR\_ORA\_VIP= NAME=ora.iwinrca02.ons TYPE=application ACTION\_SCRIPT=C:\oracle\product\10.2.0\crs\bin\racgwrap.bat ACTIVE PLACEMENT=0 AUTO START=1 CHECK\_INTERVAL=600 DESCRIPTION=CRS application for ONS on node FAILURE\_INTERVAL=0 FAILURE\_THRESHOLD=0 HOSTING\_MEMBERS=iwinrca02 OPTIONAL RESOURCES= PLACEMENT=restricted REQUIRED RESOURCES RESTART\_ATTEMPTS=3 SCRIPT\_TIMEOUT=600 START\_TIMEOUT=0 STOP\_TIMEOUT=0 UPTIME\_THRESHOLD=7d USR\_ORA\_ALERT\_NAME= USR ORA CHECK TIMEOUT=0 USR\_ORA\_CONNECT\_STR=/ as sysdba USR\_ORA\_DEBUG=0 USR\_ORA\_DISCONNECT=false USR\_ORA\_FLAGS= USR\_ORA\_IF= USR\_ORA\_IF= USR\_ORA\_INST\_NOT\_SHUTDOWN= USR\_ORA\_LANG= USR\_ORA\_NETMASK= USR\_ORA\_OPEN\_MODE= USR\_ORA\_OPI=false USR\_ORA\_PFILE= USR\_ORA\_PRECONNECT=none USR\_ORA\_SRV= USR ORA START TIMEOUT=0 USR\_ORA\_STOP\_MODE=immediate USR\_ORA\_STOP\_TIMEOUT=0 USR ORA VIP= NAME=ora.iwinrca02.vip TYPE=application ACTION SCRIPT=C:\oracle\product\10.2.0\crs\bin\racgwrap.bat ACTIVE\_PLACEMENT=1 AUTO\_START=1 CHECK\_INTERVAL=60  $\ensuremath{\texttt{DESCRIPTION}=CRS}$  application for VIP on a node FAILOVER\_DELAY=0 FAILURE\_INTERVAL=0 FAILURE\_THRESHOLD=0 HOSTING\_MEMBERS=iwinrca02 OPTIONAL\_RESOURCES= PLACEMENT=favored REQUIRED RESOURCES= RESTART\_ATTEMPTS=0 SCRIPT\_TIMEOUT=60 START\_TIMEOUT=0 STOP\_TIMEOUT=0 UPTIME THRESHOLD=7d USR ORA ALERT NAME= USR\_ORA\_CHECK\_TIMEOUT=0

USR\_ORA\_CONNECT\_STR=/ as sysdba USR\_ORA\_DEBUG=0 USR\_ORA\_DISCONNECT=false USR\_ORA\_FLAGS= USR\_ORA\_IF=Local Area Connection USR\_ORA\_INST\_NOT\_SHUTDOWN= USR\_ORA\_NETMASK=255.255.255.0 USR\_ORA\_OPEN\_MODE= USR\_ORA\_OPEN\_MODE= USR\_ORA\_OPEN\_MODE= USR\_ORA\_PFILE= USR\_ORA\_PFILE= USR\_ORA\_PFILE= USR\_ORA\_STRT\_TIMEOUT=0 USR\_ORA\_STOP\_MODE=immediate USR\_ORA\_STOP\_TIMEOUT=0 USR\_ORA\_STOP\_TIMEOUT=0 USR\_ORA\_STOP\_TIMEOUT=0 USR\_ORA\_STOP\_TIMEOUT=0

# 10. Appendix C Post Oracle Clusterware Install: Windows Filesystem, Registry & Services

E,	¥indows Task Manager					×
File	Options <u>V</u> iew <u>H</u> elp					
An	nlications Processes Performa	ancel				
						1
	Image Name	PID	CPU	CPU Time	Mer 🔺	1
	crsd.exe	2520	00	0:00:02	1	L
	crsd.exe	2716	00	0:00:00		I.
	csrss.exe	208	00	0:00:21		I.
	DefWatch.exe	712	00	0:00:00		Т
	dfssvc.exe	1052	00	0:00:00		Т
	evmd.exe	2408	00	0:00:00	1	Т
	evmd.exe	2508	00	0:00:00		Т
	evmlogger.exe	2488	00	0:00:00		Т
	explorer.exe	1692	00	0:00:07		I.
	hkcmd.exe	1788	00	0:00:00		Т
	LLSSRV.EXE	756	00	0:00:00		Т
	LSASS.EXE	272	00	0:00:02		I.
	msdtc.exe	576	00	0:00:00		I.
	mstask.exe	908	00	0:00:00		I.
	OcfsFindVol.exe	968	00	0:00:00		I.
	ocssd.exe	2176	00	0:00:00	1	Т
	ocssd.exe	2396	00	0:00:00		Т
	ons.exe	2852	00	0:00:00		I.
	ons.exe	2860	00	0:00:00		I.
	OracleOBJServic	2032	00	0:00:00		I.
	regsvc.exe	896	00	0:00:00		I.
	RemoteExecServi	2220	00	0:00:00		I.
	rsvp.exe	2184	00	0:00:00		I.
	Rtvscan.exe	828	00	0:00:10	1	Т
	services.exe	260	00	0:00:09		Т
	smss.exe	184	00	0:00:00		I.
	•					L
	□ Show processes from all user:	5		End Pro	cess	
Proce	esses: 41 CPU Usage: 55%	Me	m Usage	e: 305452K / 4	027080K	-

🍇 Services				
Action ⊻iew ← →	🛍 🔳 🔁 🗟   🕑 🕨			
Tree	Name 🛆	Description	Status	Startup Type 🔺
Services (Local)	NT LM Security Support Provider	Provides s		Manual
<b>W</b> ,	🖏 Oracle Object Service		Started	Automatic
	CracleClusterVolumeService		Started	Automatic
	CracleCRService		Started	Automatic 💻
	CracleCSService		Started	Automatic
	CracleEVMService		Started	Automatic
	CracleRemExecService		Started	Disabled
	Reformance Logs and Alerts	Configures		Manual 🗾 🗾
	<u>                                      </u>			Þ

🚉 C:\oracle\product\10.2.0\crs\BIN				<u> </u>			
<u>File E</u> dit <u>V</u> iew F <u>a</u> vorites <u>T</u> ools	<u>H</u> elp			100 A			
📙 🖨 Back 🔹 🤿 👻 🛅 🗐 🥘 Search	Fo	olders 🧭 🚰 📽	$\times $ $\square$ $\blacksquare$ .				
Address C:\oracle\product\10.2.0\crs\BIN							
Folders	×	Name 🛆	Size	Туре 🔺			
É ⊕ Cyu		cemutio.exe	6 KB	Application			
Documents and Settings		cemutls.exe	14 KB	Application			
		Clscfg.exe	80 KB	Application			
e oracle		Clsfmt.exe	11 KB	Application			
product		🐻 cluvfy.bat	3 KB	MS-DOS Batch			
⊡ 10.2.0		🔊 corejava.dll	36 KB	Application Exte			
🖻 🧰 crs		Crlogdr.exe	39 KB	Application			
		crs_getperm.exe	476 KB	Application			
E Cdata		crs_profile.exe	524 KB	Application			
⊕ 🔂 cfatoolloas		Crs_register.exe	672 KB	Application			
- <u></u> cfs		crs_relocate.exe	476 KB	Application			
		crs_setperm.exe	476 KB	Application			
		Tre start ava	476 VR	Application			
	_						
171 object(s) (Disk free space: 67.4 GB)		40.9 ME	3 🛛 🖳 My Con	nputer //			



# 11. Appendix D Post ASM Install: Oracle Cluster Registry Information

After the ASM Software has been installed and the ASM instances created the following resources will have been configured to be managed by Oracle Clusterware.

C:\oracle\product\10.2.0\crs\BIN> <b>crs stat -t -v</b>							
Name	Туре	R/RA	F/FT	Target	State	Host	
oraSM1.asm	application	0/5	0/0	ONLINE	ONLINE	iwinrca01	
ora01.lsnr	application	0/5	0/0	ONLINE	ONLINE	iwinrca01	
oraa01.gsd	application	0/5	0/0	ONLINE	ONLINE	iwinrca01	
oraa01.ons	application	0/3	0/0	ONLINE	ONLINE	iwinrca01	
oraa01.vip	application	0/0	0/0	ONLINE	ONLINE	iwinrca01	
oraSM2.asm	application	0/5	0/0	ONLINE	ONLINE	iwinrca02	
ora02.lsnr	application	0/5	0/0	ONLINE	ONLINE	iwinrca02	
oraa02.gsd	application	0/5	0/0	ONLINE	ONLINE	iwinrca02	
oraa02.ons	application	0/3	0/0	ONLINE	ONLINE	iwinrca02	
oraa02.vip	application	0/0	0/0	ONLINE	ONLINE	iwinrca02	

The Oracle Clusterware definition of the 4 new resources added as part of the ASM install is as follows :

NAME=ora.iwinrca01.ASM1.asm TYPE=application ACTION SCRIPT=C:\oracle\product\10.2.0\asm\_1\bin\racgwrap.bat ACTIVE\_PLACEMENT=0 AUTO\_START=1 CHECK INTERVAL=600  ${\tt DESCR\overline{I}PTION}{=}{\tt CRS}$  application for ASM instance FAILOVER\_DELAY=0 FAILURE\_INTERVAL=0 FAILURE\_THRESHOLD=0 HOSTING MEMBERS=iwinrca01 OPTIONAL RESOURCES= PLACEMENT=restricted REQUIRED RESOURCES=ora.iwinrca01.vip RESTART ATTEMPTS=5 SCRIPT\_TIMEOUT=600 START\_TIMEOUT=0 STOP\_TIMEOUT=0 UPTIME\_THRESHOLD=7d USR ORA ALERT NAME= USR ORA CHECK TIMEOUT=0 USR ORA CONNECT STR=/ as sysdba USR\_ORA\_DEBUG=0 USR\_ORA\_DISCONNECT=false USR\_ORA\_FLAGS= USR\_ORA\_IF= USR\_ORA\_INST\_NOT\_SHUTDOWN= USR\_ORA\_LANG= USR\_ORA\_NETMASK= USR\_ORA\_OPEN\_MODE=mount USR\_ORA\_OPI=false USR\_ORA\_PFILE= USR\_ORA\_PRECONNECT=none USR\_ORA\_SRV= USR\_ORA\_START\_TIMEOUT=0 USR\_ORA\_STOP\_MODE=immediate USR\_ORA\_STOP\_TIMEOUT=0 USR\_ORA\_VIP= NAME=ora.iwinrca01.LISTENER\_IWINRCA01.lsnr TYPE=application ACTION SCRIPT=C:\oracle\product\10.2.0\asm\_1\bin\racgwrap.bat ACTIVE\_PLACEMENT=0 AUTO START=1

ACTION\_SCRIPT=C:\oracle\product\10.2.0\asm\_1\bin\racgwrap.b ACTIVE\_PLACEMENT=0 AUTO\_START=1 CHECK\_INTERVAL=600 DESCRIPTION=CRS application for listener on node FAILOVER DELAY=0 FAILURE\_INTERVAL=0 FAILURE\_THRESHOLD=0 HOSTING\_MEMBERS=iwinrca01

OPTIONAL RESOURCES= PLACEMENT=restricted REQUIRED RESOURCES=ora.iwinrca01.vip RESTART\_ATTEMPTS=5 SCRIPT\_TIMEOUT=600 START\_TIMEOUT=0 STOP\_TIMEOUT=0 UPTIME\_THRESHOLD=7d USR\_ORA\_ALERT\_NAME= USR\_ORA\_CHECK\_TIMEOUT=0 USR\_ORA\_CONNECT\_STR=/ as sysdba USR ORA DEBUG=0 USR ORA DISCONNECT=false USR\_ORA\_FLAGS= USR\_ORA\_IF= USR\_ORA\_INST\_NOT\_SHUTDOWN= USR ORA LANG USR\_ORA\_NETMASK= USR ORA OPEN MODE= USR ORA OPI=false USR\_ORA\_PFILE= USR\_ORA\_PECONNECT=none USR ORA FRECONNECT HELE USR ORA START TIMEOUT=0 USR ORA STOP MODE=immediate USR\_ORA\_STOP\_TIMEOUT=0 USR\_ORA\_VIP=

### NAME=ora.iwinrca02.ASM2.asm

TYPE=application ACTION SCRIPT=C:\oracle\product\10.2.0\asm\_1\bin\racgwrap.bat ACTIVE\_PLACEMENT=0 AUTO START=1 CHECK INTERVAL=600 DESCRIPTION=CRS application for ASM instance FAILOVER\_DELAY=0 FAILURE\_INTERVAL=0 FAILURE THRESHOLD=0 HOSTING MEMBERS=iwinrca02 OPTIONAL\_RESOURCES= PLACEMENT=restricted REQUIRED\_RESOURCES=ora.iwinrca02.vip RESTART\_ATTEMPTS=5 SCRIPT\_TIMEOUT=600 START\_TIMEOUT=0 STOP\_TIMEOUT=0 UPTIME\_THRESHOLD=7d USR ORA ALERT NAME= USR ORA CHECK TIMEOUT=0 USR\_ORA\_CONNECT\_STR=/ as sysdba USR\_ORA\_DEBUG=0 USR\_ORA\_DISCONNECT=false USR\_ORA\_FLAGS= USR\_ORA\_IF= USR\_ORA\_INST\_NOT\_SHUTDOWN= USR ORA LANG USR ORA NETMASK= USR ORA OPEN MODE=mount USR\_ORA\_OPI=false USR\_ORA\_PFILE= USR\_ORA\_PRECONNECT=none USR\_ORA\_SRV= USR\_ORA\_START\_TIMEOUT=0 USR\_ORA\_STOP\_MODE=immediate USR\_ORA\_STOP\_TIMEOUT=0 USR\_ORA\_VIP=

#### NAME=ora.iwinrca02.LISTENER\_IWINRCA02.lsnr

TYPE=application ACTION SCRIPT=C:\oracle\product\10.2.0\asm\_1\bin\racgwrap.bat ACTIVE\_PLACEMENT=0 AUTO START=1 CHECK\_INTERVAL=600 DESCRIPTION=CRS application for listener on node FAILOVER\_DELAY=0 FAILURE\_INTERVAL=0 FAILURE\_THRESHOLD=0 HOSTING\_MEMBERS=iwinrca02 OPTIONAL RESOURCES= PLACEMENT=restricted REQUIRED\_RESOURCES=ora.iwinrca02.vip

RESTART ATTEMPTS=5 SCRIPT TIMEOUT=600 START TIMEOUT=0 UPTIME\_THRESHOLD=7d USR\_ORA\_ALERT\_NAME= USR\_ORA\_CHECK\_TIMEOUT=0 USR\_ORA\_CONNECT\_STR=/ as sysdba USR\_ORA\_DEBUG=0 USR\_ORA\_DISCONNECT=false USR\_ORA\_DISCONNECT=false USR\_ORA\_INST\_NOT\_SHUTDOWN= USR\_ORA\_INST\_NOT\_SHUTDOWN= USR\_ORA\_OPIE\_MODE= USR\_ORA\_OPIE\_false USR\_ORA\_OPIE\_false USR\_ORA\_OPIE\_false USR\_ORA\_OPIE\_false USR\_ORA\_OPIE\_Telse USR\_ORA\_START\_TIMEOUT=0 USR\_ORA\_STOP\_MODE=immediate USR\_ORA\_STOP\_TIMEOUT=0 USR\_ORA\_STOP\_TIMEOUT=0 USR\_ORA\_STOP\_TIMEOUT=0 USR\_ORA\_VIP=

## 12. Appendix E Post ASM Install: Windows Filesystem, Services & Registry



Windows Registry Editor Version 5.00

[HKEY\_LOCAL\_MACHINE\SOFTWARE\ORACLE] "inst\_loc"="C:\\Program Files\\Oracle\\Inventory"

[HKEY\_LOCAL\_MACHINE\SOFTWARE\ORACLE\KEY\_OraASM10g\_home1] "ORACLE\_HOME"="C:\\oracle\\product\\10.2.0\\asm\_1" "ORACLE\_HOME\_NAME"="OraASM10g\_home1" "ORACLE\_GROUF\_NAME"="Oracle - OraASM10g\_home1" "NLS LANG"="AMERICAN AMERICA.WE8MSWIN1252' "ORACLE\_BUNDLE NAME"="Enterprise" "OLEDB"="C:\\oracle\\product\\10.2.0\\asm 1\\oledb\\mesg"

```
"StmtCacheSize"="0"
```

"StatementCacheSize"="0"

00,65,00,00,00

- "ORACLE SID"="NO"
- "0040"="C:\\oracle\\product\\10.2.0\\asm\_1\\oo4o\\mesg"

- "SQLPATH"="C:\\oracle\\product\\10.2.0\\asm\_1\\dbs" "ORACLE\_HOME\_KEY"="SOFTWARE\\ORACLE\\KEY\_OraASM10g\_home1" "MSHELP\_TOOLS"="C:\\oracle\\product\\10.2.0\\asm\_1\\MSHELP"

- "MSHELP\_TOOLS"="C:\\oracle\\product\\10.2.0\\asm\_1\\MSHELP"
  "ORACLE\_BASE"="C:\\oracle\\product\\10.2.0\\asm\_1\\DATABASE"
  "RDBMS\_CONTROL"="C:\\oracle\\product\\10.2.0\\asm\_1\\DATABASE"
  "RDBMS\_ARCHIVE"="C:\\oracle\\product\\10.2.0\\asm\_1\\DATABASE\\ARCHIVE"
  "ORA\_+ASM1\_AUTOSTART"=hex(2):46,00,41,00,4c,00,53,00,45,00,00,00
  "ORA\_+ASM1\_SHUTDOWN"=hex(2):54,00,52,00,55,00,45,00,00,00
  "ORA\_+ASM1\_SHUTDOWNTYPE"=hex(2):69,00,6d,00,6d,00,65,00,64,00,69,00,61,00,74,\
  000\_65,00\_00\_00

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"ORA +ASM1 SHUTDOWN TIMEOUT"=hex(2):39,00,30,00,00,00

```
[HKEY LOCAL MACHINE\SOFTWARE\ORACLE\KEY OraASM10g home1\ODP.NET]
  TraceFileName"="C:\\ODPNET.trc"
"TraceLevel"="0"
"TraceOption"="0"
"StatementCacheSize"="0"
[HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE\KEY_OraASM10g_home1\OLEDB]
"CacheType"="Memory"
"ChunkSize"="100"
"DistribTX"="1"
"FetchSize"="100"
"OSAuthent"="0"
"PLSQLRset"="0"
"PwdChgDlg"="1"
"SchRstLng"="10000"
"UserDefFn"="0"
"DisableRetClause"="1"
"VCharNull"="1"
"TraceCategory"="0"
"TraceFileName"="c:\\OraOLEDB.trc"
"TraceLevel"="0"
"TraceOption"="0"
"SPPrmDefVal"="0"
"StmtCacheSize"="0"
[HKEY LOCAL MACHINE\SOFTWARE\ORACLE\KEY OraASM10g home1\0040]
"CacheBlocks"="20"
"FetchLimit"="100"
"FetchSize"="4096"
"HelpFile"="C:\\oracle\\product\\10.2.0\\asm_1\\oo4o\\doc\\oracleo.hlp"
"PerBlock"="16"
"SliceSize"="256"
"TempFileDirectory"="c:\\temp"
"OO40_HOME"="C:\\oracle\\product\\10.2.0\\asm_1\\oo4o"
[HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE\KEY_OraCr10g_home]
"ORACLE_HOME"="C:\\oracle\\product\\10.2.0\\crs"
"ORACLE_HOME_NAME"="OraCr10g_home"
"ORACLE_GROUF_NAME"="Oracle - OraCr10g_home"
"ORACLE_BUNDLE_NAME"="Enterprise"
"NLS_LANG"="AMERICAN_AMERICA.WE8MSWIN1252"
"ORA_CRS_HOME"="C:\\oracle\\product\\10.2.0\\crs"
[HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE\Ocr]
"ocrconfig_loc"="\\\\.\\ocrcfg"
"Local_Only"="FALSE"
[HKEY LOCAL MACHINE\SOFTWARE\ORACLE\SCR]
"cssfatal"="enable"
"crsstart"="enable"
[HKEY LOCAL MACHINE\SOFTWARE\ORACLE\ DosLinks]
"Scan"=hex(2):30,00,00,00
                                                                                                                                             _ 🗆 🗵
       💰 Registry Editor
        Registry Edit Yiew Eavorites Help
                       Name

        Name

        (M)
        (Morfault)

        (M)
        (Morfault)

        (M)
        (Morfault)

        (M)
        (Morfault)

        (Morfault)
        (Morfault)

    <
                                                                                                    Туре
                                                                                                                           Data
                                                                                                                                                    .
                          DosLinks
                                                                                                                            (value not set)
                                                                                                    REG_SZ
                       E- KEY_OraASM10g_home1
                                                                                                                             C:\oracle\product\10.2.
                                                                                                     REG_SZ
                             - ODP.NET
                                                                                                    REG_SZ
REG_SZ
                                                                                                                            AMERICAN AMERICA.V
                                                                                                                             C:\oracle\product\10.2.
                               🚞 0040
                                                                                                    REG SZ
                                                                                                                            C:\oracle\product\10.2.
                          - 🔚 KEY_OraCr10g_home
                                                                                                    REG_EXPAND_SZ
                                                                                                                            FALSE
                          Ocr
                                                                                                    REG EXPAND SZ
                                                                                                                            TRUE
                                                                                                    REG_EXPAND_SZ
                                                                                                                            90
                   REG_EXPAND_SZ
                                                                                                                            immediate

    Policies
    ProfileCopier

                                                                                                    REG SZ
                                                                                                                            C:\oracle\product\10.2.
                                                                                                    REG_SZ
                                                                                                                            Enterprise
                      📄 Program Groups
```

Securi REG\_SZ ORACLE\_HOME\_KEY 🗄 🚞 Symantei REG\_SZ 🗄 🦲 Voice च नि My Computer\HKEY\_LOCAL\_MACHINE\SOFTWARE\ORACLE\KEY\_OraASM10g\_home1

Runner

REG SZ

Oracle - OraASM10g ho

C:\oracle\product\10.2. SOFTWARE\ORACLE\KE

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## 13. Appendix F Post Database Create: Oracle Cluster Registry Information

After the database has been installed the following resources will have been configured to be managed by Oracle Clusterware.

C:\oracle\product\10.2.0\crs\BIN> <b>crs stat -t -v</b>							
Name	Туре	R/RA	F/FT	Target	State	Host	
oraL1.inst oraL2.inst	application application	0/5 0/5	0/0 0/0	ONLINE ONLINE	ONLINE ONLINE	iwinrca01 iwinrca02	
ora.ORCL.db	application	0/1	0/1	ONLINE	ONLINE	iwinrca01	
oraSM1.asm	application	0/5	0/0	ONLINE	ONLINE	iwinrca01	
ora01.lsnr	application	0/5	0/0	ONLINE	ONLINE	iwinrca01	
oraa01.gsd	application	0/5	0/0	ONLINE	ONLINE	iwinrca01	
oraa01.ons	application	0/3	0/0	ONLINE	ONLINE	iwinrca01	
oraa01.vip	application	0/0	0/0	ONLINE	ONLINE	iwinrca01	
oraSM2.asm	application	0/5	0/0	ONLINE	ONLINE	iwinrca02	
ora02.lsnr	application	0/5	0/0	ONLINE	ONLINE	iwinrca02	
oraa02.gsd	application	0/5	0/0	ONLINE	ONLINE	iwinrca02	
oraa02.ons	application	0/3	0/0	ONLINE	ONLINE	iwinrca02	
oraa02.vip	application	0/0	0/0	ONLINE	ONLINE	iwinrca02	

The Oracle Clusterware definition of the 3 new resources added as part of the database create is as follows :

NAME=ora.ORCL.ORCL1.inst TYPE=application ACTION\_SCRIPT=C:\oracle\product\10.2.0\db\_1\bin\racgwrap.bat ACTIVE PLACEMENT=0 AUTO\_START=1  $CHEC\overline{K}$ \_INTERVAL=600 DESCRIPTION=CRS application for Instance FAILOVER\_DELAY=0 FAILURE\_INTERVAL=0 FAILURE\_THRESHOLD=0 HOSTING\_MEMBERS=iwinrca01 OPTIONAL\_RESOURCES= PLACEMENT=restricted REQUIRED RESOURCES=ora.iwinrca01.vip ora.iwinrca01.ASM1.asm RESTART\_ATTEMPTS=5 SCRIPT\_TIMEOUT=600 START\_TIMEOUT=0 STOP\_TIMEOUT=0 UPTIME THRESHOLD=7d USR\_ORA\_ALERT\_NAME= USR\_ORA\_CHECK\_TIMEOUT=0 USR\_ORA\_CONNECT\_STR=/ as sysdba USR ORA DEBUG=0 USR\_ORA\_DISCONNECT=false USR\_ORA\_FLAGS= USR\_ORA\_IF= USR\_ORA\_INST\_NOT\_SHUTDOWN= USR\_ORA\_LANG= USR\_ORA\_NETMASK= USR\_ORA\_OPEN\_MODE= USR\_ORA\_OPI=false USR\_ORA\_PFILE= USR\_ORA\_PRECONNECT=none USR\_ORA\_SRV= USR\_ORA\_START\_TIMEOUT=0 USR\_ORA\_STOP\_MODE=immediate USR\_ORA\_STOP\_TIMEOUT=0 USR ORA VIP= NAME=ora.ORCL.ORCL2.inst TYPE=application ACTION SCRIPT=C:\oracle\product\10.2.0\db\_1\bin\racgwrap.bat ACTIVE\_PLACEMENT=0 AUTO\_START=1 CHECK\_INTERVAL=600

 ${\tt DESCR\overline{I}PTION{=}CRS}$  application for Instance

FAILOVER\_DELAY=0

FAILURE\_INTERVAL=0 FAILURE\_THRESHOLD=0 HOSTING\_MEMBERS=iwinrca02 OPTIONAL RESOURCES= PLACEMENT=restricted REQUIRED RESOURCES=ora.iwinrca02.vip ora.iwinrca02.ASM2.asm RESTART\_ATTEMPTS=5 SCRIPT\_TIMEOUT=600 START\_TIMEOUT=0 STOP\_TIMEOUT=0 UPTIME\_THRESHOLD=7d USR\_ORA\_ALERT\_NAME= USR ORA CHECK TIMEOUT=0 USR\_ORA\_CONNECT\_STR=/ as sysdba USR\_ORA\_DEBUG=0 USR\_ORA\_DISCONNECT=false USR ORA DISCONNECT=TAISE USR ORA\_FLAGS= USR ORA\_IF= USR ORA\_INST\_NOT\_SHUTDOWN= USR\_ORA\_LANG= USR\_ORA\_NETMASK= USR\_ORA\_OPEN\_MODE= USR\_ORA\_OPI\_False USR\_ORA\_OPEN\_MODE= USR\_ORA\_OPI=false USR\_ORA\_PFILE= USR\_ORA\_PRECONNECT=none USR\_ORA\_SRV= USR\_ORA\_START\_TIMEOUT=0 USR\_ORA\_STOP\_MODE=immediate USR\_ORA\_STOP\_TIMEOUT=0 USR\_ORA\_VIP= NAME=ora.ORCL.db TYPE=application ACTION SCRIPT=C:\oracle\product\10.2.0\crs\bin\racgwrap.bat ACTIVE PLACEMENT=0 AUTO START=1  $CHEC\overline{K}$  INTERVAL=600 DESCRIPTION=CRS application for the Database FAILOVER\_DELAY=0 FAILURE\_INTERVAL=60 FAILURE\_THRESHOLD=1 HOSTING MEMBERS= OPTIONAL RESOURCES= PLACEMENT = balancedREQUIRED RESOURCES= RESTART ATTEMPTS=1 SCRIPT\_TIMEOUT=600 START\_TIMEOUT=0 STOP\_TIMEOUT=0 UPTIME\_THRESHOLD=7d USR\_ORA\_ALERT\_NAME= USR\_ORA\_CHECK\_TIMEOUT=0 USR\_ORA\_CONNECT\_STR=/ as sysdba USR\_ORA\_DEBUG=0 USR ORA DISCONNECT=false USR ORA FLAGS= USR\_ORA\_IF= USR\_ORA\_INST\_NOT\_SHUTDOWN= USR\_ORA\_LANG= USR\_ORA\_NETMASK= USR\_ORA\_OPEN\_MODE= USR\_ORA\_OPI=false USR\_ORA\_PFILE= USR\_ORA\_PRECONNECT=none USR\_ORA\_START\_TIMEOUT=0 USR\_ORA\_STOP\_MODE=immediate USR\_ORA\_STOP\_TIMEOUT=0 USR ORA VIP=

# 14. Appendix G Post Database Create: Windows Filesystem, Services & Registry Information

```
Windows Registry Editor Version 5.00
 [HKEY LOCAL MACHINE\SOFTWARE\ORACLE]
 "inst loc"="C:\\Program Files\\Oracle\\Inventory"
 [HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE\KEY_OraASM10g_home1]
"ORACLE_HOME"="C:\\oracle\\product\\l0.2.0\\asm_1"
"ORACLE_HOME"="C:\\oracle\\product\\l0.2.0\\asm_1"
"ORACLE_HOME_NAME"="OraASM10g_home1"
"ORACLE_GROUP_NAME"="Oracle - OraASM10g_home1"
"NLS_LANG"="AMERICAN_AMERICA.WE8MSWIN1252"
"ORACLE_BUNDLE_NAME"="Enterprise"
"OLEDB"="C:\\oracle\\product\\10.2.0\\asm_1\\oledb\\mesg"
"StmtCacheSize"="0"
"StmtCacheSize"="0"
"StatementCacheSize"="0"
"ORACLE_SID"="NO"
"ORACLE_SID"="NO"
"OO40"="C:\\oracle\\product\\10.2.0\\asm_1\\oo40\\mesg"
"SQLPATH"="C:\\oracle\\product\\10.2.0\\asm_1\\ds"
"ORACLE_HOME_KEY"="SOFTWARE\\ORACLE\\KEY_OraASM10g_home1"
"MSHELP_TOOLS"="C:\\oracle\\product\\10.2.0\\asm_1\\MSHELP"
"ORACLE_BASE"="C:\\oracle\\product\\10.2.0"
"RDBMS_CONTROL"="C:\\oracle\\product\\10.2.0\\asm_1\\DATABASE"
"RDBMS_ARCHIVE"="C:\\oracle\\product\\10.2.0\\asm_1\\DATABASE\\ARCHIVE"
"CRA_+ASM1_AUTOSTART"=hex(2):46.00.41.00.4c,00,53,00,45,00,00
"ORA +ASM1 AUTOSTART"=hex(2):46,00,41,00,4c,00,53,00,45,00,00,00
"ORA +ASM1_SHUTDOWN"=hex(2):54,00,52,00,55,00,45,00,00,00
"ORA_+ASM1_SHUTDOWNTYPE"=hex(2):69,00,6d,00,6d,00,65,00,64,00,69,00,61,00,74,\
    00,65,00,00,00
 "ORA +ASM1 SHUTDOWN TIMEOUT"=hex(2):39,00,30,00,00,00
 [HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE\KEY_OraASM10g_home1\ODP.NET]
 "TraceFileName"="C:\\ODPNET.trc"
"TraceLevel"="0"
"TraceOption"="0"
"StatementCacheSize"="0"
[HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE\KEY_OraASM10g_home1\OLEDB]
"CacheType"="Memory"
"ChunkSize"="100"
"DistribTX"="1"
"FetchSize"="100"
"OSAuthent"="0"
"PLSQLRset"="0"
"PwdChqDlq"="1"
"SchRstLng"="10000"
"UserDefFn"="0"
"DisableRetClause"="1"
"VCharNull"="1"
"TraceCategory"="0"
"TraceFileName"="c:\\OraOLEDB.trc"
"TraceLevel"="0"
"TraceOption"="0"
"SPPrmDefVal"="0"
"StmtCacheSize"="0"
 [HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE\KEY_OraASM10g_home1\0040]
"CacheBlocks"="20"
"FetchLimit"="100"
"FetchSize"="4096"
"HelpFile"="C:\\oracle\\product\\10.2.0\\asm_1\\oo4o\\doc\\oracleo.hlp"
"PerBlock"="16"
"SliceSize"="256"
"TempFileDirectory"="c:\\temp"
"0040_HOME"="C:\\oracle\\product\\10.2.0\\asm_1\\oo4o"
 [HKEY LOCAL MACHINE\SOFTWARE\ORACLE\KEY_OraCr10g_home]
"ORACLE_HOME"="C:\\oracle\\product\\10.2.0\\crs
"ORACLE_HOME"="C:\\oracle\\product\\10.2.0\\crs
"ORACLE_HOME NAME"="Oracle_home"
"ORACLE_GROUP_NAME"="Oracle - Oracr10g_home"
"ORACLE_BUNDLE_NAME"="Enterprise"
"NLS_LANG"="AMERICAN_AMERICA.WE8MSWIN1252"
"ORA_CRS_HOME"="C:\\oracle\\product\\10.2.0\\crs"
 [HKEY LOCAL MACHINE\SOFTWARE\ORACLE\KEY OraDb10g home1]
```

```
Oracle 10gR2 RAC Install for Windows2000/2003 32 bit / 64bit
```

```
Draft Release 1.53
August 2007
```

```
"ORACLE HOME"="C:\\oracle\\product\\10.2.0\\db 1"
"ORACLE_HOME_NAME"="Orablog_home1"
"ORACLE_GROUP_NAME"="Oracle - Orabblog_home1"
"NLS LANG"="AMERICAN AMERICA.WE8MSWIN1252"
"ORACLE BUNDLE NAME"="Enterprise"
"OLEDB"="C:\\oracle\\product\\10.2.0\\db_1\\oledb\\mesg"
"StmtCacheSize"="0"
"StatementCacheSize"="0"
"ORACLE SID"="orcl1"
"0040"="C:\\oracle\\product\\10.2.0\\db_1\\oo4o\\mesg"
"SQLPATH"="C:\\oracle\\product\\10.2.0\\db_1\\dbs"
"ORACLE_HOME_KEY"="SOFTWARE\\ORACLE\\KEY_OraDb10g_home1"
"MSHELP TOOLS"="C:\\oracle\\product\\10.2.0\\db 1\\MSHELP"
"MSHELP_TOOLS"="C:\\oracle\\product\\10.2.0\\db_1\\MSHELP"
"ORACLE_BASE"="C:\\oracle\\product\\10.2.0"
"RDBMS_CONTROL"="C:\\oracle\\product\\10.2.0\\db_1\\DATABASE"
"RDBMS_ARCHIVE"="C:\\oracle\\product\\10.2.0\\db_1\\DATABASE\\ARCHIVE"
"ORA_ORCL1_AUTOSTART"=hex(2):46,00,41,00,4c,00,53,00,45,00,00,00
"ORA_ORCL1_SHUTDOWN"=hex(2):54,00,52,00,55,00,45,00,00,00
"ORA_ORCL1_SHUTDOWNTYPE"=hex(2):69,00,6d,00,6d,00,65,00,64,00,69,00,61,00,74,\
00_65_00_00_00
  00,65,00,00,00
"ORA ORCL1 SHUTDOWN TIMEOUT"=hex(2):39,00,30,00,00,00
[HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE\KEY_OraDbl0g_homel\ODP.NET]
 'TraceFileName"="C:\\ODPNET.trc"
"TraceLevel"="0"
"TraceOption"="0"
"StatementCacheSize"="0"
[HKEY LOCAL MACHINE\SOFTWARE\ORACLE\KEY OraDb10g home1\OLEDB]
"CacheType"="Memory"
"ChunkSize"="100"
"DistribTX"="1"
"FetchSize"="100"
"OSAuthent"="0"
"PLSQLRset"="0"
"PwdChgDlg"="1"
"SchRstLng"="10000"
"UserDefFn"="0"
"DisableRetClause"="1"
"VCharNull"="1"
"TraceCategory"="0"
"TraceFileName"="c:\\OraOLEDB.trc"
"TraceLevel"="0"
"TraceOption"="0"
"SPPrmDefVal"="0"
"StmtCacheSize"="0"
[HKEY LOCAL MACHINE\SOFTWARE\ORACLE\KEY OraDb10g home1\0040]
"CacheBlocks"="20"
"FetchLimit"="100"
"FetchSize"="4096"
"HelpFile"="C:\\oracle\\product\\10.2.0\\db 1\\oo4o\\doc\\oracleo.hlp"
"PerBlock"="16"
"SliceSize"="256"
"TempFileDirectory"="c:\\temp"
"0040_HOME"="C:\\oracle\\product\\10.2.0\\db_1\\oo4o"
[HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE\Ocr]
"ocrconfig_loc"="\\\\.\\ocrcfg"
"Local_Only"="FALSE"
[HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE\SCR]
"cssfatal"="enable"
"crsstart"="enable"
[HKEY LOCAL MACHINE\SOFTWARE\ORACLE\SYSMAN]
[HKEY LOCAL MACHINE\SOFTWARE\ORACLE\SYSMAN\OracleDBConsoleorcl1]
"EMDROOT"="C:\\oracle\\product\\10.2.0\\db 1"
"ORACLE HOME"="C:\\oracle\\product\\10.2.0\\db 1"
"EMSTATE"="C:\\oracle\\product\\10.2.0\\db 1\\iwinrca01 orcl1"
"CONSOLE CFG"="dbconsole"
"ORACLE SID"="orcl1"
"TIMEOUT"="15"
"TRACE LEVEL"="16"
[HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE\_DosLinks]
"Scan"=hex(2):30,00,00,00
```
### Oracle 10gR2 RAC Install for Windows2000/2003 32 bit / 64bit

<u>R</u> egistry	<u>E</u> dit <u>V</u> iew <u>F</u> avorites <u>H</u> elp				🐒 Registry Editor					
		Registry Edit View Eavorites Help								
	🖻 🧰 InstallShield		Name	Туре	Data					
	🕂 🧰 Intel		ab (Default)	REG_SZ	(value not set)					
	🗄 🦲 KasperskyLab		MSHELP_TOOLS	REG_SZ	C:\oracle\product\10.2.0\db_1\MSHELP					
	- lameme		ab NLS LANG	REG_SZ	AMERICAN_AMERICA.WE8M5WIN1252					
	H McAfee		ab OLEDB	REG SZ	C:\oracle\product\10.2.0\db 1\oledb\mesc					
	Microsoft     Microso		ab 0040	REG SZ	C:\oracle\product\10.2.0\db 1\oo4o\mesg					
	Nico Mak Computing		MORA ORCL1 AUTOSTART	REG EXPAND SZ	FALSE					
			BORA ORCLI SHUTDOWN	REG EXPAND SZ	TRUE					
			BORA ORCLI SHUTDOWN TIMEOUT	REG EXPAND SZ	90					
	DosLinks		BORA ORCI 1 SHUTDOWNTYPE	REG_EXPAND_SZ	immediate					
	E- KEY_OraASM1Ug_home1		aboracie Base	DEG S7	C:\oracle\product\10.2.0					
				DEC S7	Enterprice					
			BORACLE GROUP NAME	DEC S7	Oracle - OraDh10g home1					
	- UC40			DEC SZ	Cilorado/product/10.2.0/db.1					
	KEY_OraDb10g_home1			DEC SZ	Contracted product (10.2.0 (db_1)					
			ADDRACLE_HOME_NAME	REG_52	OraDh10a harra1					
				REG_52	UraDblug_nome1					
	0040		ORACLE_SID	REG_52	orci					
			RDBMS_ARCHIVE	REG_5Z	C:\oracle\product\10.2.0\db_1\DATABASE					
	SCR		RDBMS_CONTROL	REG_SZ	C:\oracle\product\10.2.0\db_1\DATABASE					
			SQLPATH	REG_SZ	C:\oracle\product\10.2.0\db_1\dbs					
	OracleDBConsoleorcl1		StatementCacheSize	REG_SZ	0					
			and StmtCacheSize	REG_SZ	0					
	E Policies									
	ProfileCopier									
	Program Groups									
	Runner	<b>-</b>	•		Þ					



🔯 C:\oracle\product\10.2.0\db_1\BIN	٩			<u>- 0 ×</u>		
<u>File E</u> dit <u>V</u> iew F <u>a</u> vorites <u>T</u> ools	Help			-		
🚽 Back 🔹 🔿 🗸 👬 🖓 Search	Folders 🐼 😤 🔀 🕽	< <u>m</u>				
Folders	× Name A	Size	Туре	Modif 🔺		
e	afsr.dll	24 KB	Application Extension	10/2٤		
🖻 🛄 product	agtctl.exe	40 KB	Application	8/29/		
🖻 🛄 10.2.0	aq×mlctl.bat	1 KB	MS-DOS Batch File	10/1/		
🕀 🛄 admin	aq×mlctl.pl	7 KB	PL File	11/4/		
🕀 🛄 asm_1	asmcmd.bat	2 KB	MS-DOS Batch File	6/24/		
🗄 🛄 crs	asmcmdcore	216 KB	File	5/21/		
📄 🔂 📥 🗎	asmtool.exe	4 KB	Application	8/29/		
🗄 🛄 admin	asmtoolg.exe	15 KB	Application	8/29/		
🗄 🛄 assistants	🔊 assr.dll	36 KB	Application Extension	10/26		
BIN	awsr.dll	60 KB	Application Extension	10/26		
🗄 🛄 cdata	🔊 bentofio.dll	28 KB	Application Extension	10/26		
🗄 🛄 cfgtoollogs	cbmap.map	3,060 KB	MAP File	10/26		
😟 🛄 clone	cemutls.exe	14 KB	Application	8/20/		
😟 🕀 🛄 com	chartbls.ux	1,410 KB	UX File	10/26		
	clscfg.exe	80 KB	Application	8/20/		
🗄 🔂 crs	clsfmt.exe	11 KB	Application	8/20/		
🕀 🔂 😥 🕀	💽 cluvfy.bat	1 KB	MS-DOS Batch File	10/1/		
😟 🕀 🛄 ctx	commonenv.bat	1 KB	MS-DOS Batch File	10/1/		
🕀 🛄 database	commonenv.bat.t	1 KB	TEMPLATE File	5/12/		
- 🛄 dbs	commonenv.temp	1 KB	TEMPLATE File	5/12/		
🗄 🛄 demo	corejava.dll	36 KB	Application Extension	8/16/		
🗄 🛄 diagnostics	CreatDep.exe	5 KB	Application	8/19/ -		
te - Carlos		001.00	• • •			
498 object(s) (Disk free space: 61.9 GB) 157 MB 🖳 My Computer						

## 15. Appendix H Process List of Oracle RAC Node

PsList 1.26 - Process Information Lister Copyright (C) 1999-2004 Mark Russinovich Sysinternals - www.sysinternals.com

Process information for IWINRCA01:

Name	Pid	Pri	Thd	Hnd	VM	WS	Priv
Idle	0	0	- Z	205	1 (7)(	10	0
System	104	11	53	325	16/6	212	1076
SIIISS	209	12	12	701	20609	2264	1560
USISS WINLOCON	200	12	10	191	20608	6224	1300
WINLOGON	232	T 2	19	439	52172	13456	10090
tormaru	200	10	41 17	110	50969	1330	2169
cuchost	700	10	74	263	22649	4320	1524
SVCHOSE SDOOL SV	520	0	11	120	25040	4192	2516
madta	576	0	26	200	20344	4372	1960
DefWatch	712	0	20	209	20449	2436	1900
Derwatch	712	0	10	251	20440	2430	2116
TIGODV	756	o Q	19	79	17244	2380	2110
evchost	820	2	1 /	18/	23172	3660	1628
Ptyscan	828	g	30	632	Q1312	17360	130/0
reasuc	896	8	3	58	9952	1124	324
mstask	908	8	6	121	29896	3620	1260
winnamt	964	8	6	277	40680	848	3308
OcfsFindVol	968	8	5	96	23788	2996	1040
WinVNC	1000	8	8	161	50440	15044	11692
sychost	1024	8	8	434	47660	14552	9420
wilaucit	1024	g	3	165	36080	5344	4560
dfeeve	1052	g	2	105	10104	1732	4300
OracloOBISorvia	2032	8	3	66	10104	1348	2920
oracleoboservic	2052	12	16	607	74564	10200	15020
ocssa	21/0	- 13	10	007	/4304	12300	13028
CCSSU	2190	0	2 6	125	23000	1049	1256
BomotoFucaSorui	2104		2	25	20000	1649	200
RenoceExecservi	2220	0	10	55	20992	11216	16100
evilla	2400	0	10	104	19510	7220	7009
evmiogger	2400	0	- L	124	4/540	7220	7008
evma	2508	8	2	87	48396	5668	4552
crsa	2520	8	45	929	130420	22912	36432
crsd	2716	8	2	85	50004	6388	4796
nmesrvc	3000	8	2	36	7404	1032	232
CMD	3584	8	1	21	8744	1228	324
perl	3604	8	1	24	31908	7904	6364
TNSLSNR	3200	8	4	120	52512	8804	6304
oracle	3268	8	49	2204	925164	373676	766264
oracle	3304	8	25	801	293612	130748	162884
LSASS	272	9	21	368	33428	6496	2928
explorer	1692	8	14	402	59868	5340	5020
hkcmd	1788	8	3	94	28980	3800	1476
VPTray	1820	8	3	118	32356	3556	1992
CMD	2724	8	1	22	11308	1300	348
pslist	380	13	2	79	15552	1584	784
racgimon	3248	8	6	215	59580	9256	12316
racgimon	3424	8	20	450	82000	15196	19588
ons	3568	8	1	17	7136	916	320
ons	3452	8	9	109	29492	3636	1424
java	3640	8	29	1003	461168	46948	43180
	3760	8	10	4762	89512	21492	14008

### 16. Appendix I Completely cleaning a failed install

You will have to reboot each node after completing this cleanup – This is to free the 2 device drivers that were loaded as part of the RAC install and to completely remove the registry deletes that were done in memory.

#### Services on each node in the cluster

Stop all the oracle services using the control panel applet: services.msc Stop the "Distributed Transaction Coordinator" service

Registry on each node in the cluster

Remove HKLM/Software/oracle Remove HKLM/System/CurrentControlSet/Services/Oracle\* (one at a time) Remove HKLM/System/CurrentControlSet/Services/OraFenceService Remove HKLM/System/CurrentControlSet/Services/OraFenceService

### Menu items on each node in the cluster

Remove c:\Documents and Settings\All Users\Start Menu\Programs\Oracle \* folders

### System Environment variables on each node in the cluster

PERL5LIB= (remove) PATH= (modify to remove oracle\bin directories)

# Shared disk cleanup: From one node only after stopping all above services on both nodes

You must clean the shared disks – Removing and recreating the partitions won't work – as the data will still be there.

Use the Oracle Clusterware command line utility: logpartformat.exe. You must add a drive letter using diskmgmt.msc to each partition you wish to format, remember to remove the drive letters after format has completed and check the drive letters have not returned following the subsequent reboot. Be very careful; this utility, as designed, will wipe all data from a partition.

### Symbolic link cleanup on each node in the cluster

You must also remove the symbolic links, run the Oracle Clusterware utility GuiOracleObjManager.exe, for each device that has a name next to it select the checkbox then click Options->commit

### File System cleanup on each node in the cluster

Remove C:\program Files\Oracle

Remove C:\oracle\product\ (Or wherever the Oracle binaries are installed) Remove C:\WINDOWS\system32\drivers\orafencedrv.sys Remove C:\WINDOWS\system32\drivers\orafenceservice.sys Remove C:\WINDOWS\system32\drivers\ocfs.sys

### Reboot each Node

This is required to remove the 2 device drivers

### 17. Networking Sample Files

Sample Networking files from the install

#### Server

A typical LISTENER.ORA file from Node1 in the cluster

```
LISTENER IWINRCA01 =
  (DESCRIPTION LIST =
    (DESCRIPTION =
      (ADDRESS = (PROTOCOL = IPC) (KEY = EXTPROC1))
      (ADDRESS = (PROTOCOL = TCP) (HOST = IWINRCA01-VIP) (PORT = 1521) (IP =
FIRST))
      (ADDRESS = (PROTOCOL = TCP) (HOST = 139.185.150.54) (PORT = 1521) (IP =
FIRST))
    )
  )
SID LIST LISTENER IWINRCA01 =
  (SID LIST =
   (SID DESC =
      (SID NAME = PLSExtProc)
      (ORACLE_HOME = C:\oracle\product\10.2.0\asm_1)
      (PROGRAM = extproc)
    )
)
```

### A Typical TNSNAMES.ORA from the Server

```
# tnsnames.ora Network Configuration File:
C:\oracle\product\10.2.0\db 1\network\admin\tnsnames.ora
# Generated by Oracle configuration tools.
LISTENERS_ORCL =
  (ADDRESS LIST =
     (ADDRESS = (PROTOCOL = TCP) (HOST = IWINRCA01-VIP) (PORT = 1521))
     (ADDRESS = (PROTOCOL = TCP) (HOST = IWINRCA02-VIP) (PORT = 1521))
  )
ORCL2 =
  (DESCRIPTION =
    (ADDRESS = (PROTOCOL = TCP) (HOST = IWINRCA02-VIP) (PORT = 1521))
     (CONNECT DATA =
       (SERVER = DEDICATED)
(SERVICE_NAME = orcl)
(INSTANCE_NAME = orcl2)
    )
  )
ORCL1 =
  (DESCRIPTION =
    (ADDRESS = (PROTOCOL = TCP) (HOST = IWINRCA01-VIP) (PORT = 1521))
     (CONNECT_DATA =
       (SERVER = DEDICATED)
       (SERVICE_NAME = orcl)
       (INSTANCE NAME = orcl1)
    )
  )
ORCL =
  (DESCRIPTION =
    (ADDRESS = (PROTOCOL = TCP)(HOST = IWINRCA01-VIP)(PORT = 1521))
(ADDRESS = (PROTOCOL = TCP)(HOST = IWINRCA02-VIP)(PORT = 1521))
     (LOAD_BALANCE = yes)
    (CONNECT_DATA =
       (SERVER = DEDICATED)
       (SERVICE_NAME = orcl)
    )
  )
EXTPROC CONNECTION DATA =
  (DESCRIPTION =
    (ADDRESS LIST =
       (ADDRESS = (PROTOCOL = IPC) (KEY = EXTPROCO))
```

```
(CONNECT_DATA =
  (SID = PLSExtProc)
  (PRESENTATION = RO)
)
```

### Client

)

A Typical client side TNSNAMES.ORA file :

### **Disable Media Sense**

### http://support.microsoft.com/default.aspx?scid=kb;EN-US;239924

Windows contains the "Media Sensing" feature. You may use this feature on a Windows-based computer using Transmission Control Protocol/Internet Protocol (TCP/IP) to detect whether or not your network media is in a "link state". A "link state" is defined as the physical media connecting or inserting itself on the network. For example, assuming a 10bt or 100bt physical media, Ethernet network adapters and hubs typically have a "link" light to indicate the current connection status. This is the same condition in which Windows can detect a link. Whenever Windows detects a "down" state on the media, it removes the bound protocols from that adapter until it is detected as "up" again. There may be situations where you may not want your network adapter to detect this state, and you can configure this by editing the registry.

To prevent your network adapter from detecting the link state:

Use Registry Editor (Regedt32.exe) to view the following key in the registry:

HKEY\_LOCAL\_MACHINE\System\CurrentControlSet\Services\Tcpip\Parameters

Add the following registry value:

Value Name: DisableDHCPMediaSense Data Type: REG\_DWORD -Boolean Value Data Range: 0, 1 (False, True) Default: 0 (False)

This parameter controls DHCP Media Sense behaviour. If you set this value data to 1, DHCP, and even non-DHCP, clients ignore Media Sense events from the interface. By default, Media Sense events trigger the DHCP client to take an action, such as attempting to obtain a lease (when a connect event occurs), or invalidating the interface and routes (when a disconnect event occurs).

Restart your computer.

### 18. Appendix K Sample 'hosts' file

127.0.0.1 localhost # Node 1 139.185.150.54 IWINRCA01 139.185.150.201 IWINRCA01-VIP 10.10.10.2 IWINRCA01-PRIV # Node 2 139.185.150.55 IWINRCA02 139.185.150.202 IWINRCA02-VIP 10.10.10.3 IWINRCA02-PRIV

If you have a DNS server you should register the following addresses in DNS

IWINRCA01 IWINRCA02 IWINRCA01-VIP IWINRCA02-VIP

The IWINRCA01-PRIV & IWINRCA02-PRIV do not benefit from being registered in DNS as clients do not need to contact these addresses.

### **19.** Appendix L Sample SPFILE

```
orcl2.
          db_cache_size=377487360
orcl1.
          db cache size=469762048
orcl2. java_pool_size=4194304
orcl1. java pool size=4194304
orcl2. large pool size=4194304
orcl1. large pool size=4194304
orcl2. shared pool size=218103808
orcl1. shared pool size=125829120
orcl2. streams pool size=0
orcl2. streams pool size=0
orcl1. streams pool size=0
orcl1.__streams_pool_size=0
*.audit_file_dest='C:\oracle\product\10.2.0/admin/orcl/adump'
*.background_dump_dest='C:\oracle\product\10.2.0/admin/orcl/bdump'
*.cluster_database_instances=2
*.cluster database=true
*.compatible='10.2.0.1.0'
*.control files='+DATA/orcl/controlfile/current.260.570585267','+FLASH/orcl/con
trolfile/current.256.570585269'
*.core_dump_dest='C:\oracle\product\10.2.0/admin/orcl/cdump'
*.db block size=8192
*.db create file dest='+DATA'
*.db domain=''
*.db file multiblock read count=16
*.db name='orcl'
*.db recovery file dest='+FLASH'
*.db recovery file dest size=2147483648
*.dispatchers='(PROTOCOL=TCP) (SERVICE=orclXDB)'
orcl2.instance number=2
orcl1.instance number=1
*.job_queue_processes=10
*.open cursors=300
*.pga_aggregate_target=202375168
*.processes=150
*.remote listener='LISTENERS ORCL'
*.remote login passwordfile='exclusive'
*.sga_target=609222656
orcl2.thread=2
orcl1.thread=1
*.undo management='AUTO'
orcl2.undo tablespace='UNDOTBS2'
orcll.undo tablespace='UNDOTBS1'
*.user_dump_dest='C:\oracle\product\10.2.0/admin/orcl/udump'
```

### 20. Appendix M Adding additional OCR & Vote devices

The best practice for the disk-based components of Oracle Clusterware is to provide redundant protection by the Oracle Software. Starting with Version 10.2 of the Oracle Clusterware the installer offers the option of either 1 or 2 OCR devices and either 1 or 3 vote devices. This apendix describes how to add a second OCR device and a second and third vote device post Oracle Clusterware install.

- It is possible to add the second Clusterware OCR device with the Oracle Clusterware software layer running.
- It is not currently possible to add new vote devices whilst the Oracle Clusterware software layer running.

### Steps to prepare the disk subsystem and Operating System for addition

### Create the additional disk partitions

You must add 1 more partition (inside an extended partition) of size at least 120MB. This will be used as the second OCR device.

You must add 2 more partitions (inside extended partitions) of size at least 20MB. These will be used as the additional vote devices.

- Best practices is that the OCR devices are on separate disks
- · Best practices is that the vote devices are on separate disks

You can share an OCR and a vote partition on the same disk in separate partitions.

Use diskmgmt.msc to create the devices. They must be visible to all the nodes in the cluster. Due to a feature in Windows 2003 you may have to reboot the nodes in the cluster which you did not use to run the disk management applet on (This restriction does not exist in Windows 2000) to make them visible.

After creating the partitions ensure that they do not have drive letters assigned. Windows has a habit of assigning drive letters even though the partitions are not formatted with a Windows file system.

### Label the partitions

The disks must be labelled using an Oracle utility called: GuiOracleObjManager.

Run this utility on the first node

### C:\oracle\product\10.2.0\crs\BIN>**guioracleobjmanager**

A windows application will appear

🔟 Oracle Object Manager					
Options Help	)				
New Link	Oracle Lin	Hard Disk	Partition	Partition Size	
	votedsk1	1	1	23.50 MEG	
		1	2	23.50 MEG	
		1	3	23.50 MEG	
	ocrcfg	1	4	117.63 MEG	
		1	5	117.63 MEG	

The original installation of the Oracle Clusterware will have labelled 2 of the disks already

You need to label the 3 new ones you added. Make sure you select the correct partitions.

To label a disk you click just to the right of the checkbox (but still in the New Link column) you should then get the opportunity to enter the label of the partition.

Add the following labels

Device	Label
Second vote device	votedsk2
Third vote device	votedsk3
Second OCR device	ocrmirrorcfg

Be careful not to change or remove the existing labels. These are currently in use by the Oracle Clusterware.

🔟 Oracle Object Manager 📃 🔍				
Options Help				
New Link Name	Oracle Lin	Hard Disk	Partition	Partition Size
	votedsk1	1	1	23.50 MEG
VOTEDSK2		1	2	23.50 MEG
VOTEDSK3		1	3	23.50 MEG
	ocrcfg	1	4	117.63 MEG
OCRMIRRORCFG		1	5	117.63 MEG

Remember to hit enter after typing each link name

When done select the Options->Commit menu item to write these changes away.

🙍 Oracle Object Manager					
Options Help					
New Link Name	Oracle Lin	Hard Disk	Partition	Partition Size	
	votedsk1	1	1	23.50 MEG	
	VOTEDSK2	1	2	23.50 MEG	
	VOTEDSK3	1	3	23.50 MEG	
	ocrcfg	1	4	117.63 MEG	
	OCRMIRR	1	5	117.63 MEG	

Then you should select Options->Sync Nodes

Finally start the guiOracleObjManager on the other node(s) in the cluster to confirm the labels are available on all nodes.

### Adding a second Oracle Cluster Registry

As previously mentioned this procedure can be completed whilst the Oracle Clusterware is active

### Add the new device

Issue the ocrconfig command

```
C:\oracle\product\10.2.0\crs\BIN>ocrconfig -replace ocrmirror \\.\ocrmirrorcfg
```

```
C:\oracle\product\10.2.0\crs\BIN>
```

### Confirm the new OCR device is added OK

You can then issue the following to make sure that 2 OCR devices are visible

Here you can see that 2 OCR devices are being used.

On each node, using the regedit command, check that the ocrmirror device has been add to the registry

🕵 Registry Editor				
<u>R</u> egistry <u>E</u> dit <u>V</u> iew <u>F</u> avorites <u>H</u> elp				
Intel     Microsoft	Name	Туре	Data	
Herosoft	(Default)	REG_SZ REG_SZ	(value not set) FALSE	
Image: Second Seco	ab]ocrconfig_loc	REG_SZ	\\.\ocrcfg	
		REG_5Z	\\.\ocrmirrorcrg	
FI-FI Policies				
ProfileCopier				
My Computer\HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE\Ocr //				

Oracle stores the key in the HKEY\_LOCAL\_MACHINE Oracle Or tree.

Do not change any values here, if the installation has been completed correctly then these values will be set.

### Adding a second and Third vote device

As previously mentioned this process must only be carried out after stopping Oracle Clusterware on all the nodes in the cluster.

### Confirm the existing configuration

You can use the crsctl command to query the state and number of vote disks

```
C:\oracle\product\10.2.0\crs\BIN>crsctl query css votedisk
0. 0 \\.\votedsk1
located 1 votedisk(s).
```

### Stop Database and Listener

You should stop any running database & listener on each node before proceeding.

### Stop the Oracle Clusterware Layer on each node

Using the Windows services applet (services.msc) stop the 'OracleCSService'. This should stop both the OracleCRService and OracleEVM Service as well as they are dependent services

Repeat on all the other node(s)

#### Add the new vote devices

Then on node1 only: issue the crsctl command to add the additional vote disks

Each command may take a few minutes to complete

```
C:\oracle\product\10.2.0\crs\BIN>crsctl add css votedisk \\.\votedsk2 -force
Now formatting voting disk: \\.\votedsk2
successful addition of votedisk \\.\votedsk2.
C:\oracle\product\10.2.0\crs\BIN>crsctl add css votedisk \\.\votedsk3 -force
Now formatting voting disk: \\.\votedsk3
successful addition of votedisk \\.\votedsk3.
C:\oracle\product\10.2.0\crs\BIN>
```

#### Restart the Oracle Clusterware services on each node

Next on each node in turn start the Oracle Clusterware on all node(s)

Use the services applet (services.msc) to start the 'OracleCRService' this should start both the OracleCSService and OracleEVM Service as well as they are dependent services.

#### Confirm the new vote devices are added OK

Finally use the crsctl command to query the state and number of vote devices

C:\ora	acle\p	roduct\10.2.0\crs\BIN>crsctl query css votedisk
Ο.	0	\\.\votedsk1
1.	0	\\.\votedsk2
2.	0	\\.\votedsk3