

Utilities

Name	Description
crsctl	Cluster control
srvctl	Server control
oifcfg	Network interface configuration tool
ocrconfig	Administer cluster registry (OCR) and local registry (OLR)
ocrcheck	Display health of Cluster or Local registry
ocrdump	Dump contents of the Cluster or Local registry
cluvfy	Cluster verification utility
olsnodes	Print information about cluster nodes

Startup Sequence

Add description here

Transparent Application Failover (TAF)

When an instance fails, connections are restored to a surviving instance. TAF is configured in the client side connect string. With a FAILOVER_MODE of "session", a new connection is made to a surviving node but no other action is taken. With a FAILOVER_MODE of "select", the query is executed again with the existing open cursor. In both cases, DML statements are rolled back. It is the responsibility of the application to detect and replay DML operations.

Fast Connect Notification / Failover (FAN and FCF)

A framework that published up/down events back to the client application when a cluster reconfiguration occurs. This allows the client to quickly reestablish connections to a surviving node.

Need to add to this.

Things to research and add

Application Continuity
 RAC One Node - Active/Passive clustered database. Runs on one node but will fail over or can be relocated to another node.
 Load Balancing - Can be done on the client side with the LOAD_BALANCE entry in the tnsnames.ora. It queries pmon to determine which instance to connect to. That is the old way. With 11gR2 this is best done with the scan listener.
 SCAN listener - The remote_listener parameter is set to the SCAN listener name:port
 FLEX Cluster - For large clusters to reduce the number of interconnects. Has hub nodes and leaf nodes

Acronyms / Terminology

Term	Description
GCS	Global Cache Services - Manages data block sharing between RAC instances
GES	Global Enqueue Services manages enqueue resources such as locks
GDS	Global Directory Service
DRM	Dynamic Resource Mastering
TAF	Transparent Application Failover
ONS	Oracle Notification Services
FAN	Fast Application Notification
FCF	Fast Connection Failover
AC	Application Continuity
SCAN	Single Client Access Name
CRS	Cluster Ready Services
HAS	High Availability Services

Log files

Log file	Location??

Oracle Support Notes

MOS NOte	Description
1268927.1	RACCheck Audit Tool

Oracle Maximum Availability Architecutre

<http://www.oracle.com/technetwork/database/availability/maa-reference-architectures-2244929.pdf>

Wait events

RAC Wait Events	Description
GC Current Block 2-Way/3-Way	This is a very long description to see how columns are resized of if they stay the same. I'm hoping column 1 will become smaller and this column will be wider
GC CR Block 2-Way / 3-Way	yyy
GC Current Grant 2-Way	
GC CR Grant 2-Way	
GC Current Block Busy	
GC CR Block Busy	
GC Current Block Congested	
GC CR Block Congested	
GC CR Request	Placeholder event



Wait events (cont)

GC Current Request Placeholder event

GC Lost block

GCS Log Flush Sync

Put difference between 2 way and 3 way waits here

Can some be combined like in book

Maybe current and CR waits can be put in two separate columns???

Dynamic Views

V\$xxx xxx

V\$yyy yyy

Clusterware Files

File Type	Description	Location
OCR	Oracle Cluster Registry	Location defined in /etc/oracle/ocr.loc and is stored on cluster file system
OLR	Oracle Local Registry	/etc/oracle/olr.loc. Default location is \$GRID_HOME/cdata/<hostname>.olr
VD	Voting Disk	"crsctl query css votedisk" returns the disk containing the voting disk. The kfed command can be used to read the location of the voting disk file from the disk header
GPnP and Play	Grid Plug and Play	Default location is \$GRID_HOME/gpnp/<hostname>/profiles/peer/profile.xml

Clusterware Architecture

Oracle Clusterware is split into two stacks- High Availability Services (HAS) and Cluster Ready Services (CRS). Startup is done using the "crsctl start crs" command executed as the root user or automatically after a reboot. The startup process is initiated from the /etc/inittab file (Linux)..

The High Availability Services are the lower level stack (starts first). It uses the OLR and the GPnP profile since ASM and the OCR is not yet available. To find the voting disk, it gets the location from the ASM disk header for the disk group containing the VD. This does not require the ASM disk group to be mounted.

The Cluster Ready Services is the higher level stack, started by the HAS.

Clusterware Troubleshooting

Run "crsctl check cluster" to get error messages

Background Processes

Process	Description
LCK(n)	Lock process n (LCK0, LCK1, etc)
LMD(n)	Global enqueue service daemon (Lock Manager) n Manages lock requests from other instances
LMHB	Lock manager heartbeat monitor
LMON	Global enqueue service monitor
LMS(n)	Global cache service n

Processes can be queried by

```
Select NAME, DESCRIPTION from v$bgprocess where PADDR != '00';
```

