



Oracle 11gR2 New Features for RAC

What's New in Clusterware!!!

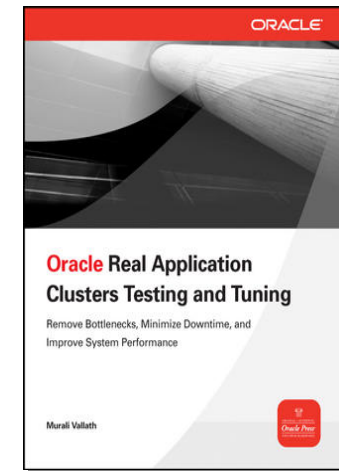
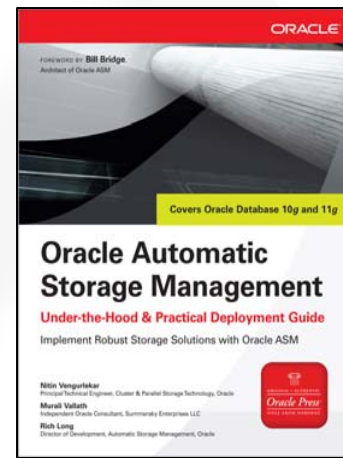
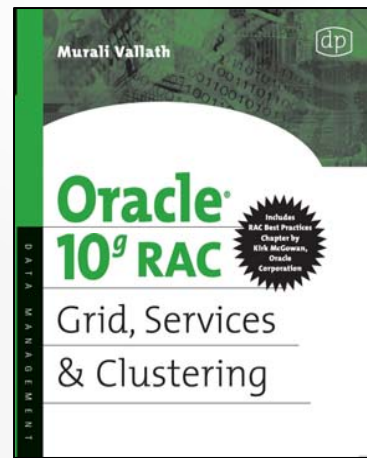
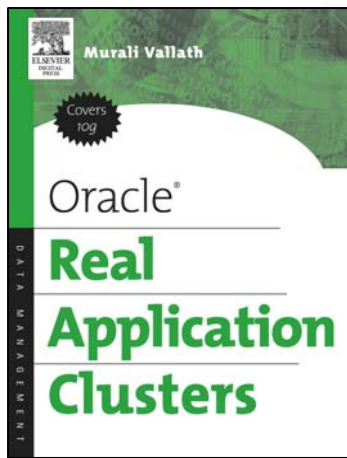
OTN Tour

(Costa Rica, Ecuador, Columbia, Peru)

About me...

Independent Oracle Consultant - **Summersky Enterprises**

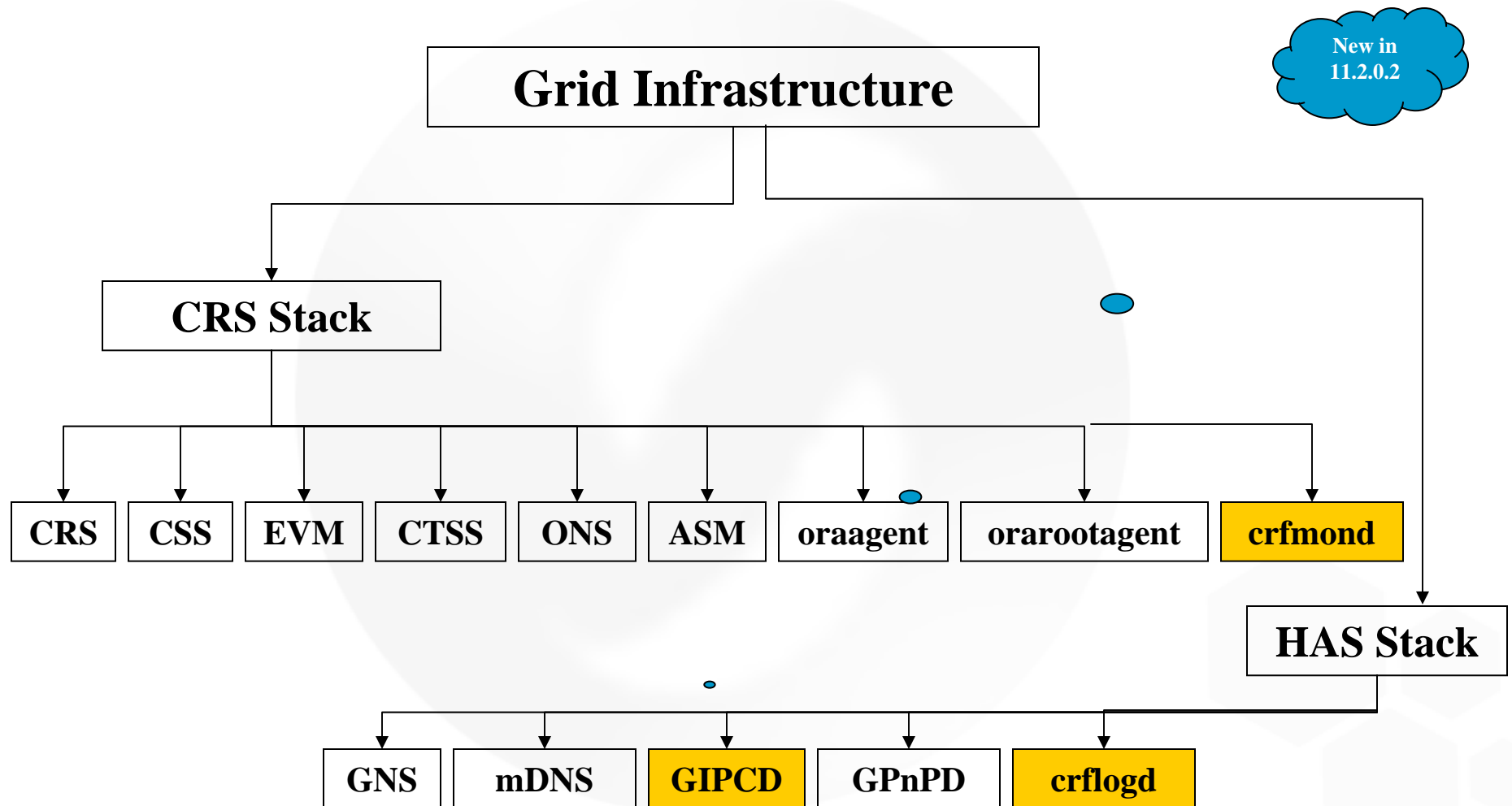
e-mail: murali.vallath@summersky.biz



Oracle Clusterware Components

- HAS stack
- CRS stack
- SCAN
- Virtual (IP)

Oracle Clusterware Components



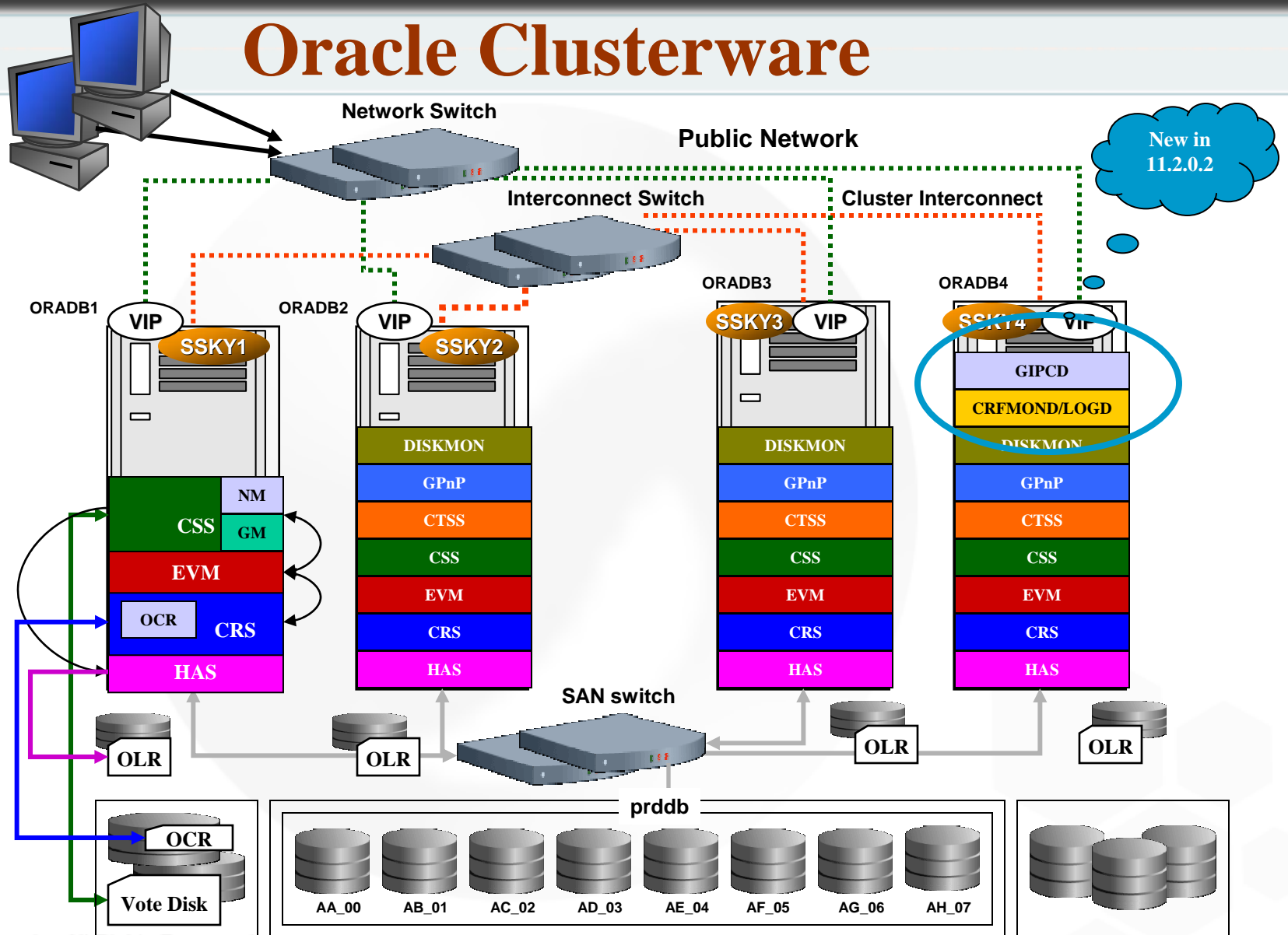
ClusterWare Files

- Oracle Cluster Registry (OCR)
- Oracle Local Registry (OLR)
- Voting Disk
- **GPnP Profile**



New in
11.2.0.2

Oracle Clusterware



GPnPD



New in
11.2.0.2

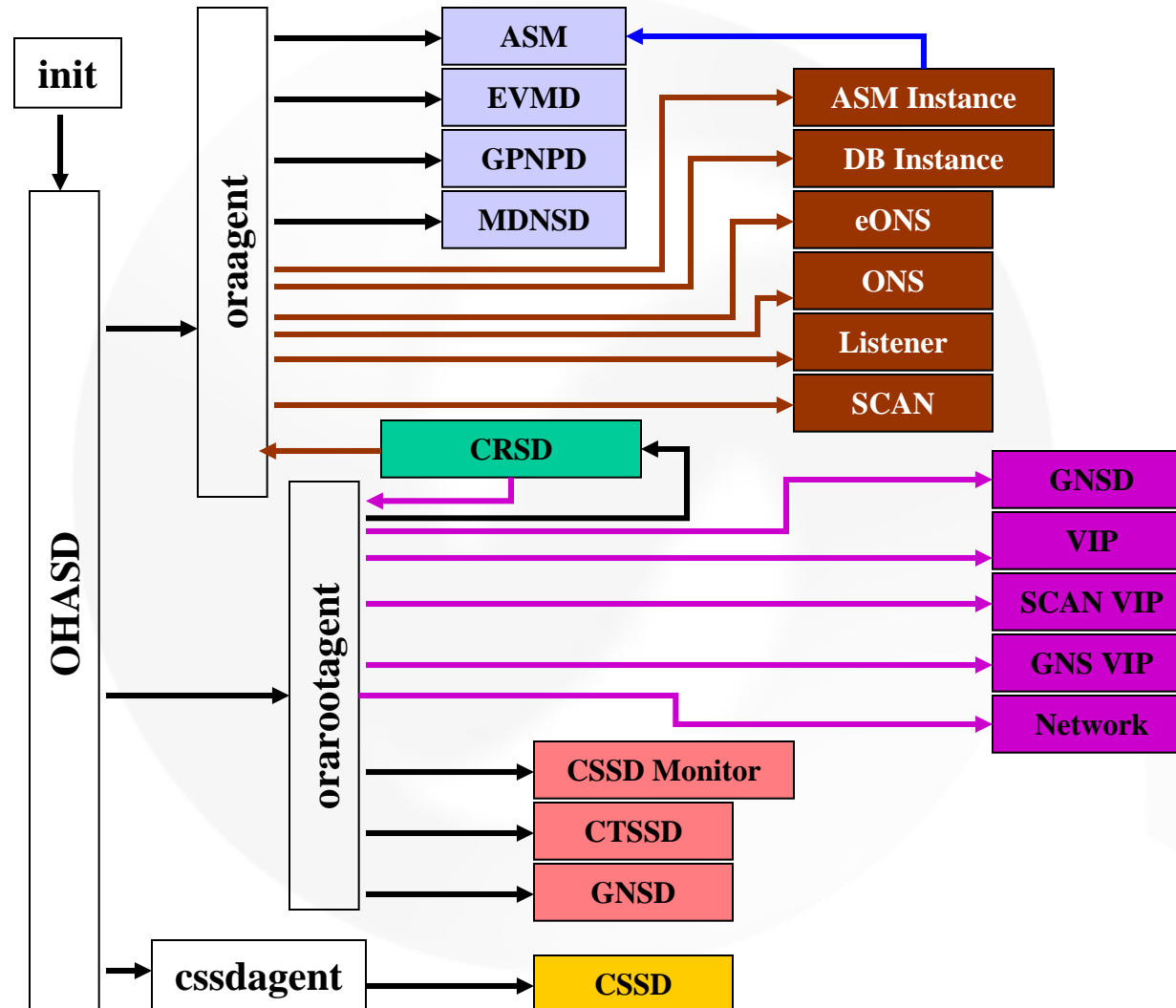
- Grid Plug and Play Daemon
- Started before CSS
- Allows easy addition and deletion of nodes
- Dynamic management of VIPs
- Maintains essential cluster information in an XML profile:
 - Cluster name and unique cluster identifier
 - Public and private network interface mappings
 - Location for the OCR and voting disks
 - Location for the ASM parameter file
- Manages and distributes the profile using the GPnP daemon
- Defines cluster name, networks and storage

GPnP Profile

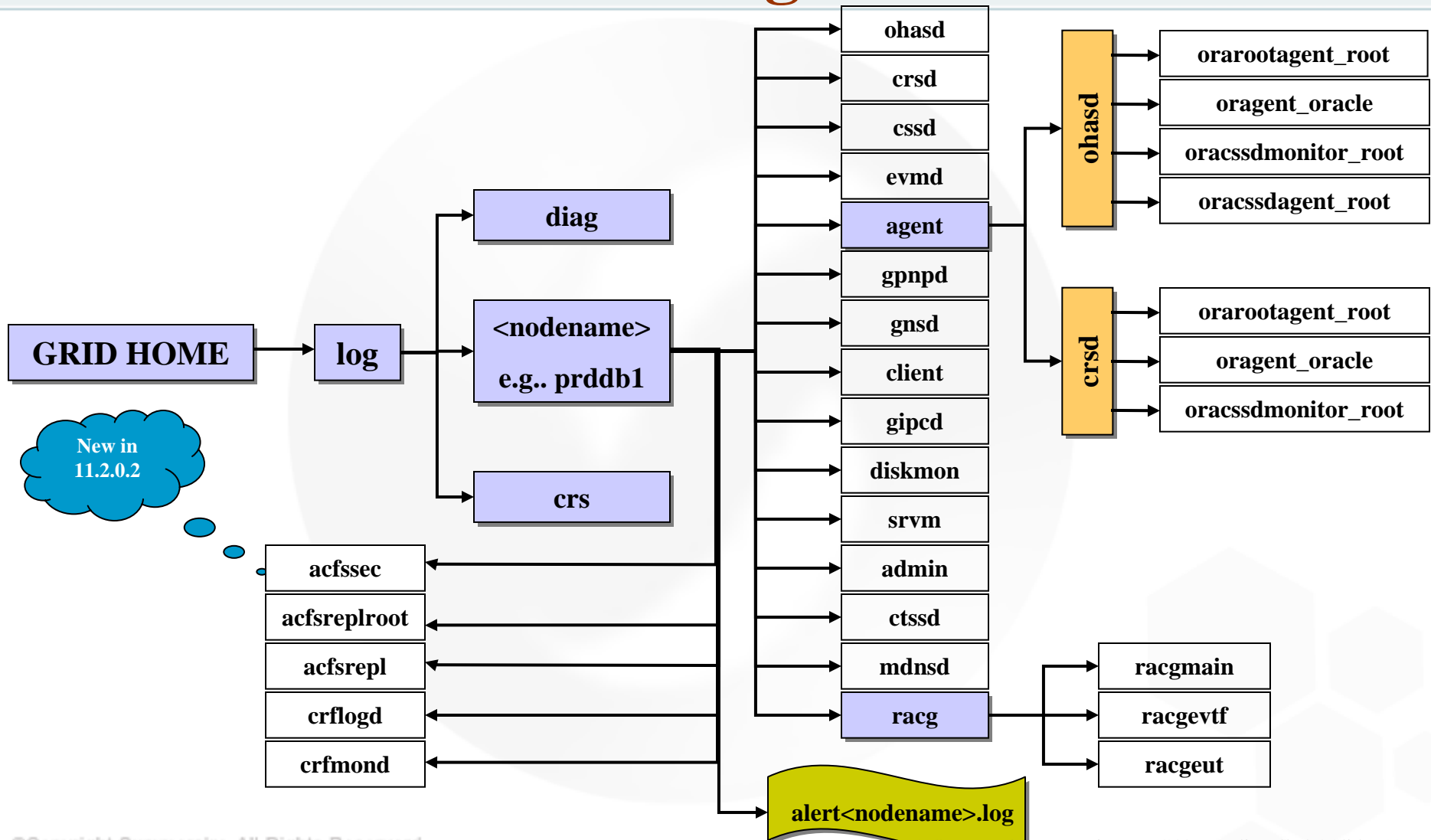
New in
11.2.0.2

```
<?xml version="1.0" encoding="UTF-8" ?>
- <gpnP:GPnP-Profile Version="1.0" xmlns="http://www.grid-pnp.org/2005/11/gpnP-profile" xmlns:gpnP="http://www.grid-
  pnp.org/2005/11/gpnP-profile" xmlns:orcl="http://www.oracle.com/gpnP/2005/11/gpnP-profile"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://www.grid-pnp.org/2005/11/gpnP-profile gpnP-
  profile.xsd" ProfileSequence="6" ClusterUIId="1a90c7ca58d54f87bfeef9b839865478" ClusterName="EGCDEVCW" PALocation="">
- <gpnP:Network-Profile>
- <gpnP:HostNetwork id="gen" HostName="*">
  <gpnP:Network id="net1" IP="192.30.0.0" Adapter="eth22" Use="cluster_interconnect" />
  <gpnP:Network id="net2" IP="192.30.0.0" Adapter="eth23" Use="cluster_interconnect" />
  <gpnP:Network id="net3" IP="192.30.0.0" Adapter="eth21" Use="cluster_interconnect" />
  <gpnP:Network id="net4" IP="10.32.7.0" Adapter="bond0" Use="public" />
</gpnP:HostNetwork>
</gpnP:Network-Profile>
<orcl:CSS-Profile id="css" DiscoveryString="+asm" LeaseDuration="400" />
<orcl:ASM-Profile id="asm" DiscoveryString="" SPFile="+EGCDEV_GRID1/egcdevcw/asmparameterfile/registry.253.740352251" />
+ <ds:Signature xmlns:ds="http://www.w3.org/2000/09/xmldsig#">
</gpnP:GPnP-Profile>
```

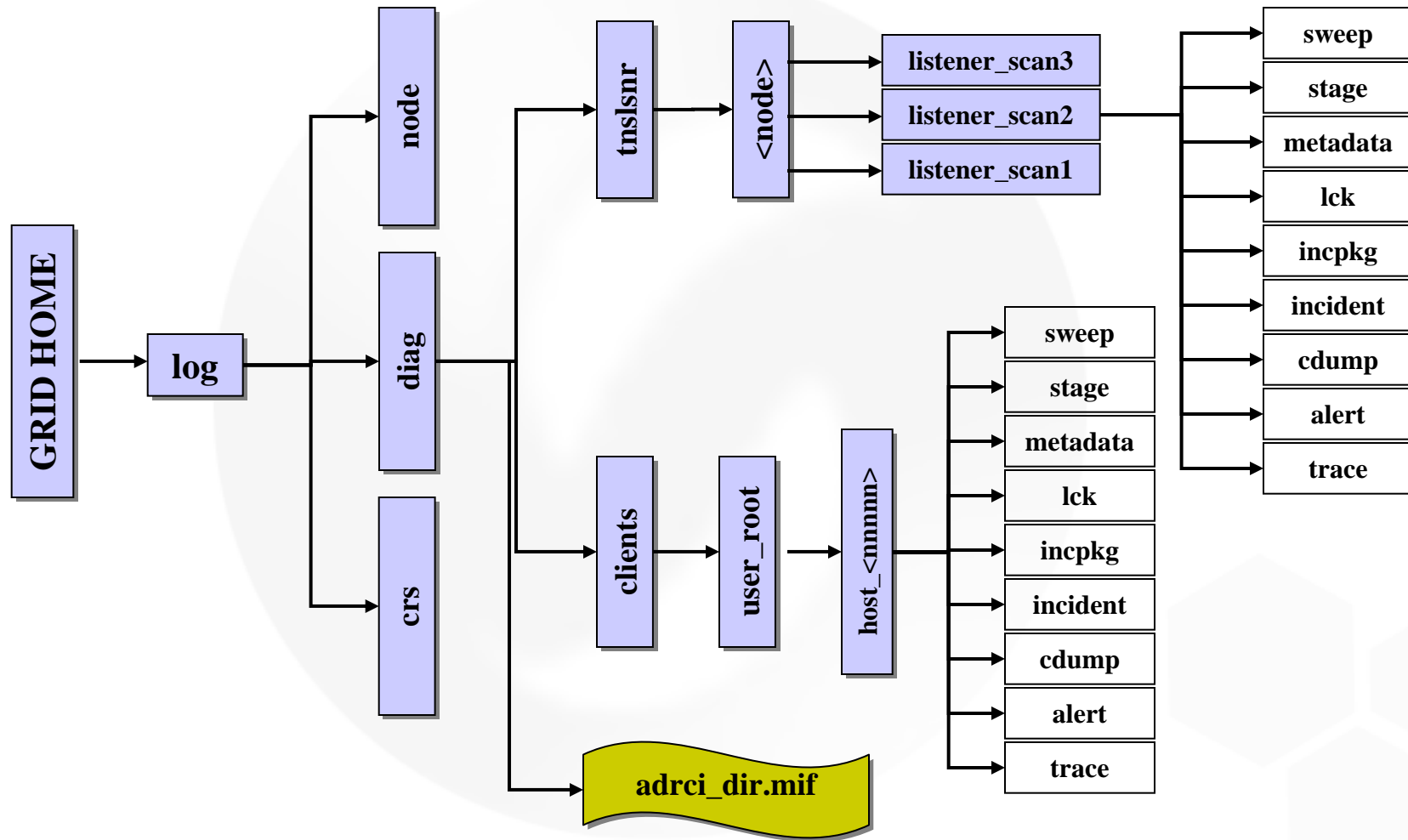

Cluster Stack Invocation



Clusterware Log Directories



Clusterware Log Directories



VIP's

- Database VIP (also called RAC VIP)
- Application VIP
- HAIP (IC VIP)



New in
11.2.0.2

Cluster Interconnect



New in
11.2.0.2

- Oracle uses the interconnect for cache synchronization
- Interconnect is also used for
 - Data blocks
 - Locks
 - SCN numbers
 - Messages

Redundant Interconnects



New in
11.2.0.2

- CLUSTER_INTERCONNECT
- NIC Bonding
- HAIP

Verify Deamons

```
$GRID_HOME/bin/crsctl stat res -t -init
```

NAME	TARGET	STATE	SERVER	STATE_DETAILS
ora.asm	1	ONLINE	ONLINE devsrv1	Started
ora.cluster_interconnect.haip	1	ONLINE	ONLINE devsrv1	
ora.crf	1	ONLINE	ONLINE devsrv1	
ora.crsd	1	ONLINE	ONLINE devsrv1	
ora.cssd	1	ONLINE	ONLINE devsrv1	
ora.cssdmonitor	1	ONLINE	ONLINE devsrv1	
ora.ctssd	1	ONLINE	ONLINE devsrv1	OBSERVER

RAC Background Process

- **ACMS – Atomic Controlfile to Memory Service**
- **GTX0-j – Global Transaction Process**
- **RMSn – Oracle RAC Management Processes (RMSn)**
- **RMSN – Remote Slave Monitor**
- **LMS – Global Cache Service Processes**
- **LMON – Global Enqueue Service Monitor**
- **LMD – Global Enqueue Service Daemon**
- **LCK – Lock Process**
- **DBRM – Database Resource Manager**
- **PING – Response time agent**



New in
11.2.0.2

SCAN


- SCAN –Single Client Access Number
- Similar to a cluster alias available on Tru64 and VMS clusters
- Helps load balance across the database cluster
- Clients do not require VIP information
- Removes the requirement to change the client connection if cluster changes
- Must resolve to atleast one address on the public network
- Best practice .. resolve to 3 addresses for the entire cluster

SCAN

- Allows clients to use EZConnect or simple JDBC connections
- Each cluster will have 3 SCAN listeners, each having a SCAN VIP defined as cluster resources on network 1
- A SCAN VIP/LISTENER will failover to another node in the cluster
- Instance registers with local listener on its node
- Database “REMOTE_LISTENER” registers instances with all SCAN listeners

Advanced Installation

Oracle Grid Infrastructure - Setting up Grid Infrastructure - Step 5 of 16

Cluster Node Information


- Installation Option
- Installation Type
- Product Languages
- Grid Plug and Play
- Cluster Node Information**
- Network Interface Usage
- Storage Option
- OCR Storage
- Moting Disk Storage
- Failure Isolation

Provide the list of nodes to be managed by Oracle Grid Infrastructure with their Public Node Name and Virtual Host Name.
If Oracle Grid Naming Service (GNS) has been selected and DHCP is enabled, then the Virtual Host Name is automatically configured for each Public Node.

Hostname	Virtual IP Name
oradb1.summersky.biz	AUTO

Add Cluster Node Information

Specify the name for the public IP address. If you want to configure the virtual host name manually, instead of allowing it to be configured automatically, then you will be prompted for the virtual IP address.

name:

Virtual IP Name:

Add Cluster Node Information

Specify a node to be part of the cluster:

Hostname:

Virtual IP Name:

Oracle Grid Infrastructure - Setting up Grid Infrastructure - Step 4 of 16

Grid Plug and Play Information

ORACLE 11g DATABASE

Single Client Access Name (SCAN) allows clients to use one name in connection strings to connect to the cluster as a whole. Client connect requests to the SCAN name can be handled by any cluster node.

Cluster Name: SSKYCW

SCAN Name: oradb-scan.gns.summersky.biz

SCAN Port: 1521

Configure GNS

GNS Sub Domain: gns.summersky.biz
For example: grid.example.com

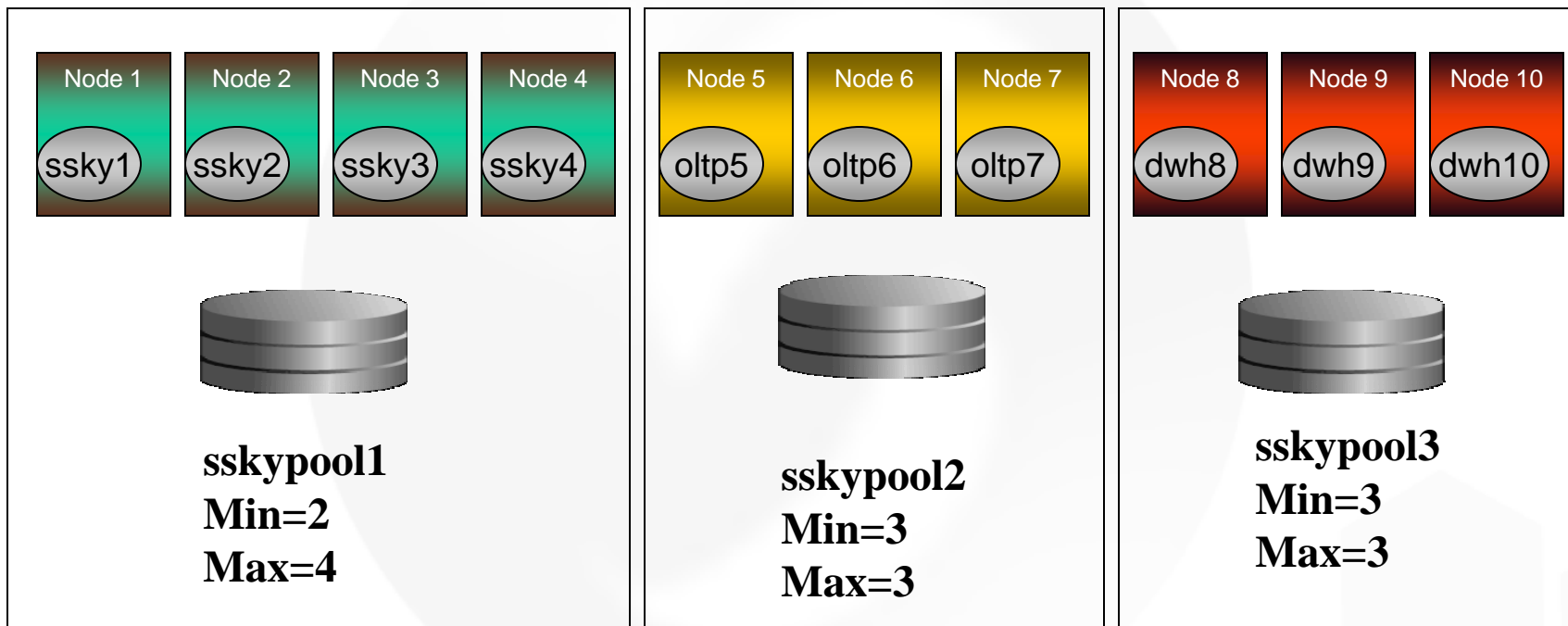
GNS VIP Address: 192.12.46.20

Help < Back Next > Finish Cancel

SCAN configuration

GNS configuration

Server Pools



Server Pools

- Logical division of the cluster into pools of servers
- Applications (e.g. databases) can be configured to run in one or more server pools
- Managed by `crsctl` (applications), `srvctl` (Oracle)
- Defined by 3 attributes:
 - MIN - minimum number of servers (default 0)
 - MAX – maximum number of servers (default 0 or -1)
 - IMPORTANCE – 0 (least important) to 1000

Server Pools

- One-to-one mapping between a database service and server pool
- A database service can only be defined to operate in one pool
 - UNIFORM – all servers in the pool
 - SINGLETON – one server in the pool
- Resources are contained in logical groups of server pools

Types of Server Pools

- System defined
 - Free
 - Generic
- User defined

Server Pools

Database Configuration Assistant, Step 3 of 13 : Database Identification

Cluster database configuration can be Policy-Managed or Admin-Managed. A Policy-Managed database is dynamic with instances managed automatically based on pools of servers for effective resource utilization. Admin-Managed database results in instances tied to specific servers.

Configuration Type: Admin-Managed Policy-Managed

An Oracle database is uniquely identified by a Global Database Name, typically of the form "name.domain".

Global Database Name:

Server pool is a group of servers that collectively work together to host database workload.

Create New Server Pool for this database

Server Pool Name:

Cardinality:

Use Existing Server Pool for this database


Select Server Pool [cardinality]:

Cancel Help Back Next

Server Pools

Database Configuration Assistant, Step 3 of 13 : Database Identification

Cluster database configuration can be Policy-Managed or Admin-Managed. A Policy-Managed database is dynamic with instances managed automatically based on pools of servers for effective resource utilization. Admin-Managed database results in instances tied to specific servers.



Database Configuration Assistant

There are not enough servers available to allocate to this Server pool. Database instances may not come up on specified cardinality. Do you want to continue?

Yes No

Server Pool Name: pocdb

Cardinality: 3

Use Existing Server Pool for this database

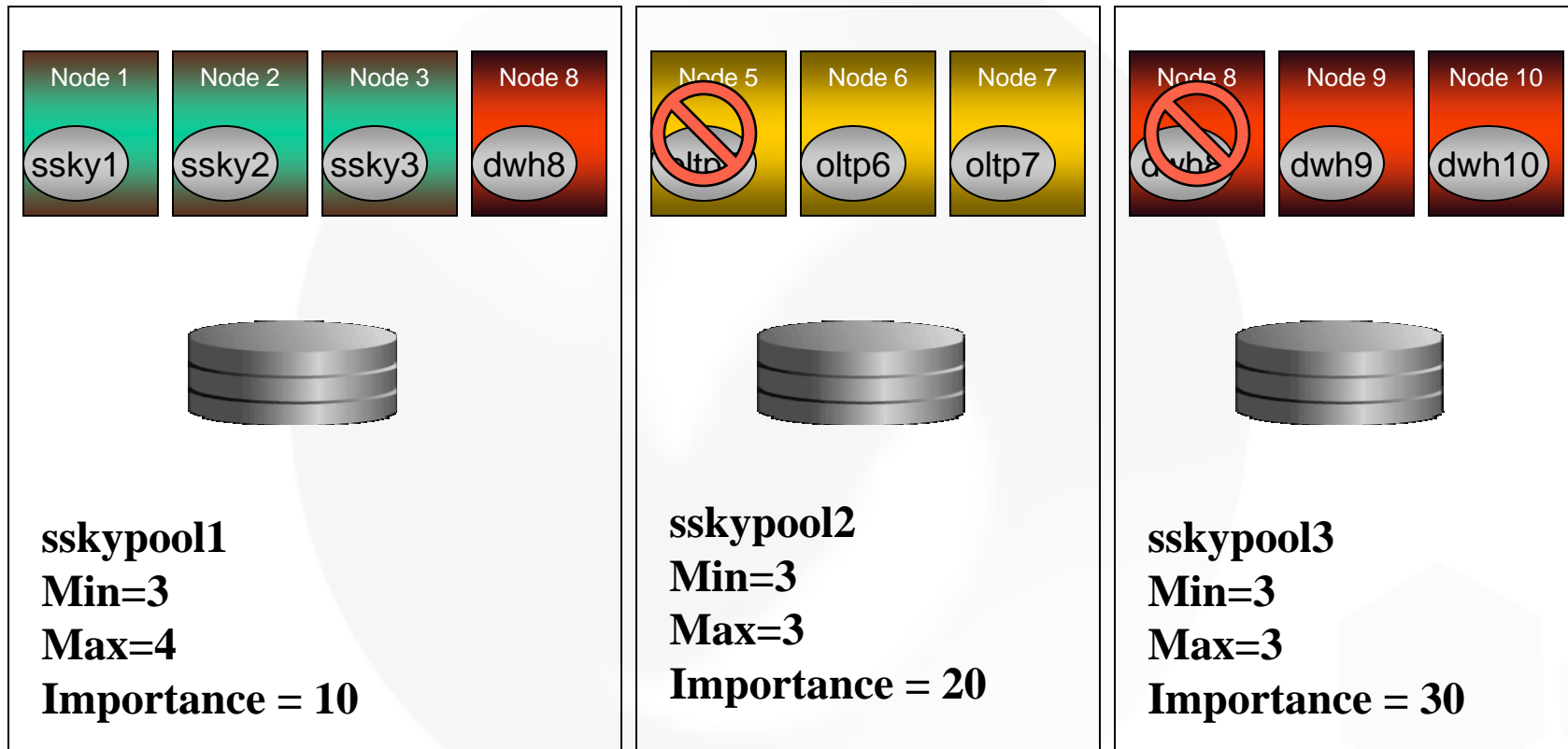
Select Server Pool [Cardinality]: obicycb [3]

Cancel Help Back Next

Server Pools



Server Pools





QUESTIONS
ANSWERS

Thanks for Listening

murali.vallath@summersky.biz