



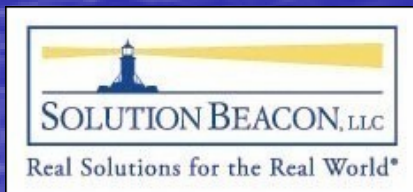
10G-RAC-ASM-OCFS-RAW-PDQ Decoded

Kevin Dahl

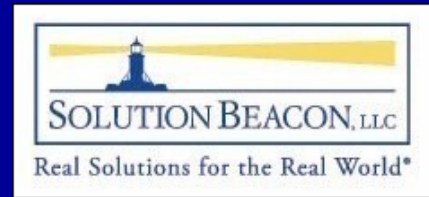
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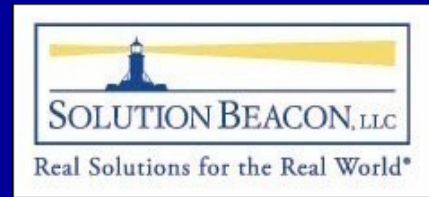


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◆ Agenda

- Introduction
- Decoding definitions
- Decoding whats in
- Decoding clusterware
- Decoding ASM
- Decoding 10g
- Decoding RAC
- RAC in the context of 11i/10g
- Conclusion

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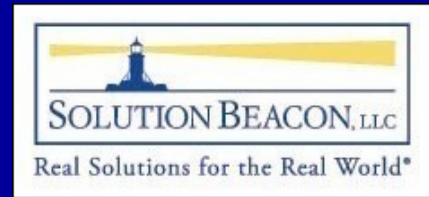


◆ Introduction

● 10G-RAC-ASM-OCFS-RAW-PDQ

- ◆ This string of acronyms represents both the old and the new
- ◆ Included in this presentation will answers to the following
 - What is the difference between Oracle Clustered File Systems, RAW devices and Automatic Storage Management
 - How do I start and stop oracle cluster services
 - Why do I need a database just for ASM?
 - How does my database communicate with ASM?

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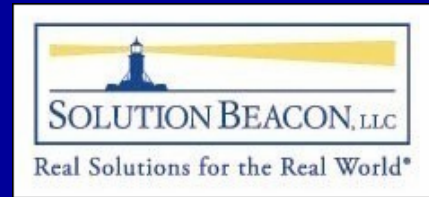


◆ Decoding definitions

● Costs

- ◆ Clusterware
- ◆ RAC
- ◆ ASM
- ◆ OCFS
- ◆ RAW
- ◆ PDQ

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◆ Decoding whats in

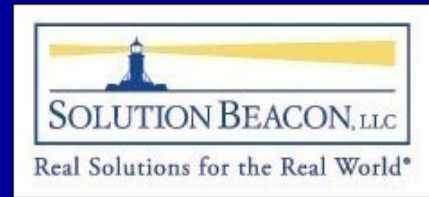
● Whats in

- ◆ Clusterware
- ◆ RAC
- ◆ ASM preferred (OCFS and OCFS2 kinda maybe...on the way out)
- ◆ PQ

● The rest is generally out

- ◆ RAW – replaced by OCFS, which in turn replaced by ASM
- ◆ PDQ – Now PQ

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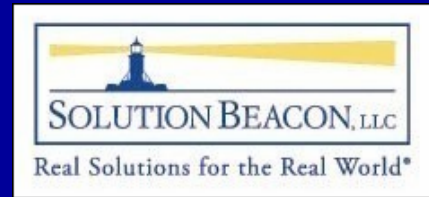


◆ Decoding whats in (major storage options)

Storage Option	OCR/voting	Oracle software	database	recovery
ASM	N	N	Y	Y
OCFS	Y	N	Y	Y
OCFS2	Y	Y	Y	Y
Local	N	Y	N	N
NFS	Y	Y	Y	N
Shared raw	Y	N	Y	N

Source: Chapter 3 - Oracle® Database Oracle Clusterware and Oracle Real Application Clusters Installation Guide 10g Release 2 (10.2) for Linux Part Number B14203-08

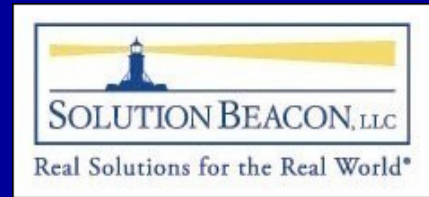
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◆ Decoding clusteware

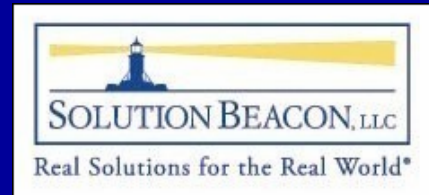
- Cluster - a cluster comprises multiple interconnected computers or servers that appear as if they are one server to end users and applications
- Oracle clusterware - a portable cluster management solution that is integrated with the Oracle database. Oracle Clusterware is also a required component for using RAC
- RAC uses Oracle Clusterware for the infrastructure to bind multiple servers so that they operate as a single system.
- Oracle Clusterware requirements:
 - ◆ Voting disk – records node membership
 - ◆ Oracle Cluster Registry (OCR) - records cluster configuration information
 - ◆ Private interconnect – private network used by the nodes (Use Datagram Protocol (UDP) on a Gigabit Ethernet)

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- ◆ Decoding clusterware...
 - Major clusterware services
 - ◆ Cluster Synchronization Services (CSS)
 - ◆ Cluster Ready Services (CRS)
 - ◆ Event Management (EVM)
 - ◆ Oracle Notification Service (ONS)
 - ◆ RACG
 - ◆ Process Monitor Daemon (OPROCD)

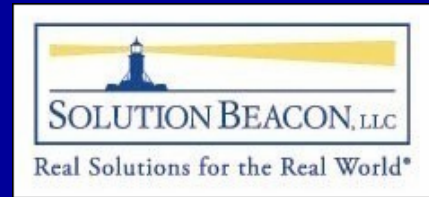
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◆ Decoding clusterware...

Oracle Clusterware Component	Linux/Unix Process
Process Monitor Daemon	oproc
RACG	racgmain, racgimon
Oracle Notification Service (ONS)	ons
Event Manager	evmd, evmd.bin, evmlogger
Cluster Ready	crsd.bin
Cluster Synchronization Services	init.cssd, ocssd , ocssd.bin

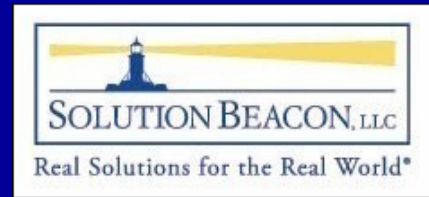
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◆ Decoding clusterware...

● How to Stop Oracle Clusterware or Cluster Ready Services Processes

- ◆ Shut down any processes in the Oracle home on each node that might be accessing a database
- ◆ Shut down all Oracle RAC instances on all nodes
 - `$ oracle_home/bin/srvctl stop database -d prod1`
- ◆ Shut down all ASM instances on all nodes
 - `$ oracle_home/bin/srvctl stop asm -n racnode1`
- ◆ Stop all node applications on all nodes
 - `oracle_home/bin/srvctl stop nodeapps -n racnode1`
- ◆ Log in as the root user, and shut down the Oracle Clusterware or CRS process
 - `# CRS_home/bin/crsctl stop crs`



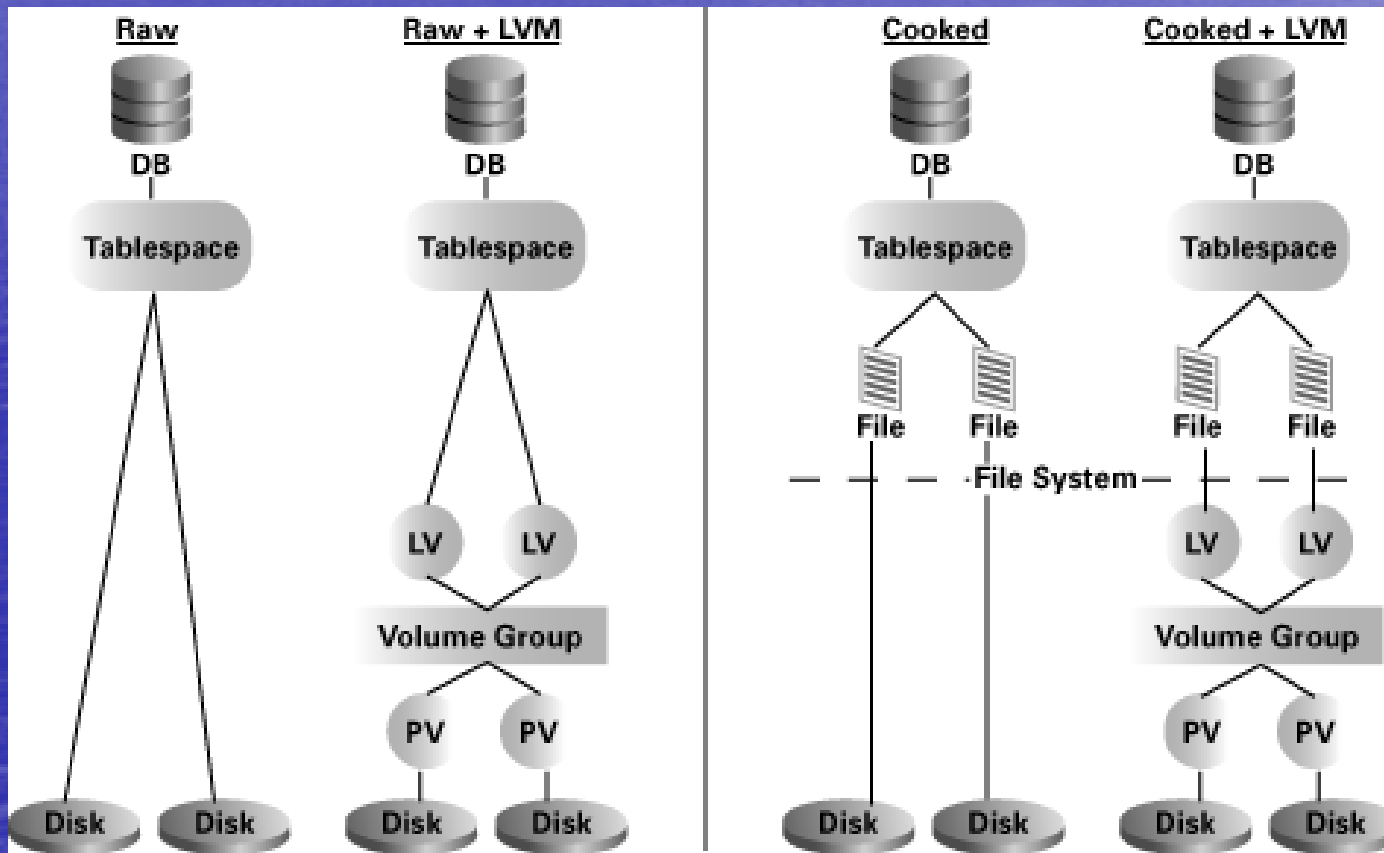
◆ Decoding ASM

- The Automatic Storage Management (ASM) feature of Oracle Database 10g provides a **virtualization layer** between the database and storage so that multiple disks can be treated **as a single disk group** and disks can be dynamically added or removed while keeping databases online. Existing data will automatically be spread across available disks for performance and utilization optimization II the ASM support library, ASMLib

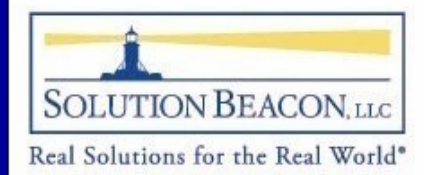
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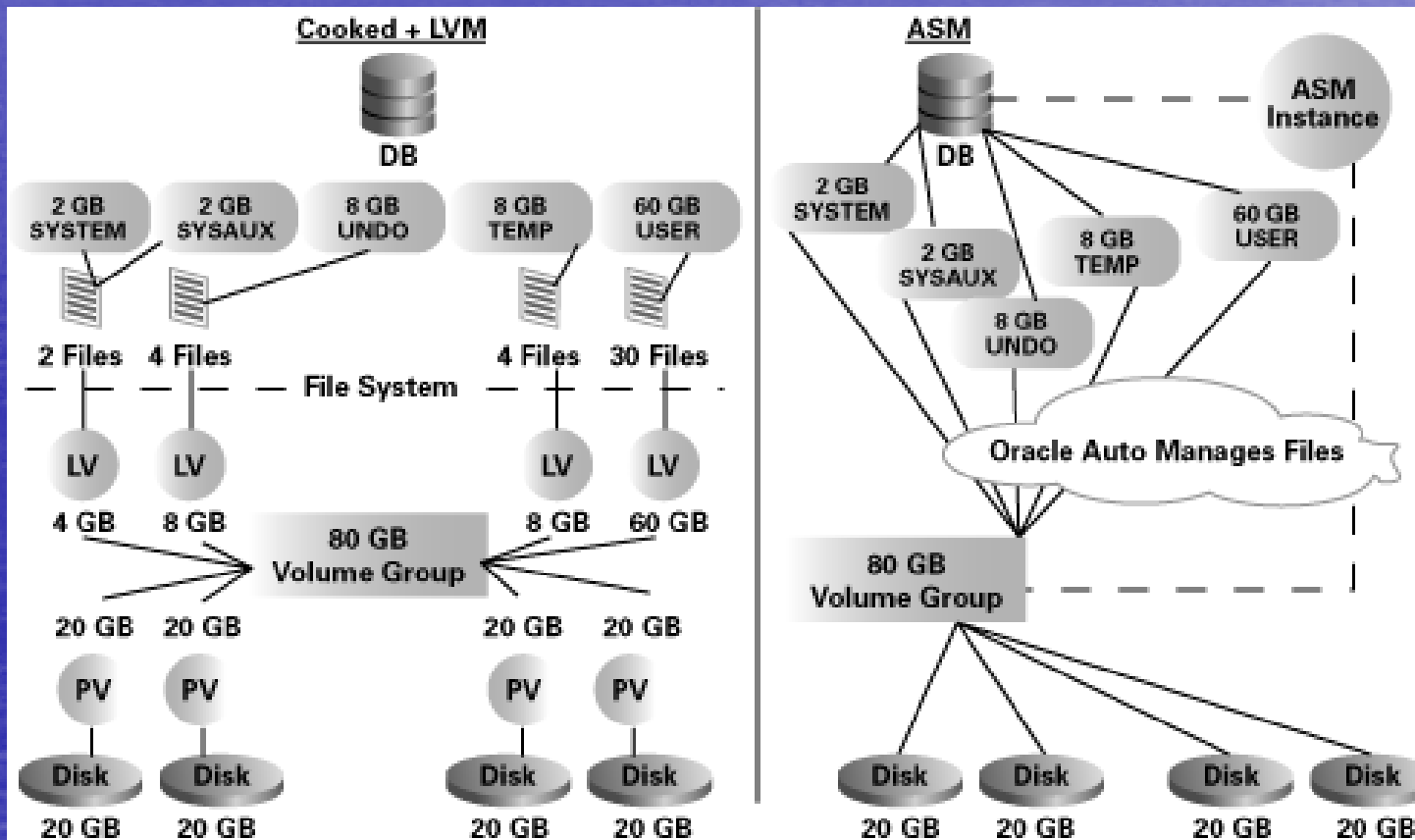
Overview of ASM-traditional non ASM storage



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Overview of ASM-cooked vs. ASM



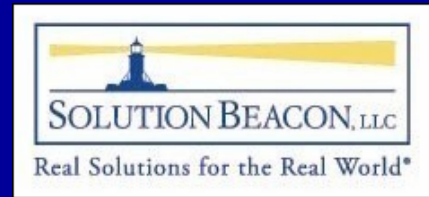
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◆ Decoding 10g

- Application Development – 7 general subtopics listed
- Availability – 3 general subtopics listed
- Business Intelligence – 5 general subtopics listed
- Clustering – 3 general subtopics listed
- Content Management – 2 general subtopics listed
- Database Overall
- Database Security – 4 general subtopics listed
- Grid Computing – 2 general subtopics listed
- Grid Management – 4 general subtopics listed
- Information Integration – 2 general subtopics listed
- Location Services – 5 general subtopics listed
- Performance and Scalability – 2 general subtopics listed
- Server Manageability
- Windows – 4 general subtopics listed

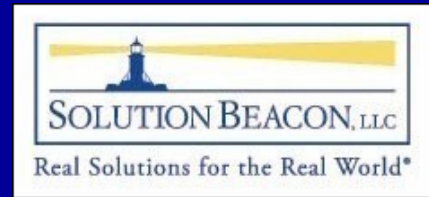
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◆ Decoding 10g

- Easier Manual Upgrades – 1 common script covers multiple versions
- Enhanced Pre-Upgrade Information Utility – utlu102i.sql, lists pre-upgrade tasks
- Default DATA_PUMP_DIR Directory Object – DBA doesn't have to pre-create
- SQL*Plus XQuery Support – start with xquery, then xml, then / on single line

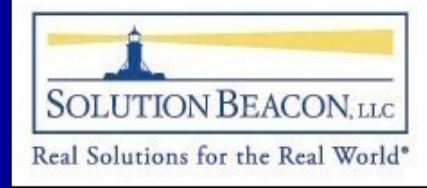
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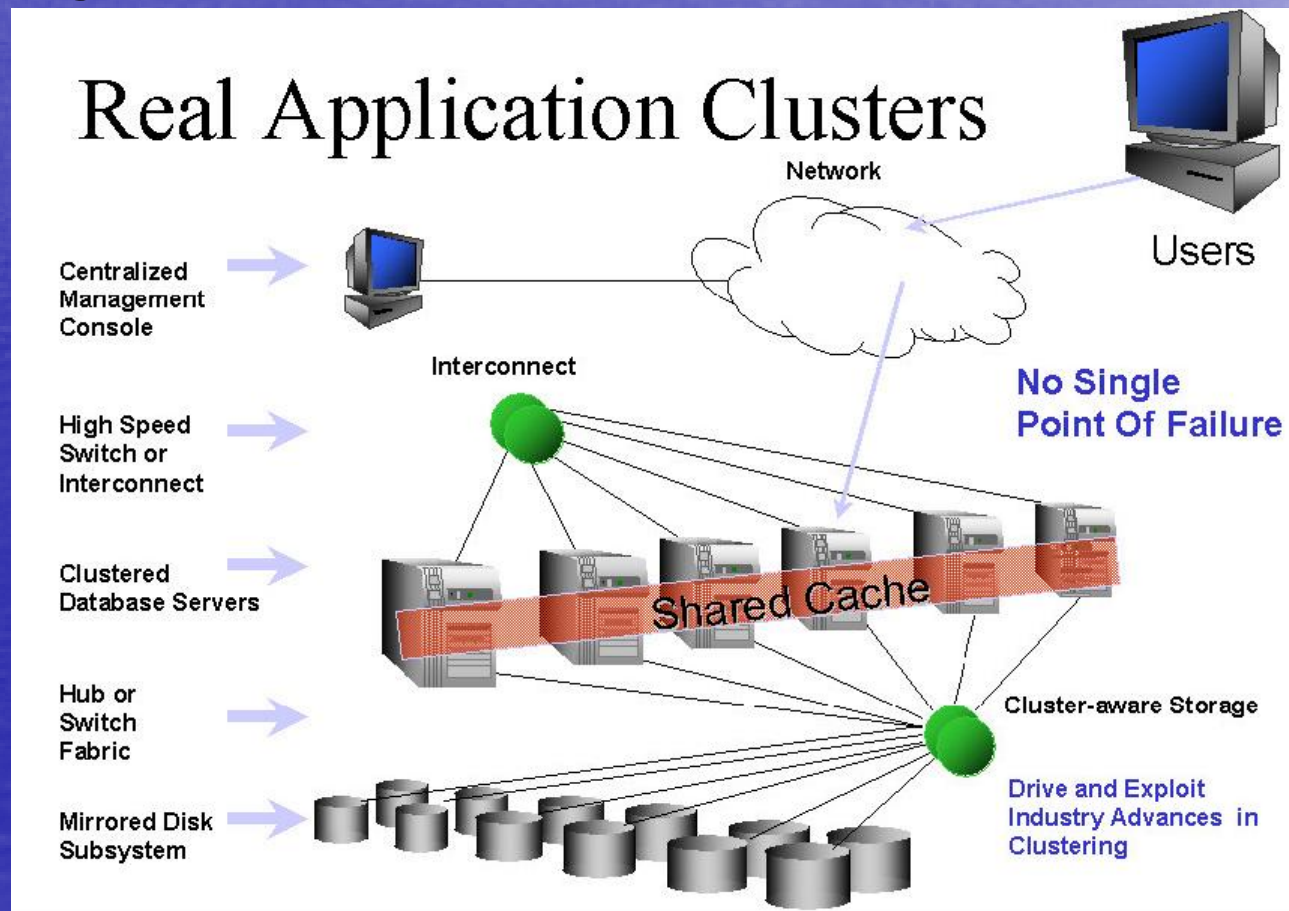
◆ Decoding 10g

- Improvement to EM and elimination of some *init.ora* parms
 - ◆ Simplified Configuration – *init.ora* parms, *net services*
 - ◆ Automatic Undo Retention Enhancement – *UNDO_RETENTION* eliminated, *db_cachesize*
 - ◆ Net Services Administration in EM console – *TAF*, for example
 - ◆ Diagnosis of Hung or Extremely Slow Databases Through EM - *provides access to hard to get SGA diagnostic info*
 - ◆ *Optimizer is different, can conflict with code tuned for 9i*

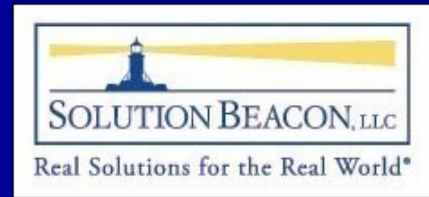
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◆ Decoding RAC



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◆ Decoding RAC

● Benefits

- ◆ Non Disaster/Recovery high availability
- ◆ Increased performance via scalability
- ◆ Depending on user base(#), would be able to use “commodity” hardware and operating system

● Costs

- ◆ Increased time and complexity of implementation and subsequent maintenance
 - CRS implementation/administration
 - ASM implementation/administration
 - Other DBA tasks
- ◆ Additional machines to administer
 - At a minimum, the dba tier hardware would double
- ◆ Increased license cost

- If you need high availability, RAC has never been better

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- ◆ Decoding RAC in the context of 11i/10g
 - Install 11i software on tier box-upgrade existing 11.5.9 via SB rapid migration technique
 - Install Oracle Clusterware 10.2.0.1
 - Install Oracle Database Software 10.2.0.1
 - Install Database Components from Oracle 10g (10.2.0.1) Companion CD
 - Upgrade Cluster Ready services , database software to 10.2.0.2
 - Upgrade Oracle9i (9.2.0.6) Database to 10g (10.2.0.2)
 - Create ASM Instances/Diskgroups
 - Convert to OATM
 - Convert 10g Database to RAC
 - Enable AutoConfig on Applications Database Tier
 - Establish Applications Environment for RAC
 - Configure Parallel Concurrent Processing
 - Conversion to shared application file system

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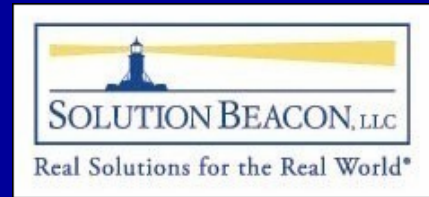


◆ Conclusion

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- ◆ The goal of this presentation was to clarify, define and explain the above concepts. Because Oracle is continuously improving its product set old product and versions gain features, de-emphasize other features or remove those features altogether. 10Gr2 is a clear demonstration of Oracle's effort to simplify and thereby reduce the TCO of RAC

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◆ Presentation references

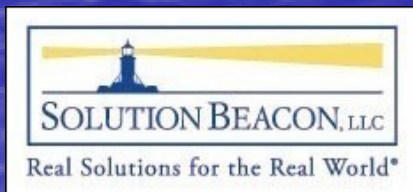
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- Oracle® Applications System Administrator's Guide - Configuration Release 11i Part No. B13925-06
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- Using Oracle Applications with a Split Configuration Database Tier on Oracle 10g Release 2 – metalink note 369693.1
- Shared APPL_TOP FAQ – metalink note 243880.1
- Sharing the Application Tier File System in Oracle Applications 11i - metalink note 233428.1
- Oracle® Database New Features Guide 10g Release 2 (10.2) - Part Number B14214-02
- Oracle Real Application Clusters 10g May] 2005 Author: Barb Lundhild Contributing Authors: Peter Sechser

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Questions and Answers



Thank you!

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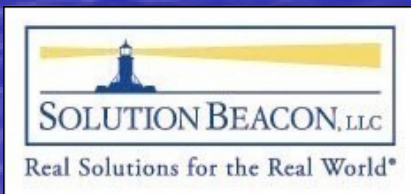
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