ORACLE REAL APPLICATION CLUSTERS

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- Option of Oracle Database 11g Enterprise Edition
- $20,000/cpu or $400/named user plus
- Included with Oracle Database 11g Standard Edition
- Supports up to100 nodes
- Oracle Clusterware
- Data Center High Availability
- Low Cost Scalability
- Automatic Workload Management
- Single image installation and management

Oracle Real Application Clusters (RAC) is an option to the award-winning Oracle Database Enterprise Edition. Oracle RAC is a cluster database with a shared cache architecture that overcomes the limitations of traditional shared-nothing and shared-disk approaches to provide a highly scalable and available database solution for all your business applications. Oracle RAC provides the foundation for enterprise grid computing.

What is RAC?

Oracle's Real Application Clusters (RAC) option supports the transparent deployment of a single database across a cluster of servers, providing fault tolerance from hardware failures or planned outages. Oracle RAC running on clusters provides Oracle's highest level of capability in terms of availability, scalability, and low-cost computing. Oracle RAC supports mainstream business applications of all kinds. This includes OLTP, DSS, and Oracle's unique ability to effectively support mixed OLTP/DSS environments. This also includes popular packaged products such as SAP, PeopleSoft, Siebel, and Oracle E*Business Suite, as well as custom applications.

Oracle RAC provides a single image installation and management. The DBA has a single point of control to install and manage a RAC cluster from the GUI interface or command line.

Oracle Database 11g includes Oracle Clusterware, a complete, integrated clusterware management solution available on all Oracle Database 11g platforms (excluding OS/390). This clusterware functionality includes mechanisms for cluster messaging, locking, failure detection, and recovery. For most platforms, no 3rd party clusterware management software need be purchased. Oracle will, however, continue to support select 3rd party clusterware products on specified platforms.

Oracle Clusterware includes a High Availability API to make applications highly available. Oracle Clusterware can be used to monitor, relocate, and restart your applications. With Real Application Clusters, Oracle Clusterware automatically manages all Oracle processes.

Continuous Availability

Oracle RAC provides very high availability for applications by removing the single point of failure with a single server. If a node in the cluster fails, the Oracle Database continues running on the remaining nodes. Individual nodes can be shutdown for maintenance while application users continue to work.

Fast Application Notification (FAN), enables end-to-end, lights-out recovery of applications and load balancing when a cluster configuration changes. A FAN event is posted and server-side callouts are executed when a state change occurs within the

cluster. Server-side callouts can be used to automate activities such as start/stop application programs, page or email the DBA, open a trouble ticket. The application tier can receive the FAN event and react appropriately. Oracle Database 11g JDBC, ODP.NET, OCI, and Oracle Application Server 10g are integrated with FAN. The Oracle connection pools will automatically clean up connections to an instance when a down event is received and create new connections when an up event is received.

Flexible Scalability

Oracle Real Application Clusters provides flexibility for scaling applications. To keep costs low, clusters can be built from standardized, commodity-priced processing, storage, and network components. When you need more processing power, simply add another server without taking users offline servers to gain horizontal scalability. Oracle Clusterware and Oracle RAC support up to 100 nodes in the cluster.

Automatic Workload Management

With Oracle Database 11g, application workloads can be defined as Services so that they can be individually managed and controlled. DBAs control which processing resources are allocated to each Service during both normal operations and in response to failures. Users connecting to a Service are load balanced across the cluster. Performance is tracked on a per Service basis by the Oracle Database 11g Automatic Workload Repository facility. Thresholds on performance metrics can be set to automatically generate alerts should these thresholds be crossed. Services are integrated with the Database Resource Manager, to control the resources within an instance that a group of users are given. Services provide location transparency with queues when using Oracle Streams Advanced Queuing. Through the Scheduler feature, batch job classes can be mapped to services.

To provide the best possible throughput of application transactions, Oracle Database 11g JDBC Implicit Connection Cache, OCI Session Pools, and ODP.NET connection pools provide intelligent load balancing for applications called Runtime Connection Load Balancing. The connection pools are updated with the current service response being supplied by the active database instances. When an application gets a connection, instead of receiving a random free connection, it is given the free connection that will provide the best possible response based on current processing activity in the cluster.

Enabling Enterprise Grids

Oracle RAC enables enterprise Grids. Enterprise Grids are built from standardized, commodity-priced processing, storage, and network components. Oracle RAC enables the Oracle Database to run on this platform and provides the highest levels of capability in terms of availability and scalability. Nodes, storage, CPUs, and memory can all be dynamically provisioned while the system remains online. This allows service levels to be easily and efficiently maintained while lowering cost still further through improved utilization. Oracle Database 11*g* dramatically reduces operational costs and provides the flexibility to make systems more adaptive, proactive, and agile.