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¡Bienvenidos!

y

Muchas Gracias

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Noviembre, 2011

ORACLE
10g Certified Master

Experiencias de Implementación de Cloud Computing

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Basada en las siguientes presentaciones:

- Database Cloud Overview

  Michael Timpanaro-Perrotta, Oracle
  Pat Bangalore, Oracle
  Jason Reinhardt, Executive Manager DB Services, CBA

  Presenting with
  CommonwealthBank

- Best Practices for Implementing Platform Consolidation in a Database Cloud

  Raj K. Kammend
  Director of Product Strategy

  Presenting with
  SNCF

- Effectively Using Oracle Active Data Guard For Multiple Purposes

  Emre Baransel - DBA - Turkcell
  Devrim Bahar - Manager - Turkcell

  TURKCELL

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Agenda

- Database Cloud Capabilities
- Cloud Architectures and Deployment Methods
- Consolidation Best Practices
- Customer Case Study – TurkCell

Definición NIST de Cloud Computing

National Institute of Standards and Technology

- Cloud Computing es un modelo que habilita el acceso bajo demanda a un conjunto de recursos computacionales (Ej: redes, servidores, almacenamiento, aplicaciones y servicios) y que pueden ser rapidamente provisionados y liberados con un mínimo esfuerzo administrativo.

  Este modelo conlleva alta disponibilidad y esta compuesto de:

5 Essential Characteristics
- On-demand self-service
- Resource pooling
- Rapid elasticity
- Measured service
- Broad network access

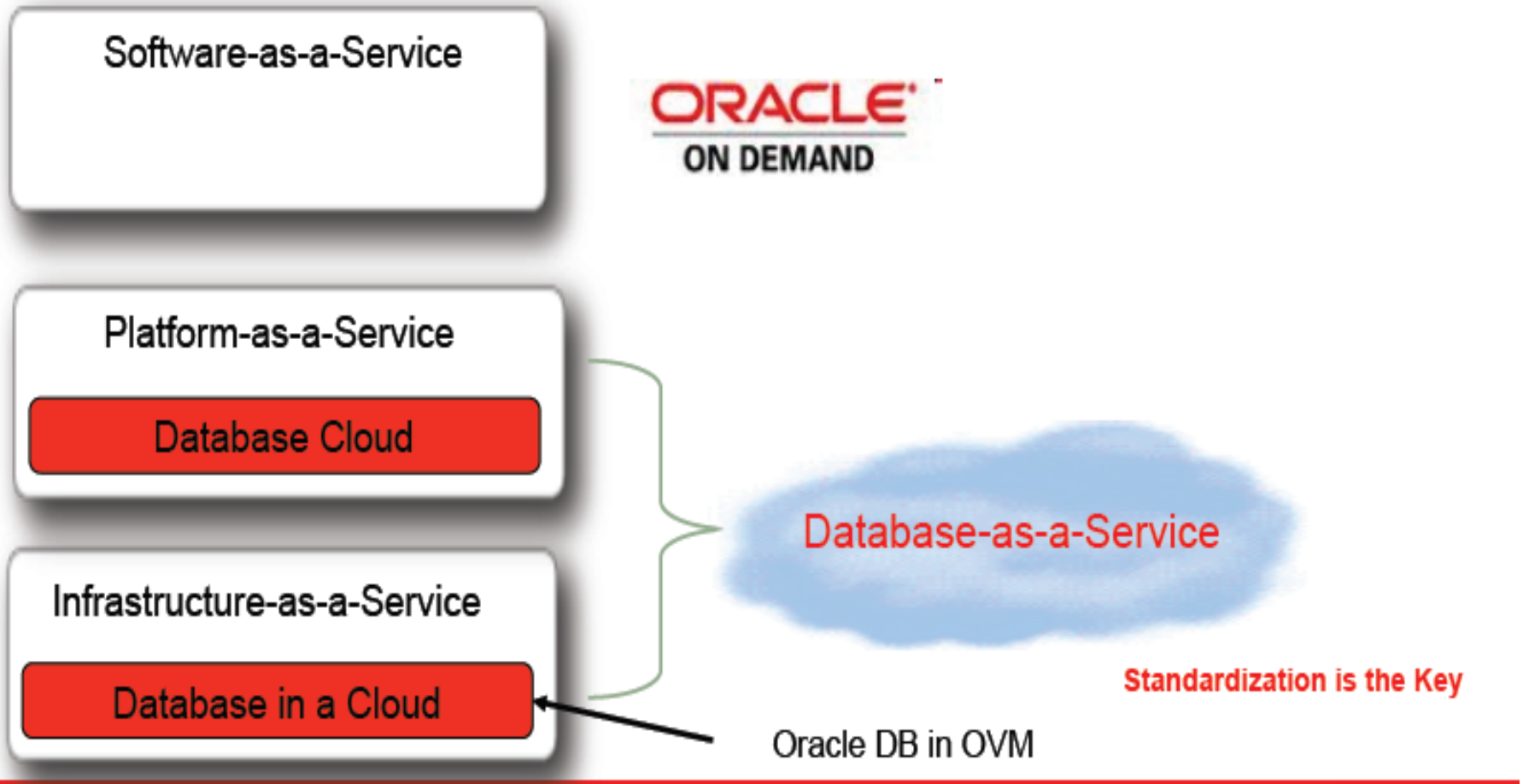
3 Service Models
- SaaS
- PaaS
- IaaS

4 Deployment Models
- Public Cloud
- Private Cloud
- Community Cloud
- Hybrid Cloud

Source: NIST Definition of Cloud Computing v15

Database as a Service

Two alternatives to deploy DBaaS



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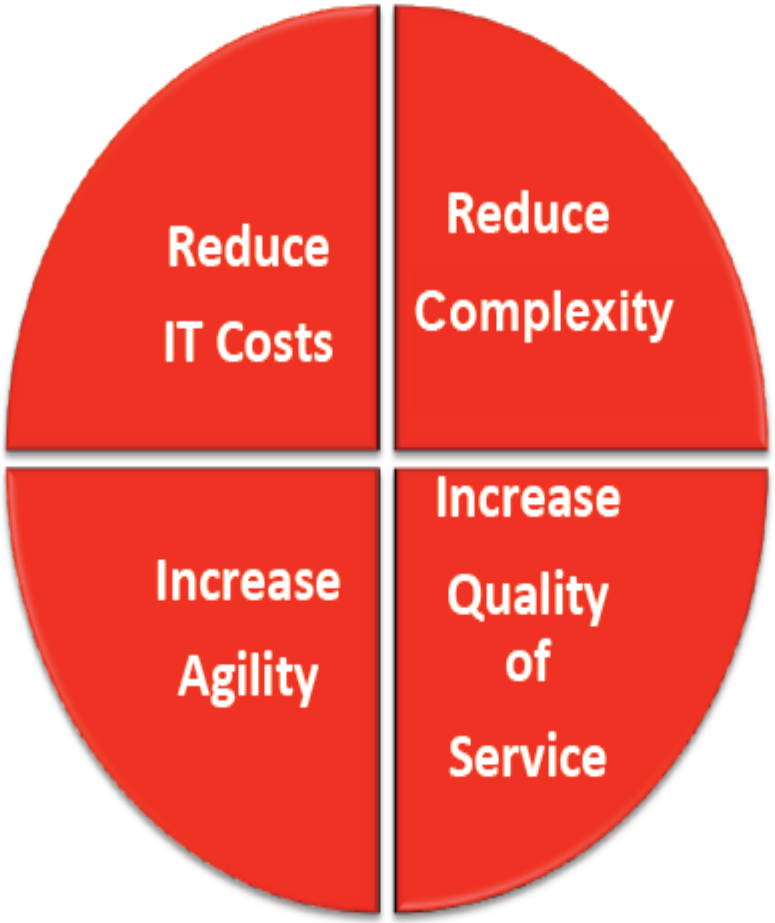
Database Cloud Business Drivers

Lower:
- CapEx
  - Servers
  - Storage
  - S/W licenses
- OpEx
  - Maintenance
  - Management



Reduce:
- Configurations
- Services

Standardize:
- OS
- DB Versions

Enable:
- Online changes
- Rapid response
- Faster Time to market

Enhance:
- IT service time
- Availability
- Security

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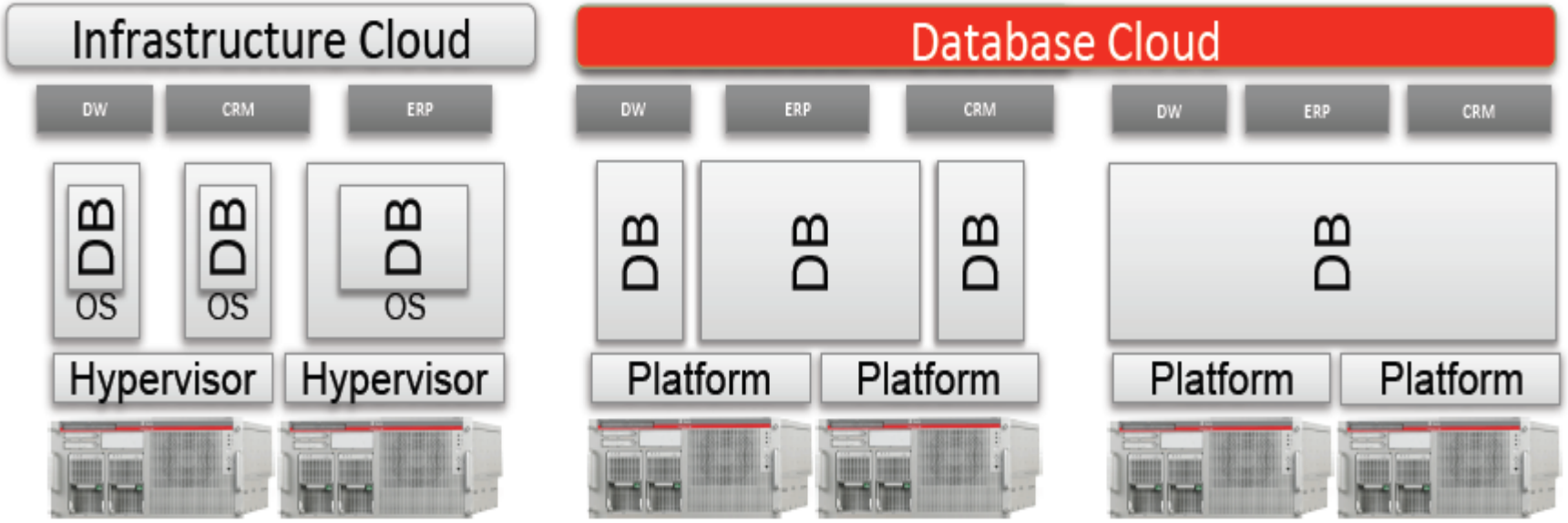
Database Cloud Architectures

Common building blocks are shared server and storage pools



Server Consolidation

Deploy in dedicated VMs
Server virtualization

Platform Consolidation

Share server pool
Real Application Clusters

Database Consolidation

Share database instances
Real Application Clusters

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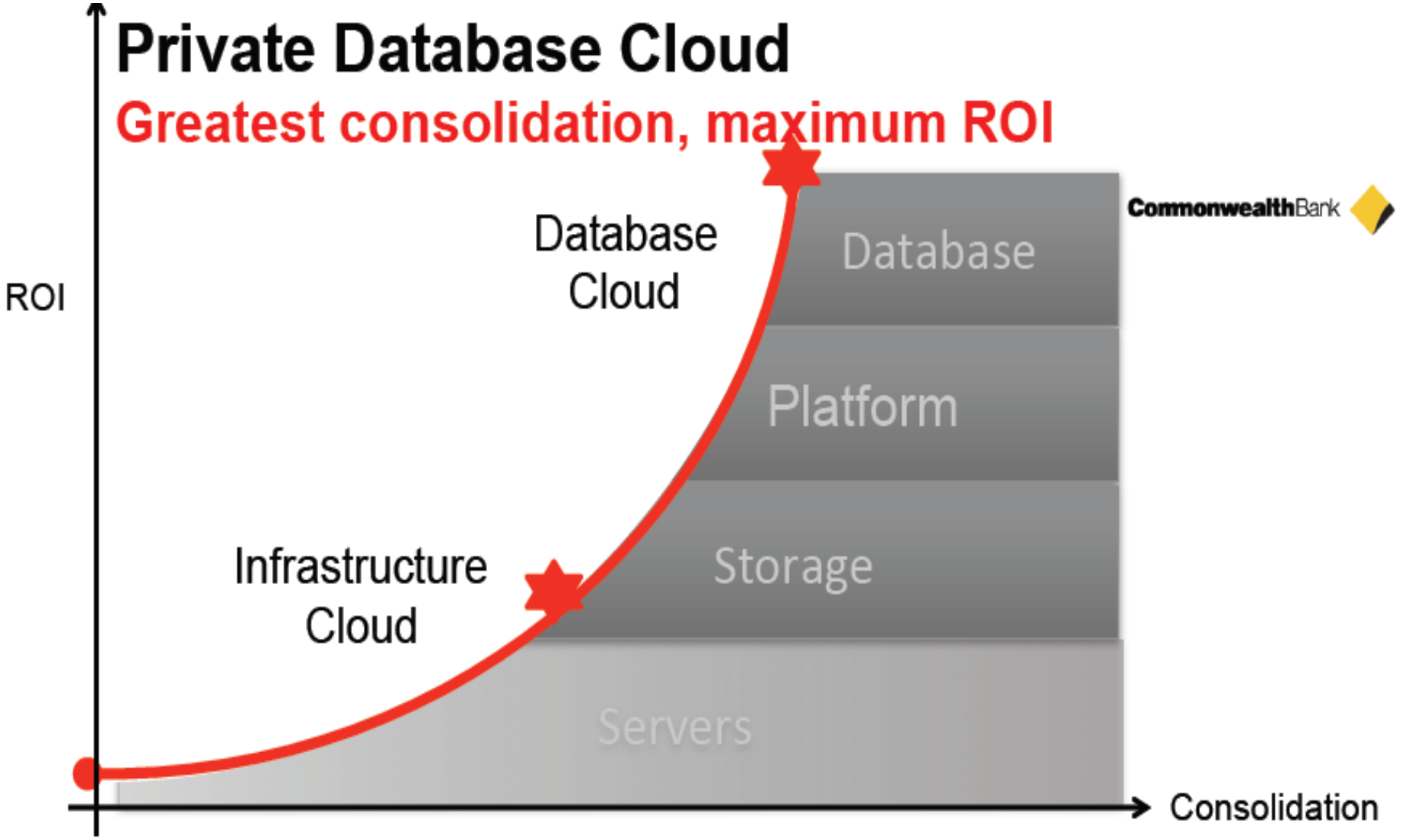
Private Database Cloud

Greatest consolidation, maximum ROI



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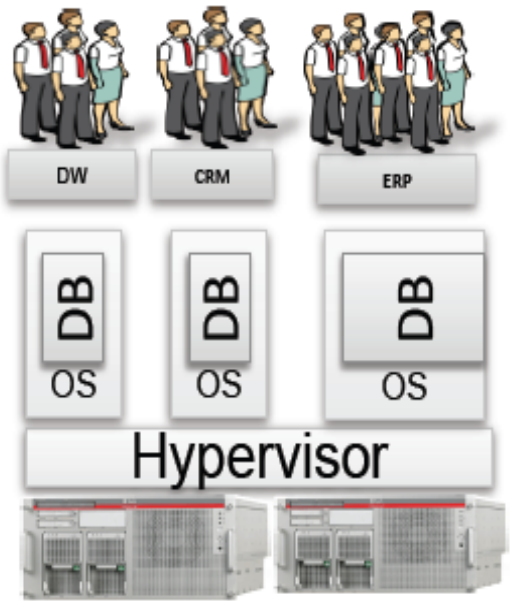
Infrastructure Cloud

Server - Provision a Database in a VM

- Reasons for adoption
  - Simple to implement
  - Excellent isolation
  - Mixed workloads
  - As-is consolidation
  - Legacy support
- Customer concerns
  - Lower consolidation density
  - Lower ROI
  - Performance (latency)
  - Managing sprawl
  - Not suitable for all deployments



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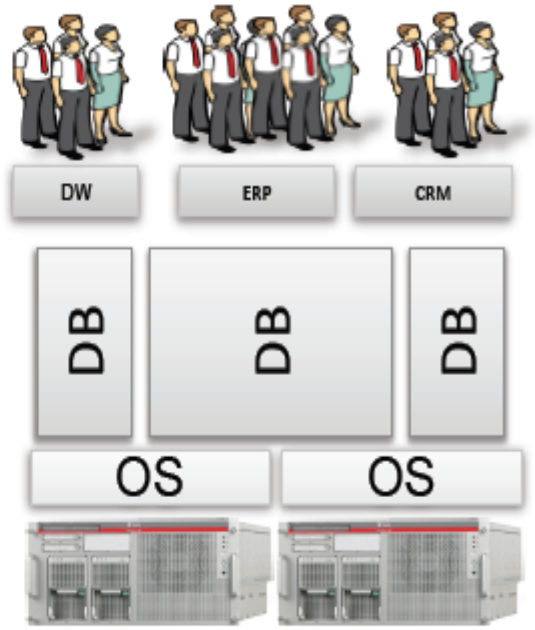
Private Database Cloud

Platform – Provision Database

- Reasons for adoption
  - Consolidation density
  - Good ROI
  - Performance
  - Supports any app
- Customer concerns
  - Requires OS standardization
  - Database only



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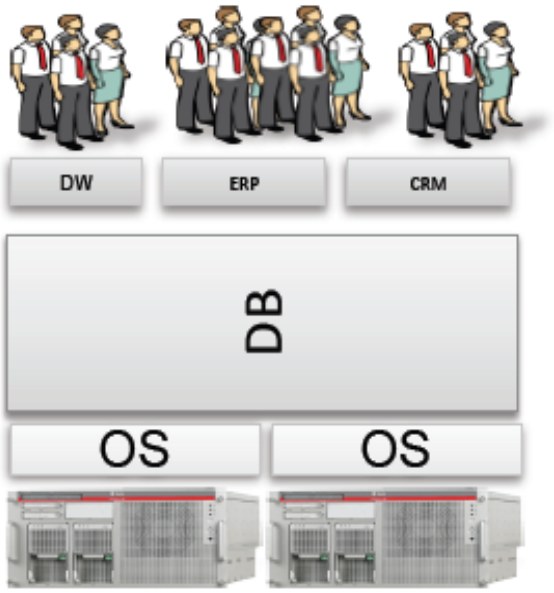
Private Database Cloud

Database – Provision Schema

- Reasons for adoption
  - Most efficient
  - Extremely fast provisioning
  - Best ROI
  - Performance
  - Efficient memory use
- Customer concerns
  - App qualification required
  - Requires OS and DB standardization
  - Isolation



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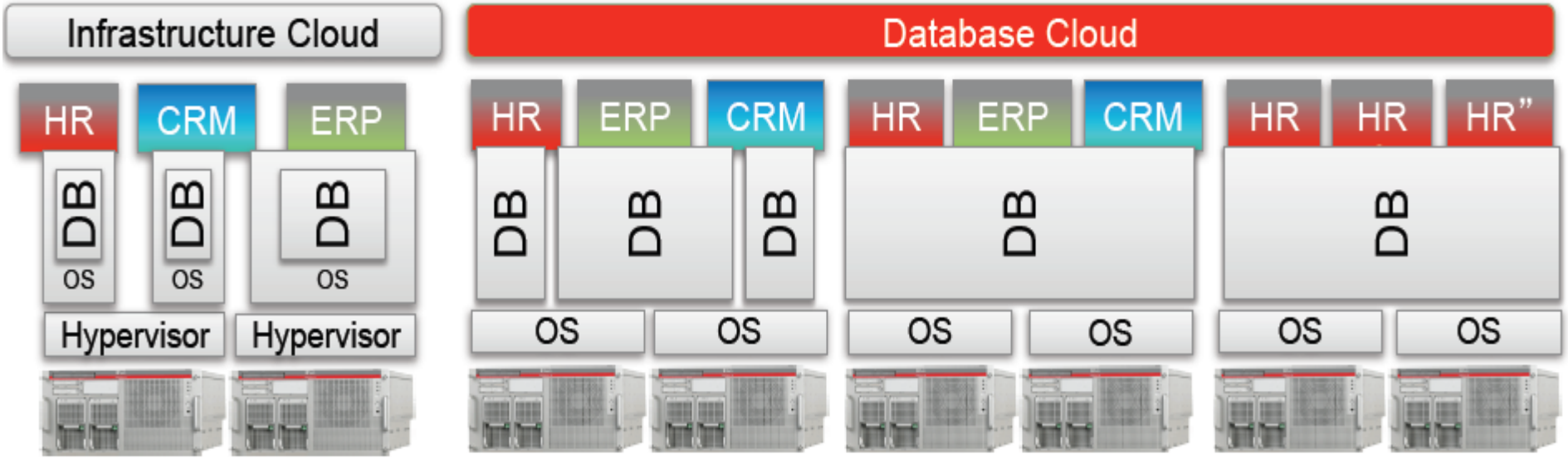
Database Cloud Architectures

Common building blocks are shared server and storage pools



Server Consolidation
Deploy in dedicated VMs

Platform Consolidation
Share server pool
Real Application Clusters

Database Consolidation
Share database instances
Real Application Clusters

Schema Consolidation
Extreme Scalability
VPD, Sharded, or Partitioned

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Platform Consolidation Best Practices

Planning Recommendations

- Categorize databases into three groups
  1) Critical: Core business, revenue generating, customer facing databases
  2) Standard: Other non-critical production databases
  3) Non-production: Dev/test/QA databases
- Consolidate databases within each group but not across groups to align following objectives
  - Availability
  - Recovery: RTO, RPO, RGO
  - Planned Maintenance: Patches, Upgrades

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Platform Consolidation Best Practices

Planning Recommendations

- Determine type, quantity and size of Cloud Pools you'll need
  - Fixed or variable size
  - Headroom for peak and growth
  - Resources for HA and planned maintenance activities
- Define cloud pool fullness policy
  - When to grow or create a new cloud pool
- Define exceptions and objections handling strategy
  - Data compliancy – PII, PCI or HIPPA
- Define isolation strategy for physical and logical resources
  - Fault, resource, security and operational isolation
- Define planned outage and patching strategy

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Private Database Cloud Deployment

OS Sizing

- Hugepages: Hugepages are generally required if 'PageTables' in /proc/meminfo is > 2% of physical memory
  - If used, should equal to sum of shared memory from all databases
  - See MOS note 401749.1 for precise computations
- Shared Memory Settings
  - Shared Memory Identifiers: Set SHMMNI > # of DBs
  - Shared Memory Segments: Set SHMMAX <= 85% of physical memory size
- Semaphore Settings
  - Total #of semaphores SEMMNS > ∑(#processes of all DBs)
  - Max #of semaphores in a set SEMMSL > Max(#processes of all DBs)

Private Database Cloud Deployment

Database Sizing

- PROCESSES
  - The number of active processes should be < 4 times the number of cores on the database node to prevent performance problems
  - A single production database should always have at least 2 CPU cores allocated to it
- Automatic Memory Mgmt - Memory_target
  - Sum of MEMORY_TARGET of all DBs should be < 75% physical memory
  - MEMORY_TARGET should be increased by 12MB per 100 PROCESSES increment when the parameter PROCESSES > 600

Private Cloud Database Deployment

ASM Sizing

- PROCESSES: Size it based on expected number (*n*) of DB instances that will be served by ASM instance on that node

  PROCESSES = (n > 10) ? {50 x MIN (n + 1, 11) + 10 x MAX (n – 10, 0)} : {50 x (n + 1)}

- Automatic Memory Mgmt - Memory_target: Size it to accommodate large PROCESSES setting
  - MEMORY_TARGET should be increased by 12MB per 100 PROCESSES increment when the parameter PROCESSES > 600
- Diskgroup Compatibility
  - Set RDBMS.COMPATIBLE parameter to the minimum COMPATIBLE parameter value for DB that is an ASM client

Private Cloud Database Deployment

Instance Caging

- Instance Caging is an Oracle feature for "caging" the amount of CPU that a database instance can use on a node at any moment
- For each DB instance,
  - Set CPU_COUNT parameter
    - Maximum number of CPU cores the instance can use at any moment
  - Set "resource_manager_plan" parameter
    - Enables CPU Resource Manager, "DEFAULT_PLAN" by default
- Two approaches for Instance Caging
  1) Partitioning – for critical DBs group; ∑< 75% of CPU cores
  2) Over-provisioning – for standard and non-production DBs groups; up to 3x CPU cores is reasonable

Private Cloud Database Deployment

Traffic Isolation

- Default Public Network
  - Register all databases on default network with SCAN listeners
  - Use *EZConnect* syntax with SCAN for accessing database services over default public network
- Additional (non-default) Public Network(s)
  - Configure additional Network, VIP and Listener resources for non-default public networks
  - Configure LISTENER_NETWORKS parameter in each database to serve clients over non-default network(s)
  - Use ADDRESS_LIST containing non-default VIPs in service connect URL

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Private Cloud Database Deployment

Managing in Platform Consolidation

- Operational
  - Backup and Recovery: Use least intrusive backup and recovery procedures, such as incremental backups, and flashback technologies, tablespace point in time recovery, etc.
  - Patching: Use Standby Apply First or Rolling Patches
  - Provisioning: Use Self Service or IT based Provisioning
  - Metering: Implement Chargeback or Show-back for internal costing
- Security
  - Use different OS users & groups, and different database users & roles
  - Use restrictive ACLs on binaries and data files
  - Use different Diskgroups for each DB for physical separation of data
- Resource Management
  - "Noisy neighbor" management
  - Fair share resource and QoS management

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Caso de Estudio

CONCLUSIONES

» Multiples modelos de Cloud Computing
» Muchas historias de exito
» Se han beneficiado de la alta calidad de los servicios que proveen, de la reducción en la complejidad y del incremento en la flexibilidad
» Las nubes privadas de procesamiento consolidan servidores, almacenamiento, sistemas operativos, bases de datos y carga
» Oracle provee soluciones maduras para la implementar Cloud Computing

Para mayor información o compras por favor contáctenos:

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