

# *The Business Value of Virtualizing Oracle eBusiness Suite*

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# *Agenda*



- Introductions
- Introduction to Virtualization
- Challenges with Current Implementations
- Case Study
- Conclusions
- Questions & Answers

# *Introductions*



## **Haroon Qureshi**

- Over 15 years of experience as an Oracle DBA and Architect
- Part of the Oracle Performance and Architecture group based in Chicago
- Worked on implementing and trouble shooting number of global implementations of Oracle eBusiness Suite
- Focused on performance and architecture of Oracle technologies and eBusiness Suite

## **QSolve, Inc.**

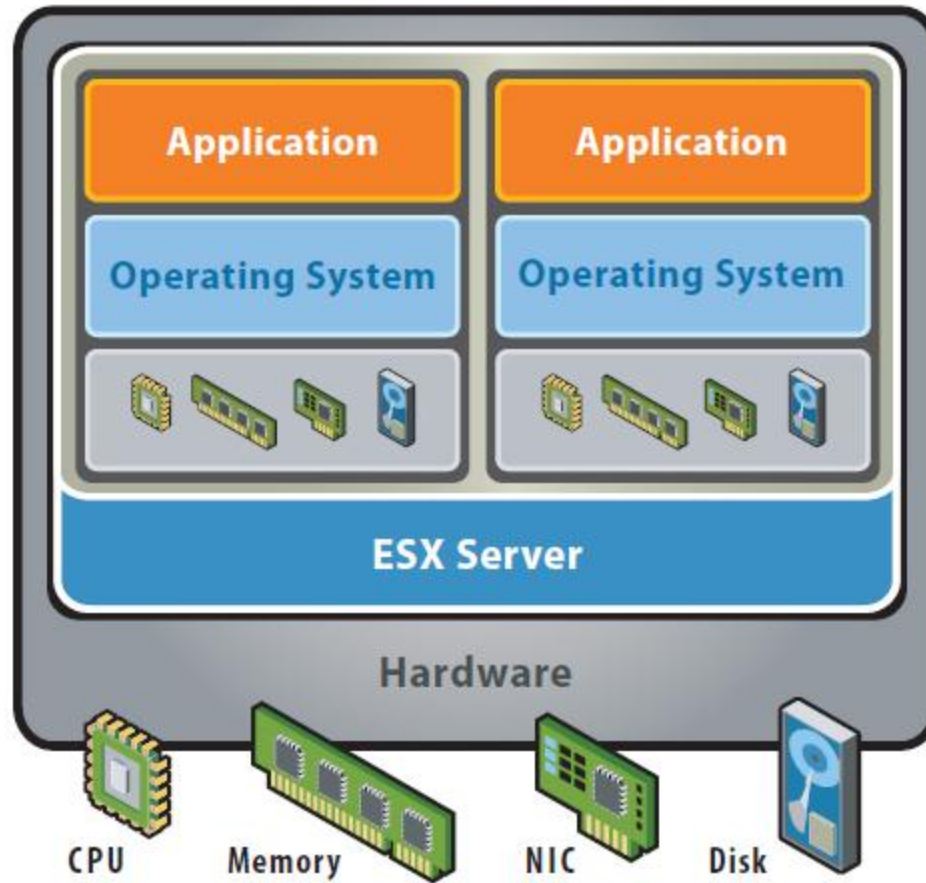
- Professional services company providing business-driven technology services
- Specializing in advanced Oracle technologies
- Founded in 2005
- Based in Schaumburg, Illinois, USA

As a trusted advisor, we provide clients with the expertise and experience to

- Optimize and align IT infrastructure with business processes and goals
- Develop IT roadmaps
- Lower total cost of ownership
- Mitigate project risks while maintaining high standards of quality
- Successfully implement and manage Oracle Applications and infrastructure

- What is virtualization?
  - Virtualization is the process of abstracting computing resources such that multiple operating system and application images can share a single physical server, bringing significant cost-of-ownership and manageability benefits.
  - As CPUs became more powerful, the old model of application deployment meant that resources were vastly underutilized

# Virtualization

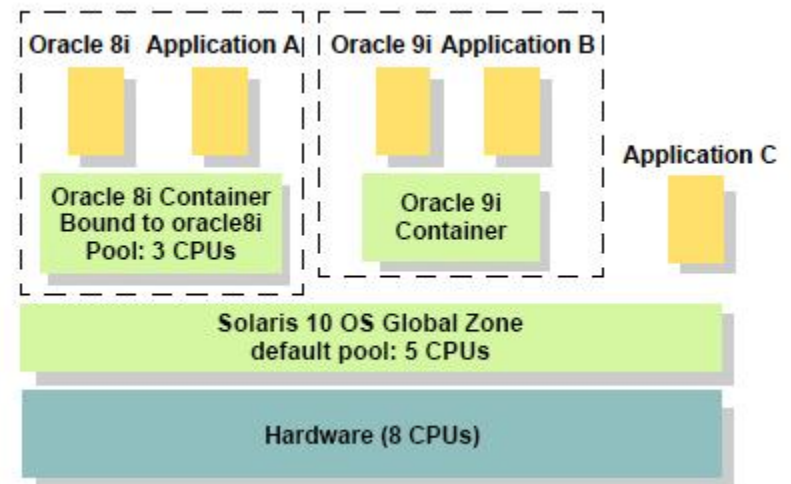


The concept of virtual machines has been around for a long time:

- HP Service Guard
- IBM LPAR
- Sun Clusters

The two most popular products for virtual machines is VMWare ESXi and Oracle Virtual Machines

- Sun Clusters
- Feature of Solaris 10
- Allows for partitioning of an existing operating system in separate virtual hosts



# Virtual Machines

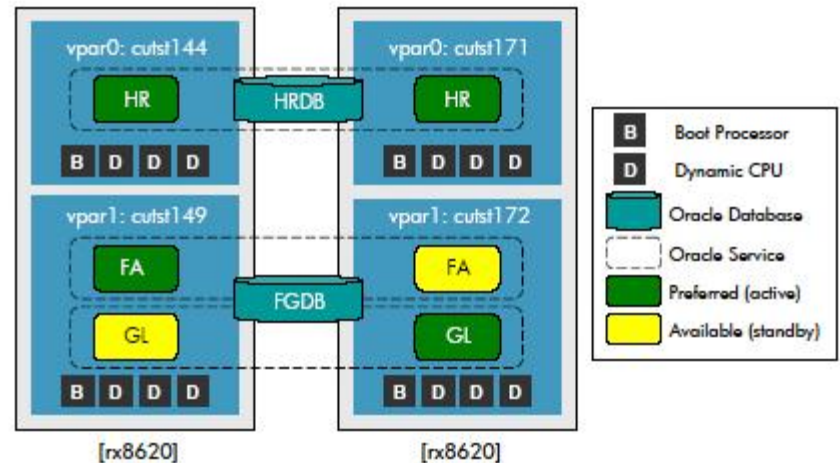
- IBM Logical Partitioning (LPAR)
- Enables the virtualization of hardware resources which can be shared by multiple operating systems





# Virtual Machines

- HP Service Guard
- Allows for running of multiple instances of HP-UX on the same server



# Oracle VM and VMWare



## Oracle VM

- Based on open source Xen hypervisor
- Supports Windows and Linux OS
- Managed using VM Management Pack in Grid Control

## VMWare ESXi

- Based on proprietary hypervisor technology
- Supports multiple operating systems
- Can be monitored in GC using a plug-in
- Has its own manager server
- A more mature product with more tools available

# *Support Concerns*



- Non-issue with known Oracle bugs
- Oracle mostly certifies Operating Systems
  - No certifications with network hardware, storage, servers
- Search My Oracle Support for VMWare related issues
- Review note 249212.1 on My Oracle Support for Oracle's position on virtualization

Two questions to answer:

1. Why virtualize?
2. How is this applied to an Oracle eBusiness Suite implementation?

# Why Virtualize?



## *Benefits of Virtualization*

- Server consolidation and infrastructure optimization
  - Pooling of common infrastructure resources
  - Breaking of the “one application to one server” model
- Physical infrastructure cost reduction
  - Reduce the number of servers
  - Reduction in real estate, power, cooling costs
- Improved operational flexibility
  - Offers new way of managing IT infrastructure
  - Helps administrators spend less time on repetitive tasks such as provisioning, configuration, monitoring and maintenance
- Increased availability and business continuity
  - Can securely back up and migrate entire virtual environments with no interruption in service
  - Decoupling of instances from physical servers

# *eBusiness Value of Virtualization*



- Illustrated by best practices for eliminating the challenge of multiple Oracle development and test instances with many physical servers
- In a given lifecycle of an Oracle implementation, with the use of virtualization, the following can be achieved:
  - ▣ Server consolidation
  - ▣ Physical infrastructure costs
  - ▣ Operational flexibility

# *Disadvantages of Virtualization*



- Running multiple or many virtual operating systems may require additional resources (memory, higher performing CPUs, etc)
  - ▣ Capacity planning effort for virtual machines
- Virtual machines cannot be migrated to other machines with a different type of CPU
  - ▣ X86 to RISC

# *Challenges of an EBS Implementation*



- Support for multiple development and test instances
  - ▣ Traditionally, the need was for 2-3 instances for development and test
  - ▣ Nowadays, this need has grown to 8 or 9 instances
  - ▣ For example, Citibank's P2P implementation involved using multiple languages (8 languages in addition to English). The need was to have an instance for each language.
- The need for physical servers also has grown to support this need for instances
  - ▣ Servers for QA, development, test, patching, etc.
- The need to streamline Oracle upgrades and Migrations
- Escalating Infrastructure costs



## *Installing Oracle eBusiness Suite*

- Define two virtual machines
  - ▣ Vmdb as the database server
  - ▣ Vmapp as the application server
- Install Oracle Applications
  - ▣ Follow installation instructions as with a physical server, using the virtual servers instead

# Oracle Applications Manager



## ORACLE Applications Manager

Support Cart Setup Home Logout Help

Applications Dashboard | Site Map

Applications Dashboard: VIS

Navigate to Application Services

Overview Performance Critical Activities Diagnostics Business Flows Security Software Updates

### Applications System Status

Data Retrieved: 27-Mar-2008 23:41:05

Host	Platform	Host Status	Admin	Database	Concurrent Processing	Forms	Web
VMDB	Linux x86-64 (64-bit)	✓		✓			
VMAPP	Linux x86-64 (64-bit)	✓	✓		✓	✓	✓

### Configuration Changes (last 24 hours)

Data Retrieved: 27-Mar-2008 23:40:56

Patches Applied   
 Site Level Profile Options   
 Applications Context Files Edited

### System Alerts

Data Retrieved: 27-Mar-2008 23:40:56

New Alerts   
 New Occurrences   
 Open Alerts   
 Open Occurrences

### Web Components Status

Data Retrieved: 05-Dec-0006 00:00:00

PL/SQL Agent  Up  
 Servlet Agent  Up  
 JSP Agent  Up  
 Discoverer  Unmonitored  
 Personal Home Page  Up  
 TCF  Up

### User Initiated Alerts

Data Retrieved: 27-Mar-2008 23:40:56

New Alerts   
 New Occurrences   
 Open Alerts   
 Open Occurrences

**TIP** The information shown above (with the exception of Web Components Status section) is retrieved from the system periodically. To retrieve up-to-the-minute data, please use the refresh icon for the desired section. Please see Help for more details.

Support Cart Setup Home Logout Help

Virtualization provides the ability to rapidly and easily deploy pre-built, pre-configured and pre-patched virtual machines through the use of templates.

- Significantly reduces deployment time and risk
- Easy to Maintain and Customize
  - Not a “Black Box”

# *Use of Templates*



- Cloning instances
- Backups
  - ▣ Strategic backup points during an upgrade or migration
- Application isolation
- Instance Management

# eBusiness Tuning Scenario

## Difficulty in Performance Tuning on a Shared Production Server



Physically Shared, Multiple Processes Running in Parallel

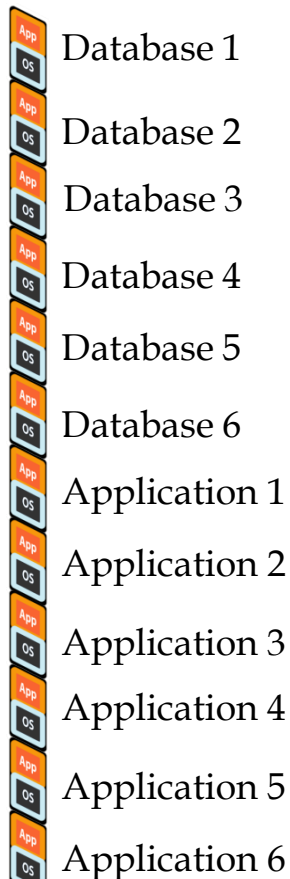
- Database 1
- Database 2
- Database 3
- Database 4
- Database 5
- Database 6
- Application 1
- Application 2
- Application 3
- Application 4
- Application 5
- Application 6

**Goal: Increase performance of an application on a shared server with 10 other applications**

- **Shutdown All Other Applications:** Performance tuning over the weekend
- **Increased Performance 125%:** Baseline > Tuning > Results
- **Monday Morning Performance:** The progress we made was masked by the other applications running on the Shared Production Server!

# eBusiness Tuning Scenario

## Difficulty in Performance Tuning on a Shared Production Server



### Physically Shared

- Manual steps
- Possible Impact to other systems
- Requires downtime
- Requires additional planning



### Virtually Shared

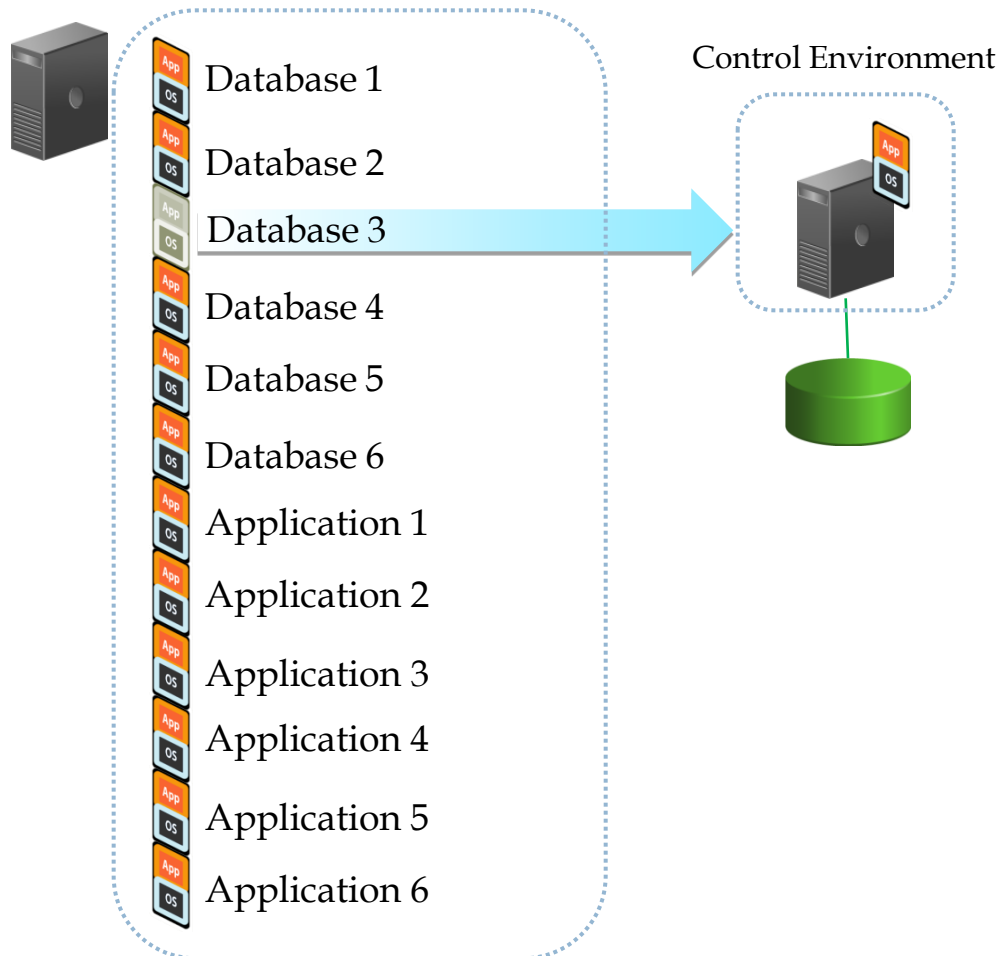
- Isolation
- Zero Downtime
- Faster Reaction Time



**Flexibility & Agility Benefits**

# eBusiness Tuning Scenario

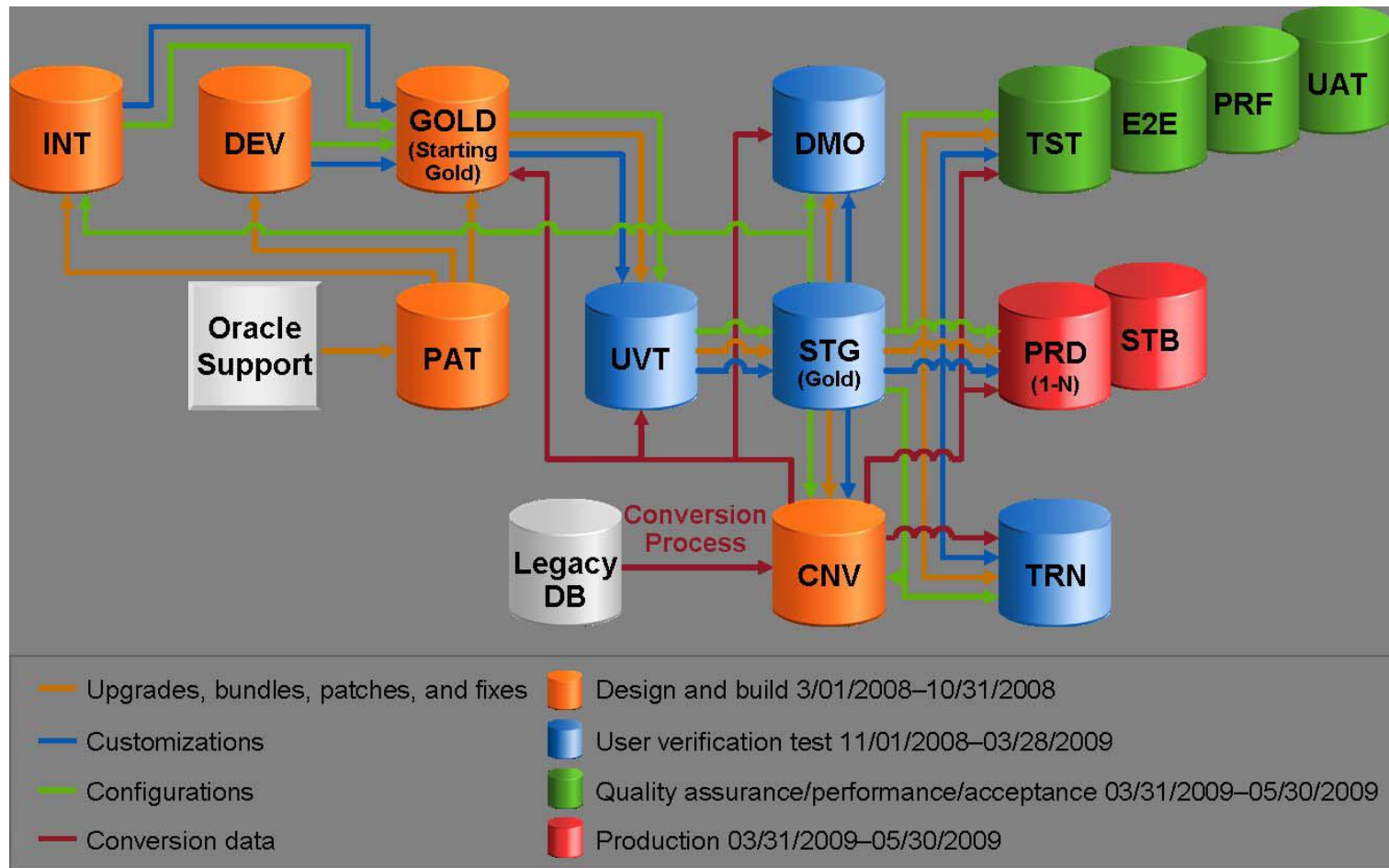
## Difficulty in Performance Tuning on a Shared Production Server



**Goal: Increase performance of an application on a shared server with 12 other applications**

- **Zero Downtime:** Performance tuning starts immediately
- **Increased Performance 125%:** Baseline > Tuning > Results
- **Big WIN! Performance Benefits realized immediately!**

# Instance Management Scenario





## *Consolidation Begins by Looking for Untapped Capacity*

MFG Dev 1

MFG Dev 2

ASCP  
Dev 1

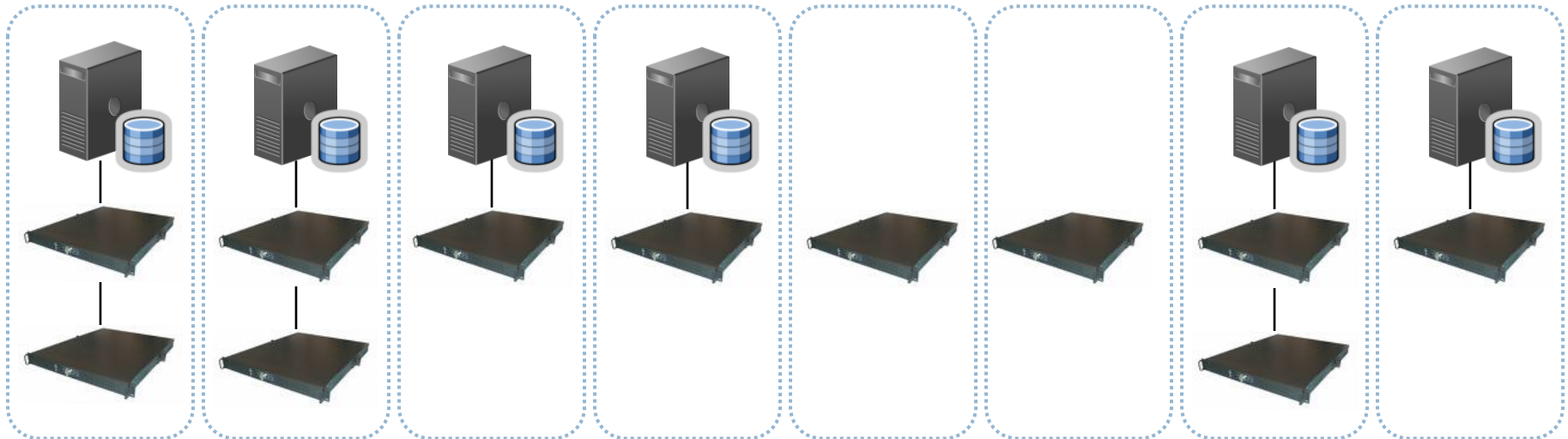
ASCP  
Dev 2

Reporting  
Dev 1

Reporting  
Dev 2

Patch  
Dev 1

Patch  
Dev 2



**Goal is to intelligently consolidate the 17 servers while providing the same level of performance & gaining key virtualization features**

*Each DB server has 4 cores for a total of 24 cores*

# Case Study

DB Avg. Utilization

42%

Apps Avg. Utilization

13%

MFG Dev 1

MFG Dev 2

ASCP  
Dev 1

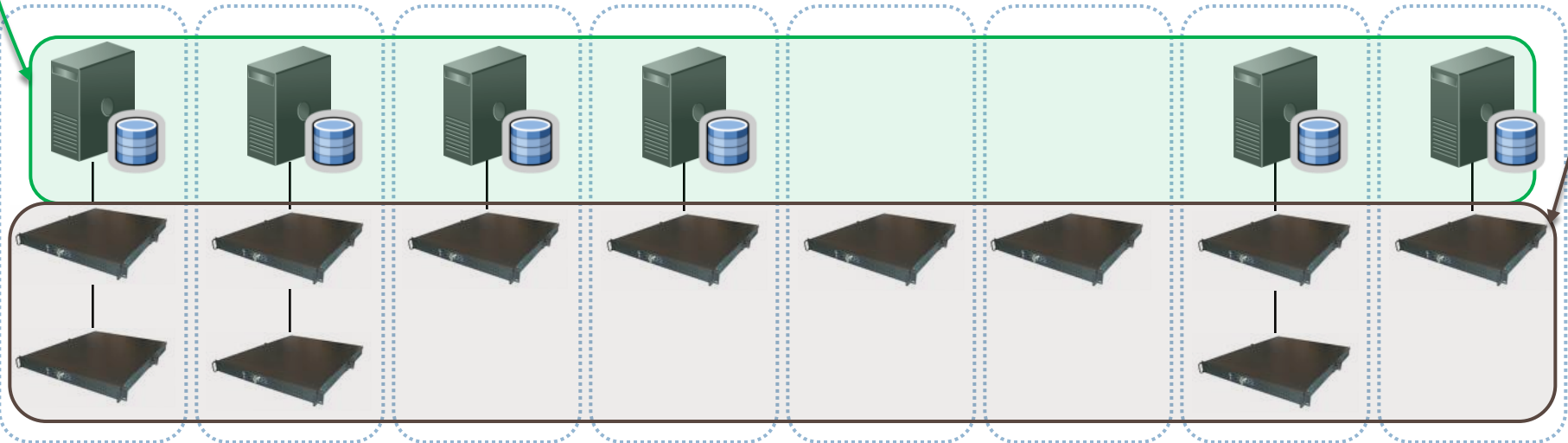
ASCP  
Dev 2

Reporting  
Dev 1

Reporting  
Dev 2

Patch  
Dev 1

Patch  
Dev 2



**Business Plans Consolidate by:**

- Moving from 6 to 2 database servers
- Moving from 11 to 3 application servers

Using virtualization enables the  
Business to use 5 servers instead of  
17

## EMC Proof of Concept

Migrating our largest (E-Business suite) application from RISC to (x86)

### *High ROI in migrating to fewer faster processors*

#### **From 224 to 32 CPUs on a two node RAC cluster**

We ran our standard load tests using both front-end (end-user load) and back-end (batch and simulated end-user load) and measured response times. What we observed:

- Our legacy Sun E25k's were 60 – 80% loaded (Unix)
  - Pushed around 25,000 IOPS
- Our Cisco Unified Computing System (UCS) were 10 – 20% loaded (Red Hat Linux)
  - Pushed around 40,000 IOPS

**With UCS servers response times were reduced by 50% and in some cases dropped to 10%!**

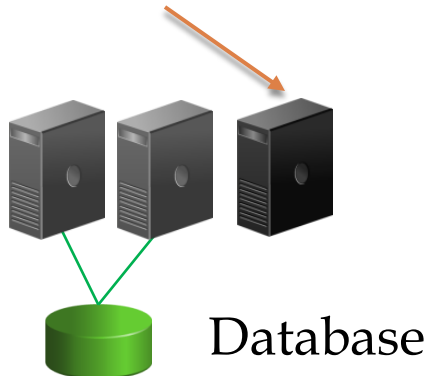


Zero Downtime in the case of hardware failure

## Instantaneous Failover = Zero Downtime

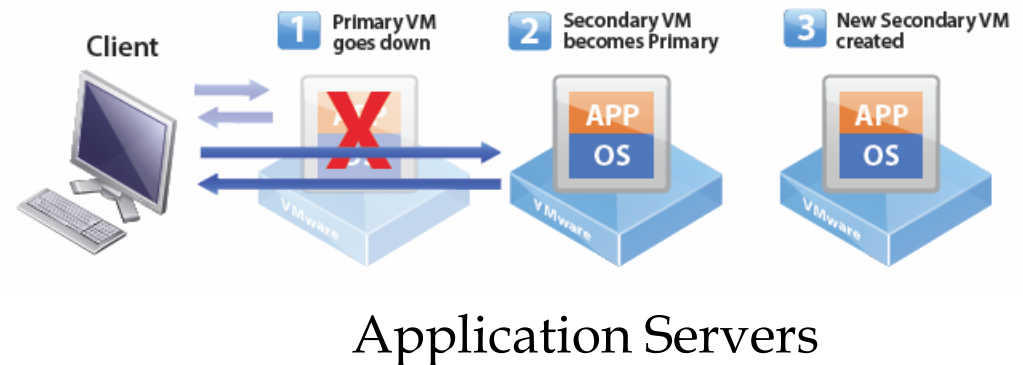
### Oracle Real Application Clusters

- Fault Tolerant
- High Scalability
  - Add another server



### Fault Tolerance

- Fault Tolerant
- One click to implement



## Maximum Availability Architecture

# *Conclusion/Benefits of Virtualization*



- Server consolidation and infrastructure optimization
  - ▣ Pooling of common infrastructure resources
  - ▣ Breaking of the “one application to one server” model
- Physical infrastructure cost reduction
  - ▣ Reduce the number of servers
  - ▣ Reduction in real estate, power, cooling costs
- Improved operational flexibility
  - ▣ Offers new way of managing IT infrastructure
  - ▣ Helps administrators spend less time on repetitive tasks such as provisioning, configuration, monitoring and maintenance
  - ▣ Managing implementations and upgrades are much easier
  - ▣ Assists in problem resolution
- Increased availability and business continuity
  - ▣ Can securely back up and migrate entire virtual environments with no interruption in service
  - ▣ Decoupling of instances from physical servers

# *Questions*



*Thank You !!*