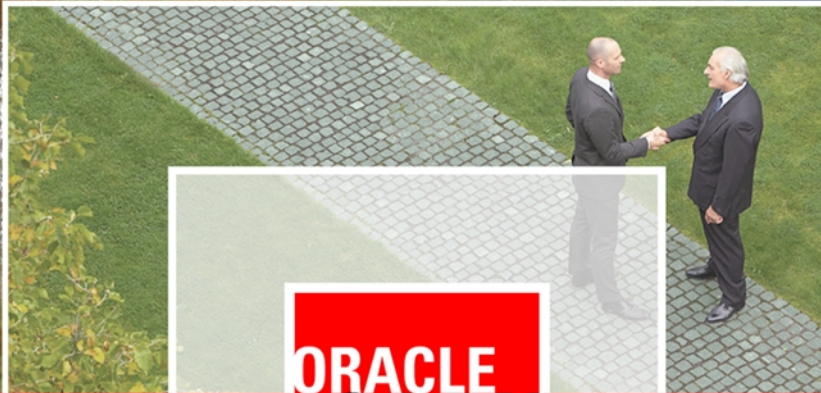




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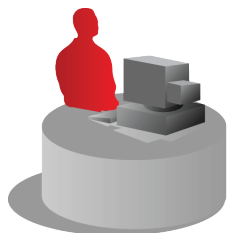
Managing Oracle Grid Computing: Oracle Real Application Clusters, Oracle Automatic Storage Management, Oracle Data Guard

Venkat Maddali, Sr. Director of Development
Mark Ramacher, Director of Development

ORACLE®

Oracle's Complete Enterprise Software Stack

Built-in & Integrated Manageability



Business User



ENTERPRISE APPLICATIONS

ORACLE®
Oracle E-Business Suite, PeopleSoft, Siebel, JD Edwards, Oracle Fusion

MIDDLEWARE

Oracle WebLogic, Oracle SOA Suite, OracleAS

DATABASE

Oracle Database, Oracle TimesTen

OPERATING SYSTEM

Enterprise Linux

VIRTUALIZATION

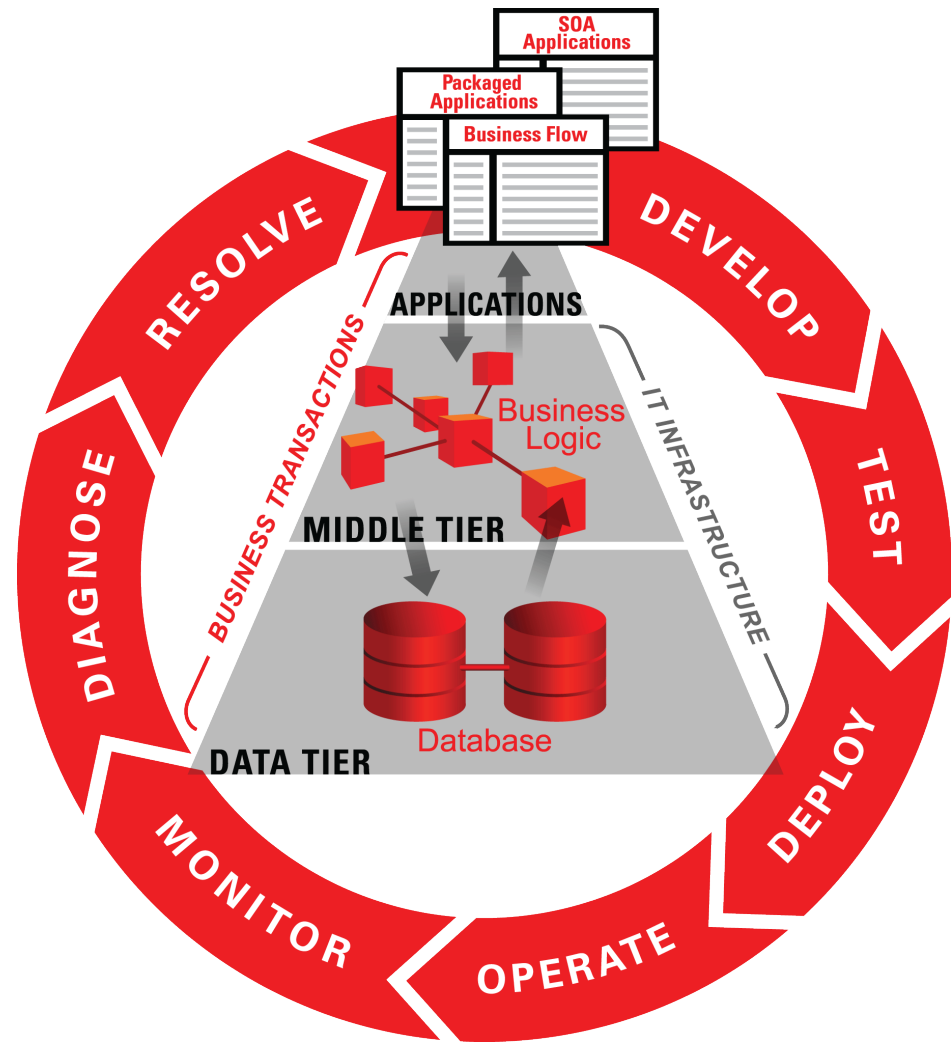
Oracle VM

- Leader in the complete enterprise application stack
- Built-in manageability into every tier
- Integrated manageability across the entire stack

Oracle Enterprise Manager

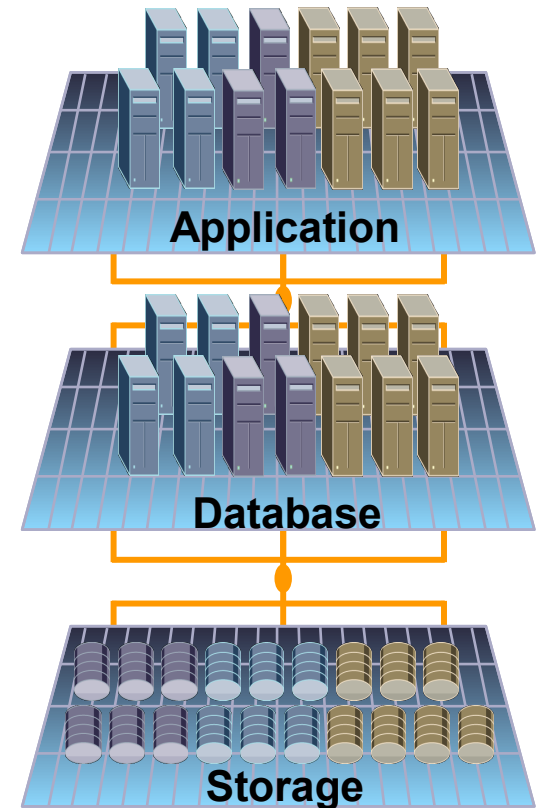
Increases Business Efficiency

- **Manage applications top-down, from the business perspective** by understanding user experiences and business impact of IT issues
- **Manage entire application lifecycle to increase business agility** with comprehensive application quality management and compliance solutions
- **Reduce operational costs** through intelligent diagnostics and automated IT processes



Oracle Highly Available Grid strategy

- **Scale-Out architecture**
 - Commodity hardware building blocks
 - Inherently highly scalable & redundant
- **Scalability & Availability responsibility moves out of hardware/OS to scale-out savvy software**
 - First Web & Application server tiers
 - Application servers
 - Then DB tier
 - Real Application Clusters
 - Data Guard for disaster recovery
 - Then storage tier
 - Scale-out storage software



Agenda

Managing Oracle's Highly Available Grid

Setup

Setup RAC, ASM and Standby configurations

Automate Oracle recommended Best practices

Avoid maintaining custom scripts or time consuming and error prone manual procedures

Manage

Manage as One, Diagnose as Many

Manage RAC, ASM and Standby configurations

Reduce Total Cost of Ownership

Agenda

Managing Oracle's Highly Available Grid

Setup

Setup RAC, ASM and Standby configurations

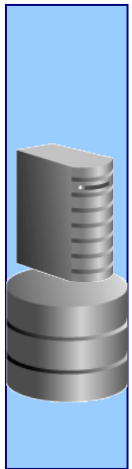
Automate Oracle recommended Best practices

Avoid maintaining custom scripts or time consuming and error prone manual procedures

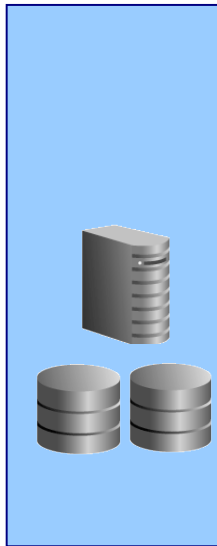
Oracle's Highly Available Grid - Setup

- Setup RAC, ASM and Data Guard configurations to implement Highly Available Grid
 - Migrate Database to ASM Storage
 - Convert Single Instance Database to RAC
 - Create Standby Database for your RAC Primary
 - Convert Standby Database to RAC
- Automate Oracle recommended best practices
- Avoid maintaining custom scripts or time consuming and error prone manual procedures

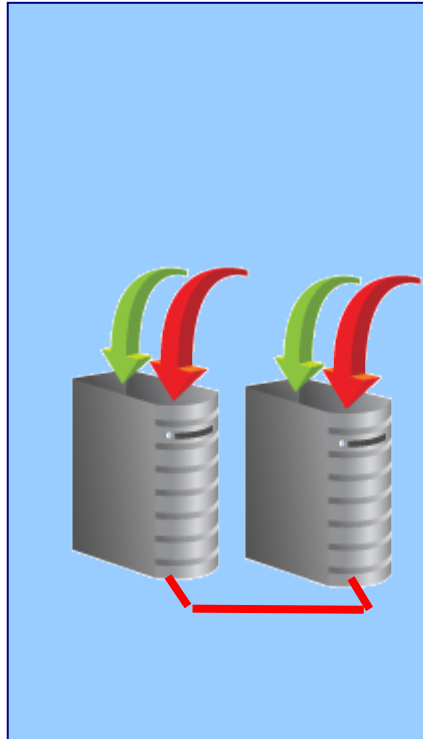
Getting on to Oracle's HA Grid



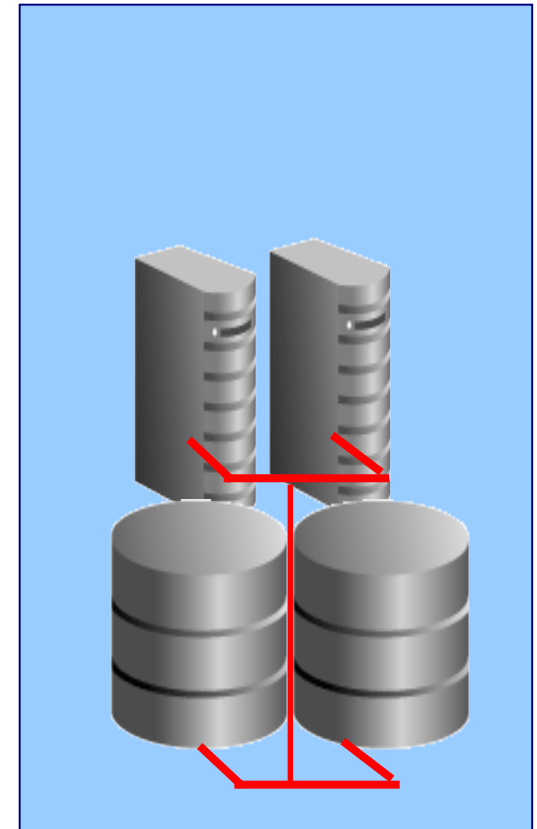
Single Instance Database



Migrate Database to ASM Storage

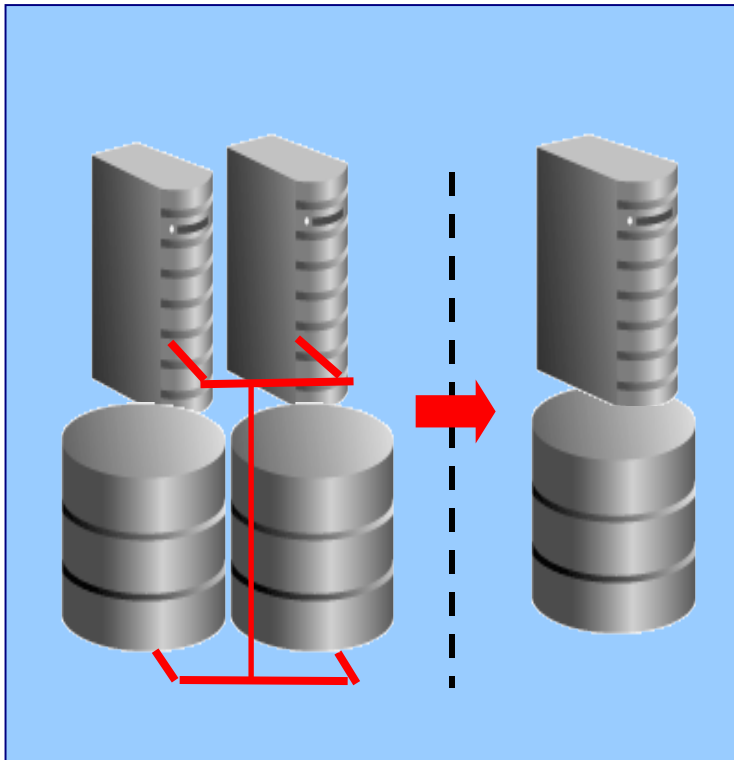


Provision Clusterware

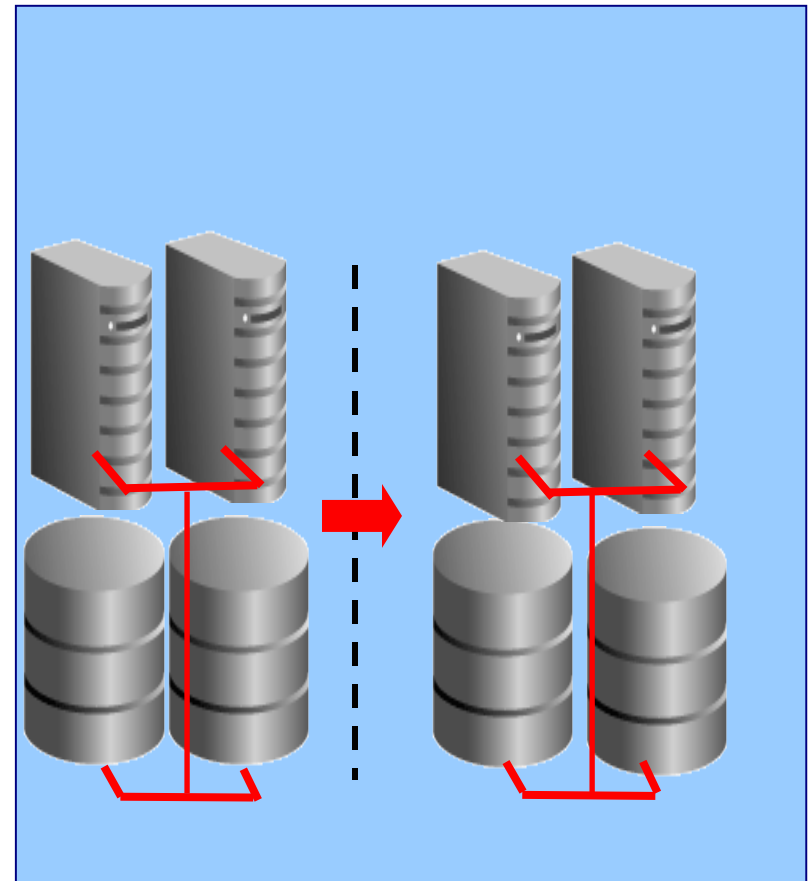


Convert Single Instance Database to RAC

Getting on to Oracle's HA Grid



Create Standby database



Convert Standby to RAC

Oracle's Highly Available Grid - Setup

- Setup RAC, ASM and Data Guard configurations to implement Highly Available Grid
 - Migrate Database to ASM Storage
 - Convert Single Instance Database to RAC
 - Create Standby Database for your RAC Primary
 - Convert Standby Database to RAC
- Automate Oracle recommended best practices
- Avoid maintaining custom scripts or time consuming and error prone manual procedures

Migrate Database to ASM Storage

Migrate Database To ASM: Migration Options

Database **hrdb**
Logged In As **sys**

ASM Instance **+ASM2_stajv16.us.oracle.com**
Host **stajv16.us.oracle.com**

[Cancel](#) [Step 1 of 4](#) [Next](#)

Files To Be Migrated

Specify the files to be migrated to Automatic Storage Management (ASM).

Database Files

Includes datafiles, controlfiles, redo log files, server parameter file and dataguard broker configuration files. The database will be shutdown and restarted to perform the migration.

Migration Type Offline - Database will be taken offline for the entire duration of migration operation

Minimum Downtime - Copying database files to diskgroups is done online. Database will be taken offline only when switching to ASM storage

[▶ Advanced](#)



Recovery-related Files


Includes archived log files and database backups on the disk

Parallelism

Degree Of Parallelism

Specify parallelism to allocate multiple RMAN channels for copying Oracle files. Depending on system resources, this can make the file copy faster.

- Configure ASM if needed 
- Supports migration from Raw or File system to ASM storage
- Migrate database and recovery files
- Minimal Downtime Migration 

- Migrate to different host 
- Automated as EM job

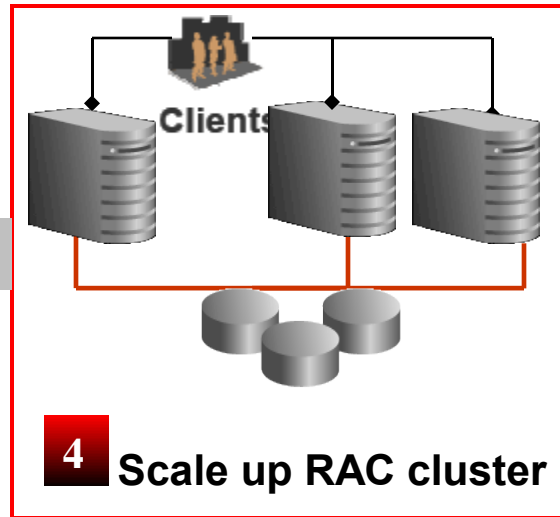
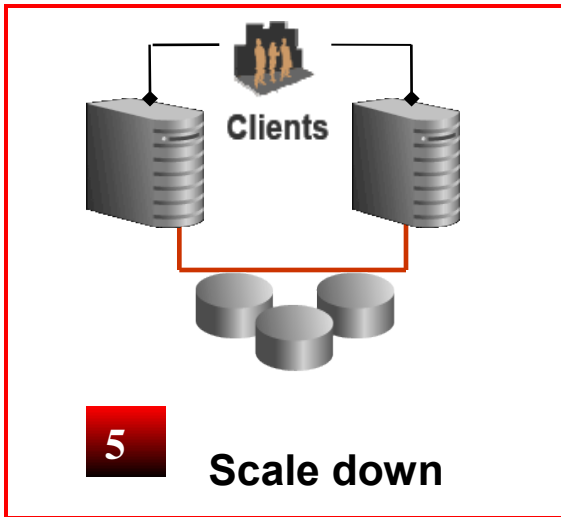
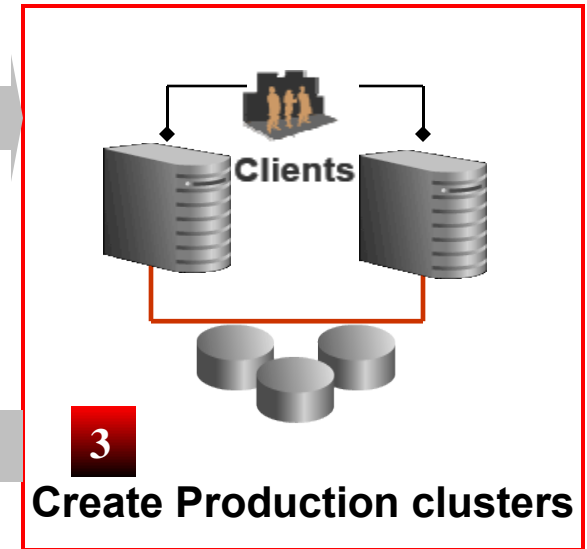
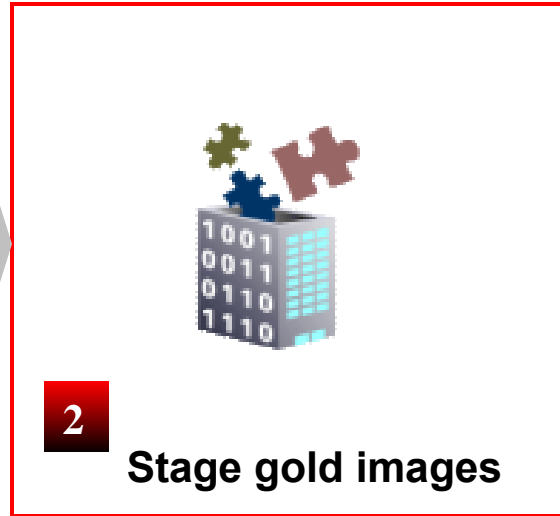
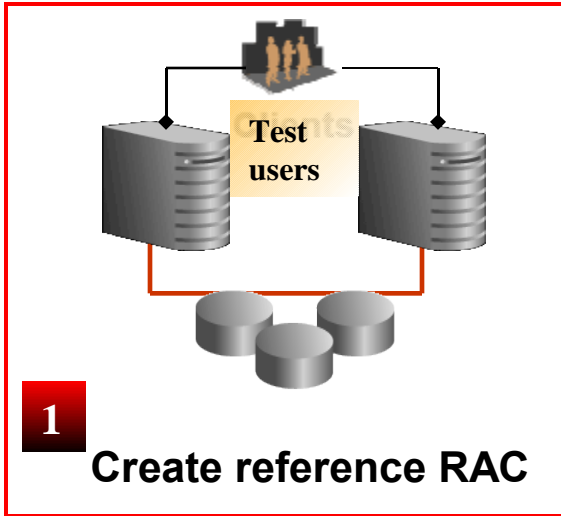
Migrate Database to ASM Storage

- Configuration
 - Performs pre-requisite checks prior to initiating the operation
 - Configure Single Instance or Clustered ASM
 - Can migrate single instance or RAC
- Migrate using Backups
 - Migrate database files and recovery files while database is online
 - Option to suspend the job and notify prior to taking database offline for switching to ASM storage.
 - If opted to be notified, can resume at planned downtime window
 - Can use existing backup to avoid load on production server
 - Can be migrated to different host
- Minimal Downtime Migration (using Data Guard)
 - Create Physical standby, and Switchover

Oracle's Highly Available Grid - Setup

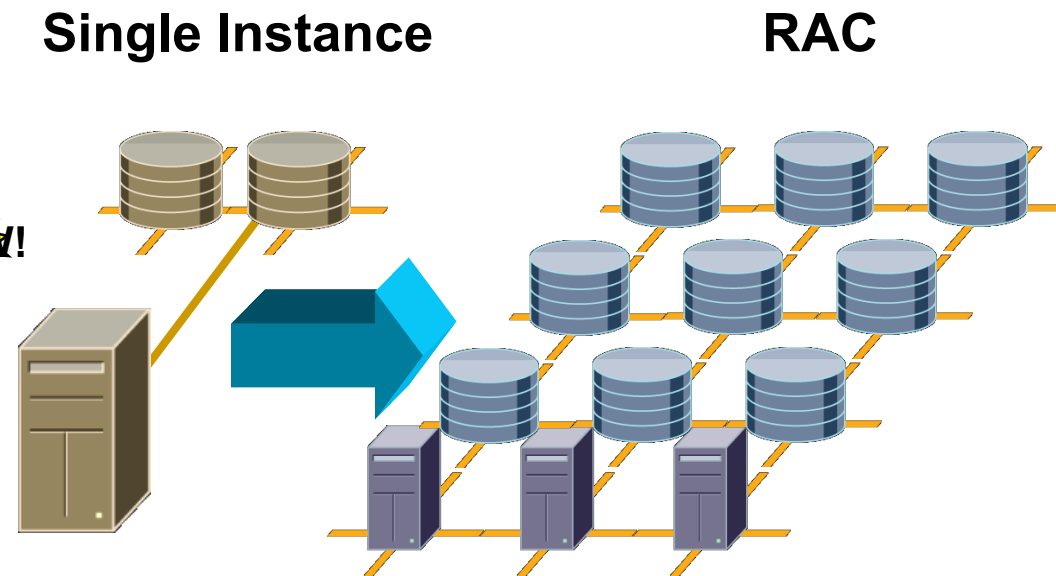
- Setup RAC, ASM and Data Guard configurations to implement Highly Available Grid
 - Migrate Database to ASM Storage
 - Convert Single Instance Database to RAC
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 - Convert Standby Database to RAC
- Automate Oracle recommended best practices
- Avoid maintaining custom scripts or time consuming and error prone manual procedures

EM driven RAC Provisioning



Convert Single Instance Database to RAC

- Wizard-driven interface to convert single instance into multi-instance RAC database
- Convert ASM to Clustered ASM (if necessary) **NEW!**
- Automated as EM jobs



Convert Single Instance Database to RAC

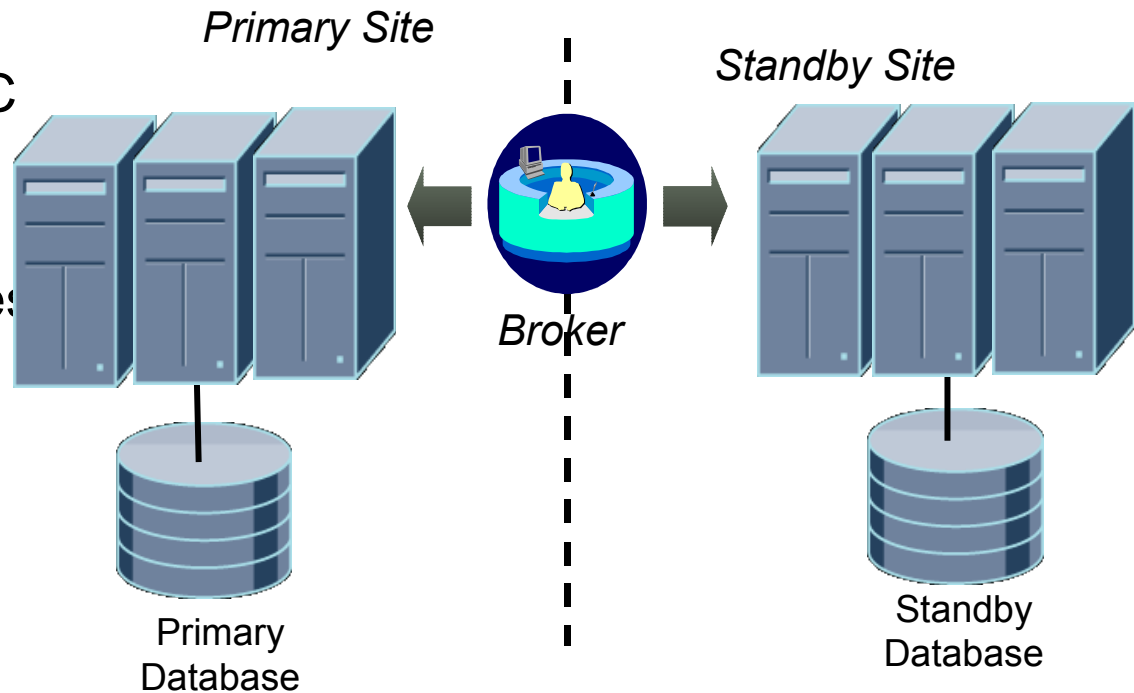
- Pre-reqs prior to performing cluster-wide operations
 - Cluster verification
 - Node accessibility
 - Oracle Database Software on all selected nodes
 - If converting ASM to Clustered ASM, ensures that ASM is not in use by any open database
- Automates
 - Mounting of shared diskgroups on all nodes
 - Setup parameter files across cluster hosts
 - Migrate files to shared file system or ASM storage (if necessary)
 - Create additional undo TS, redo logs, password files, oratab/registry entries etc.
 - Listener configuration across all cluster hosts
 - Register with Cluster-ware
- Restore SI ASM or SI DB back if something were to fail, so retry can be attempted after fixing the root cause

Oracle's Highly Available Grid - Setup

- Setup RAC, ASM and Data Guard configurations to implement Highly Available Grid
 - Migrate Database to ASM Storage
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 - Convert Standby Database to RAC
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Setup Standby Database Grid

- Create Physical, Logical standby databases
- Create Standby for your RAC database
- Create standby on ASM storage for primary databases on FS/Raw storage **NEW!**
- Create standby from existing RMAN backups **NEW!**
- Convert Physical standby to Snapshot Standby and vice-versa **NEW!**



Oracle's Highly Available Grid - Setup

- Setup RAC, ASM and Data Guard configurations to implement Highly Available Grid
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Oracle's Highly Available Grid - Setup

Enterprise Manager helps setup Highly Available Grid

Setup

Setup RAC, ASM and Standby configurations

Automate Oracle recommended Best practices

Avoid maintaining custom scripts or time consuming and error prone manual procedures

Agenda

Managing Oracle's Highly Available Grid

Manage

Manage as One, Diagnose as Many

Manage RAC, ASM and Standby configurations

Reduce Total Cost of Ownership

Oracle's Highly Available Grid – Manage

- Manage as one
- HA Console – Dashboard to Manage HA Grid **NEW!**
- Manage RAC
- Manage ASM
- Manage Data Guard

ORACLE Enterprise Manager 10g Grid Control

Home Targets Deployments Alerts Compliance Jobs Reports

High Availability Console

Cluster Database : salesdb

Page Refreshed September 20, 2008 2:25:18 PM PDT Refresh Manually

Availability Summary

Status **Up**

Instances **1**

Up Since **Sep 19, 2008 6:38:22 PM**

Availability **100.0%**

Cluster **sbddg_cluster**

Advisor [Details](#)

Availability Events

Message	Target	Time
✘ The Data Guard status of salesdb is Error ORA-16810: multiple errors or warnings...	salesdb	Sep 20, 2008 9:23:11 PM
✘ Metrics "CPU Time Per User Call" is at 1513754.75 for service "shipments"	salesdb salesdb3	Sep 20, 2008 4:23:25 PM
✘ Metrics "Elapsed Time Per User Call" is at 566148.94444 for service "shipments"	salesdb salesdb3	Sep 20, 2008 4:23:25 PM
⚠ Metrics "Elapsed Time Per User Call" is at 65493.92809 for service "reports"	salesdb salesdb4	Sep 20, 2008 2:40:41 PM

Availability History

Day

Week

Month

Backup/Recovery Summary

Last Backup **✓** **Sep 20, 2008 1:34 AM**

Output Size **80.00 KB**

Backup Size **SPFILE**

Next Backup **N/A**

Flashback **Disabled**

Flash Recovery Area Usage

Flash Recovery Area **oradbnas/flash_recovery_area** (8.0 GB)

Unused 55.71 MB
Used (Reclaimable) 2.77 GB
Used (Non-reclaimable) 5.17 GB

Data Guard Summary

Overall Status **✘ Error**

Protection Mode **Maximum Performance**

Fast-Start Failover **Disabled**

Primary Database **⚠ salesdb**

Primary Redo Rate **1.08 MB/sec**

Standby Databases

Name	Host	Role	Status	Transport Lag	Apply Lag
salesdbs	stajv16.us.oracle.com	Physical Standby	✓	Normal 98.0 sec	59.0 min

Services Summary

Problem Services **✘ 1**

Clusterware Version **11.1.0.7.0**

Services Details

Name	Status	Running Instances	Avg Response (msec/call)	% CPU Load	Alerts
shipments		2	601.27	.90	✘ 2
reports		1	26.56	.12	⚠ 2
forecast		2	0	0	✓
orders		1	0	0	✓

Used (Non-reclaimable) Flash Recovery Area (%)

Current Value **64.68%**

Primary Database Redo Rate (MB/sec)

Redo Rate **1.08 MB/sec**

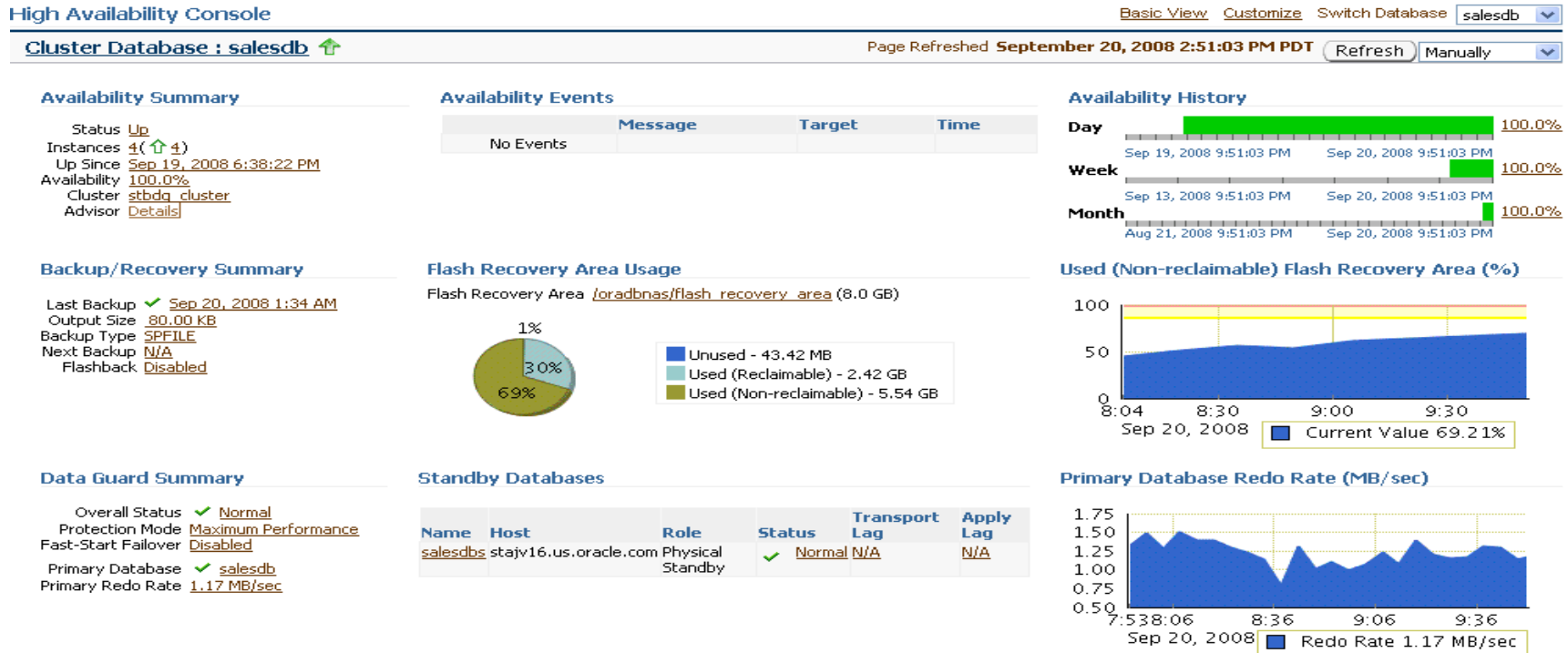
Top Services % CPU Load

forecast reports shipments orders

Additional Links
[High Availability Operations](#)

Home Targets Deployments Alerts Compliance Jobs Reports Setup Preferences Help Logout

HA Console



- Configuration-wide view for RAC/HA setup instead of individual databases
- Show MAA configuration advice
- Show Availability related events across the configuration
- Summary and Chart views for key Backup/Recovery, Data Guard and HA Service metrics
- Customizable views
- Drilldowns
- Launch HA Operations

HA Console – Configuration Advice

High Availability Configuration Advisor

Outage Type	Oracle Solution	Benefits
Computer Failures	Configure Oracle Real Application Clusters and Oracle Clusterware	Automatic recovery of failed nodes and instances. Fast application notification with failover.
Computer Failures	Configure Oracle Data Guard	Fast-start failover and fast application notification with integrated Oracle clients.
Computer Failures	Configure Oracle Streams	Online replica database resumes processing.
Storage Failures	Migrate Storage to Automatic Storage Management	Mirroring and online automatic rebalance places redundant copies of the data in s
Storage Failures	Setup Oracle Data Guard	Fast-start failover and fast application notification with integrated Oracle clients.
Storage Failures	Schedule Backups Using Flash Recovery Area	Fully managed database recovery and disk-based backups.
Storage Failures	Configure Oracle Streams	Online replica database resumes processing.
Human Errors	Enable supplemental logging.	Provides ability to browse transactions by time or SCN range.
Human Errors	Configure Flash Recovery Area and Enable Flashback Database	Fine-grained and database-wide rewind capability.
Data Corruptions	Use storage compliant with Hardware Assisted Resilient Data (HARD) Initiative.	Corruption prevention within a storage array.
Data Corruptions	Configure DB_BLOCK_CHECKING and DB_BLOCK_CHECKSUM Initialization Parameters	Different levels of block corruption prevention and detection at the database level.

- Provide launch pad to perform configuration changes for better Availability
- Based on Oracle Suggested Best practice recommendations
- Provide automation workflow to implement recommendation



Demo

Oracle's Highly Available Grid – Manage

- Manage as one
- HA Console – Dashboard to Manage Highly Available Grid
- Manage RAC
- Manage ASM
- Manage Data Guard

ORACLE Enterprise Manager 10g Grid Control

Home Targets Deployments Alerts Compliance Jobs Reports

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Problem Services **✗ 1**

Clusterware Version **11.1.0.7.0**

Services Details

Name	Status	Running Instances	Avg Response (msec/call)	% CPU Load	Alerts
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reports		1	26.56	.12	⚠ 2
forecast		2	0	0	✓
orders		1	0	0	✓

Primary Database Redo Rate (MB/sec)

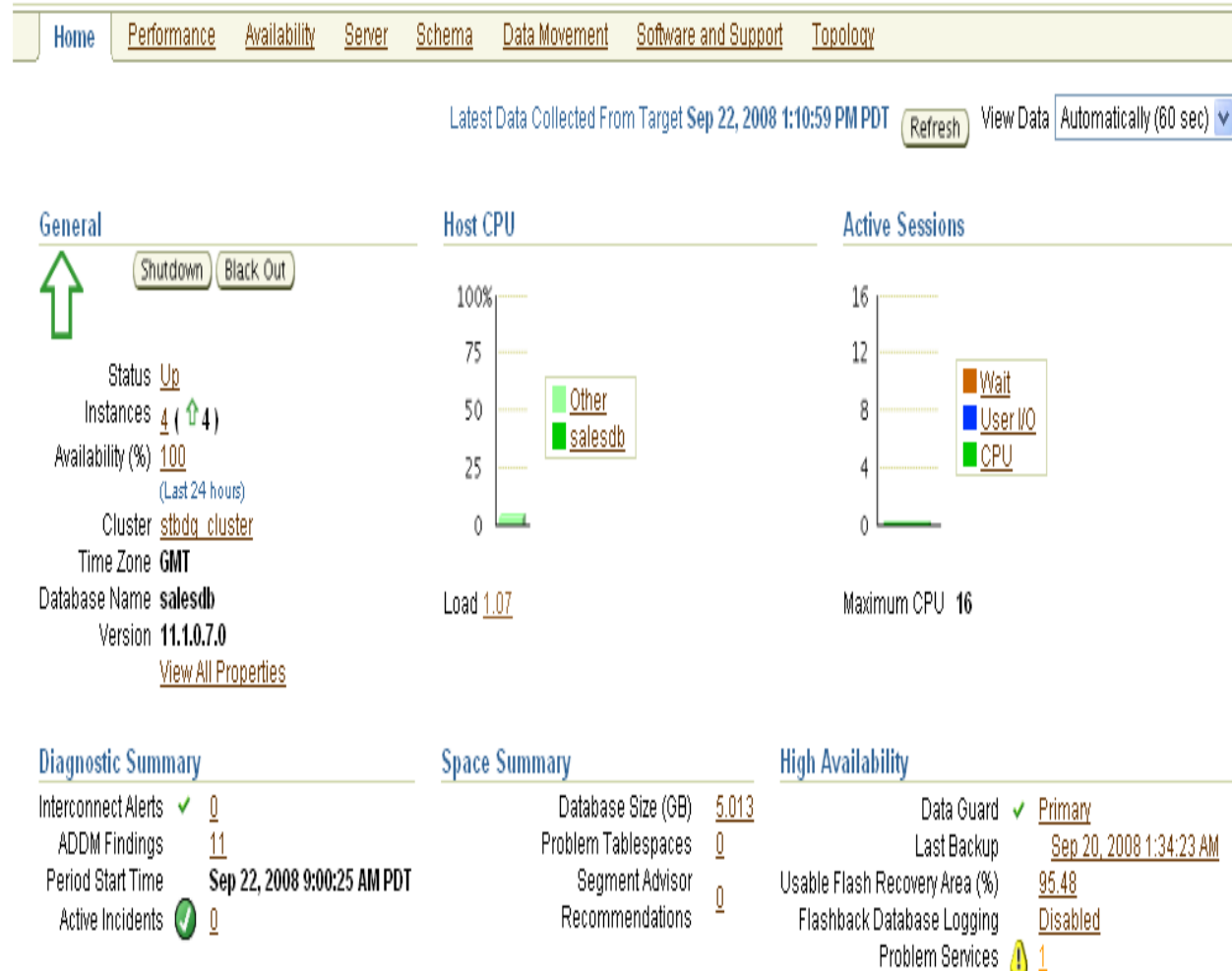
Redo Rate **1.08 MB/sec**

Top Services % CPU Load

RAC Management

- Manage as one
- Monitor RAC and Cluster targets
- Cluster-aware monitoring
- Cluster-aware jobs
- ADDM for RAC **NEW!**
- Service Centric Management **NEW!**
- Diagnose as many **NEW!**

Cluster Database: salesdb



RAC Management

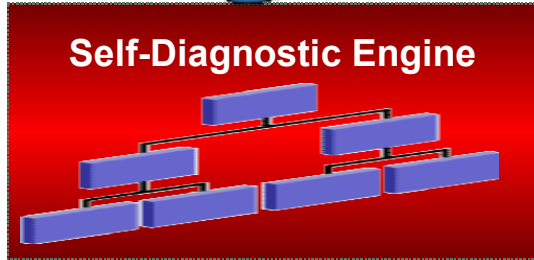
- Cluster Monitoring
 - Interconnects
 - Status, VIP relocations, nodeapp availability
 - Alert log monitoring
- RAC Monitoring
 - Summary views, drilldowns to individual components
 - Load average across the cluster
 - RAC level Active Sessions
 - Identify Top SQL, Sessions
 - Global Cache Coherency
 - Identify top node(s)/ instance(s) involved in block transfers
 - Identify top segments with extreme concurrency profile across some nodes
- Topology views
 - RAC and Cluster level topology views
 - Launch Operations

ADDM for RAC

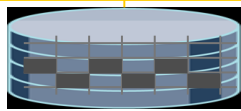
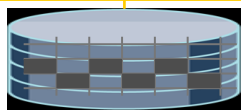
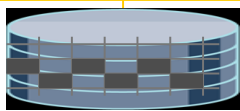
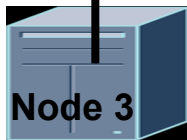
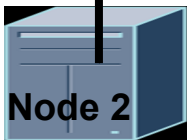
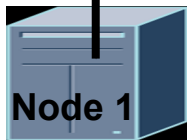
Database-Level ADDM



Self-Diagnostic Engine



Instance-Level ADDMs



- A Performance Expert, now a RAC Specialist too!
- Identifies the most “Globally Significant” performance issues
- Automatically runs every hour
- Cluster-wide analysis of:
 - Global cache interconnect issues
 - Lock manager congestion issues
 - Global resource contention, e.g. IO bandwidth, hot blocks
 - Globally high-load SQL
 - Skew in instance response times

Service Centric Management

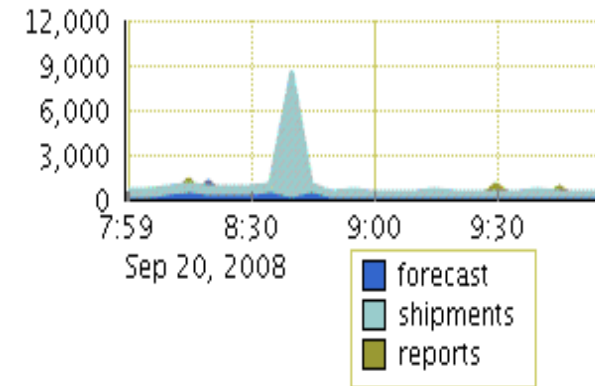
Services Summary

Problem Services ✖ 1 ⚠ 1
Clusterware Version 11.1.0.7.0

Services Details

Name	Status	Running Instances	Avg Response (msec/call) ▾	% CPU Load	Alerts
shipments	↑	2	579.86	.91	✖ 2
reports	↑	1	38.44	.13	⚠ 1
forecast	↑	2	0	0	✓
orders	↑	1	0	0	✓

Top Services Average Response Time (msec/call)



- Create and Administer Cluster Managed Databases Services for work load management
- Monitor Services for Status, Performance and Configuration issues via HA console
 - View Top services based on Avg. Response time across the cluster
 - View Top services based on %CPU utilization across the cluster
 - Drilldowns to analyze the session waits, identify SQL or root cause

Service Centric Administration

Cluster Managed Database Services

The following shows the status of all cluster managed services defined for the current database. Select a service to manage the states of its instances.

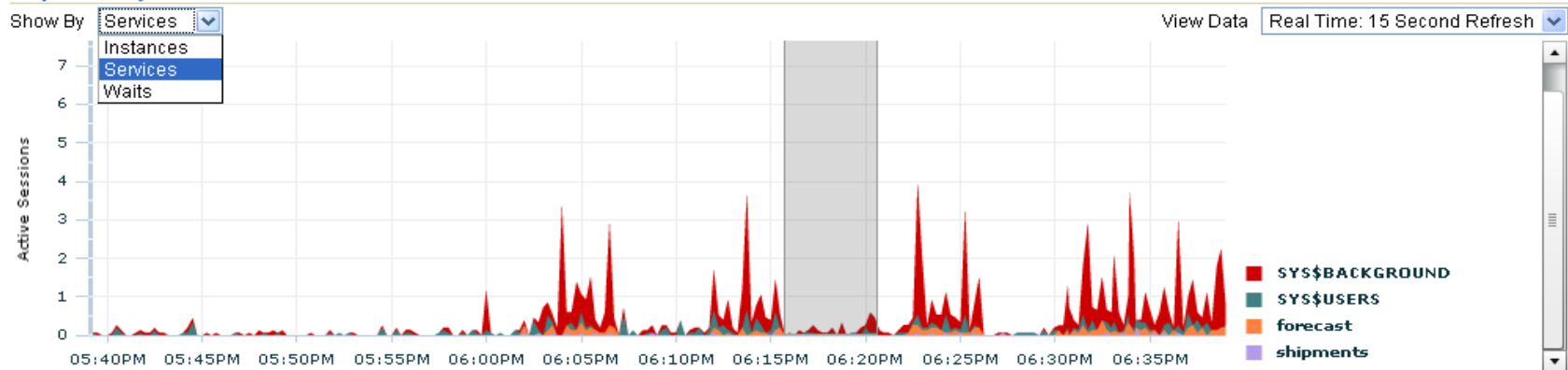
Page Refreshed 9/22/08 10:56 AM

Select	Service Name	Status	Running Instances	Response Time (milliseconds)(Last 5 Minutes)	% CPU Load	Service related alerts among all instances	Status Details
<input checked="" type="radio"/>	forecast		salesdb1, salesdb2	9.92 19.60 173.77	3.07	1 1	Service is running on all preferred instances.
<input type="radio"/>	orders		salesdb2	134.90 150.88 192.81	3.36	1 0	Service is running on all preferred instances.
<input type="radio"/>	reports		salesdb4	113.77 121.07 135.95	1.20	1 1	Service is down on one or more preferred instances.
<input type="radio"/>	shipments		salesdb3	137.01 145.12 155.55	3.88	1 1	Service is down on one or more preferred instances.

- Setup HA Services with Preferred/Available instances
- Test connectivity to service
- Create TNS alias files for services as well as ability to export this to client machines.
- Manage Services for start/stop/relocate, enable/disable operations
- Drilldown to individual services

Service Centric Monitoring

Top Activity



Detail for Selected 5 Minute Interval

Start Time **Sep 22, 2008 6:15:45 PM PDT**

Top SQL

Actions: **Schedule SQL Tuning Advisor** (dropdown)

Select All | Select None

Select Activity (%)	SQL ID	SQL Type	Service	Instance
<input type="checkbox"/>	20.00 	9imd3v1tnxv9n	UNKNOWN	SYS\$USERS salesdb1

Top Sessions

View: **Top Sessions** (dropdown)

Activity (%)	Session ID	User Name	Program	Service
29.79 	126	SYS	oracle@stbdq07.us.oracle.com (QMNC)	SYS\$BACKGROU
17.02 	140	SYS	oracle@stbdq06.us.oracle.com	SYS\$BACKGROU

- Identify Top services from Avg. Response time and %CPU utilization across the cluster
- Drilldown to identify Top Activity breakdown by Service, Wait and Instances
- Identify SQL and session(s) causing waits

Diagnose as many

- Manage as one works but one would need to diagnose problems at one or many nodes/instances
- Monitor any metric across the Database instances or cluster nodes in a single tile based view
- Customizable views for selective monitoring
- Fits in to existing workflows

ORACLE Enterprise Manager 10g
Grid Control

Home Targets Deployments Alerts Compliance Jobs Reports

Hosts Databases Web Applications Services Systems Groups All Targets

Cluster: stbdq_cluster > Cluster Database: salesdb > Logged in As SYS

Hosts: Load Average

View Data Real Time: 15 Second Refresh Customize

Summary Chart Tile Chart

Click on an area of the summary chart or an instance name in the chart legend to view additional performance information for the host.

Summary Chart

Instance Name	Current Value	Average Over Last Hour	Maximum Over Last Hour
stbdq07.us.oracle.com (salesdb4)	1.11	1.30	1.78
stbdq04 (salesdb1)	0.12	0.23	0.67
stbdq06.us.oracle.com (salesdb3)	0.10	0.18	0.53
stbdq05 (salesdb2)	0.22	0.16	0.38

Instances Data

Instance Name	Current Value	Average Over Last Hour	Maximum Over Last Hour
stbdq07.us.oracle.com (salesdb4)	1.11	1.30	1.78
stbdq04 (salesdb1)	0.12	0.23	0.67
stbdq06.us.oracle.com (salesdb3)	0.10	0.18	0.53
stbdq05 (salesdb2)	0.22	0.16	0.38

Home | Targets | Deployments | Alerts | Compliance | Jobs | Reports | Setup | Preferences | Help | Logout

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[About Oracle Enterprise Manager](#)

Diagnose as many

Cluster: stbdq_cluster > Cluster Database: salesdb >

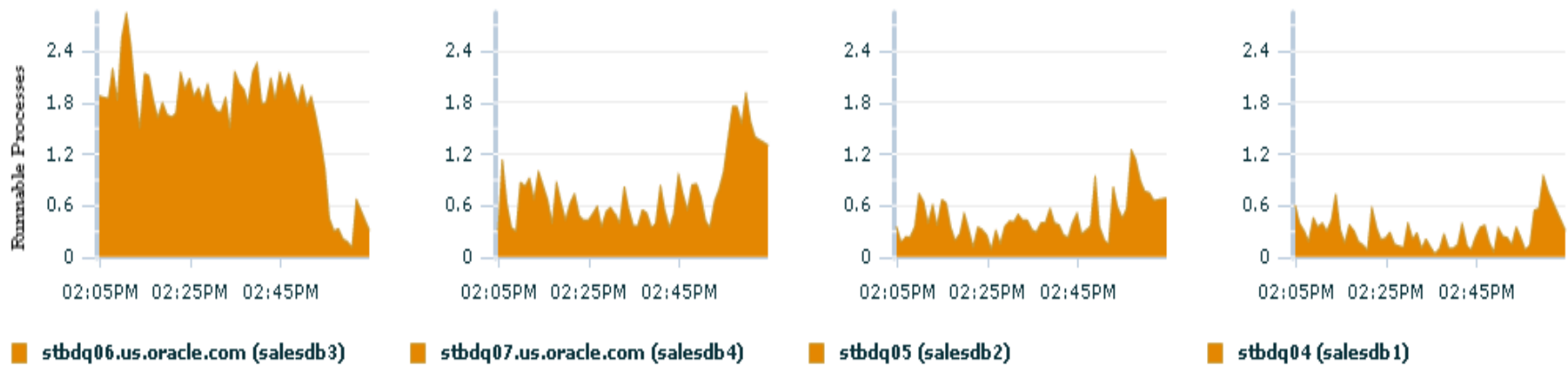
Logged in As SYS

Hosts: Load Average

View Data Real Time: 15 Second Refresh

Customize

Summary Chart Tile Chart



Instances Data

Instance Name	Current Value	Average Over Last Hour ▾	Maximum Over Last Hour
stbdq06.us.oracle.com (salesdb3)	0.31	1.69	2.85
stbdq07.us.oracle.com (salesdb4)	1.30	0.74	1.92
stbdq05 (salesdb2)	0.69	0.45	1.25
stbdq04 (salesdb1)	0.31	0.29	0.95

Diagnose as many

Logged in As SYS

Cluster: stbdg_cluster > Cluster Database: salesdb >

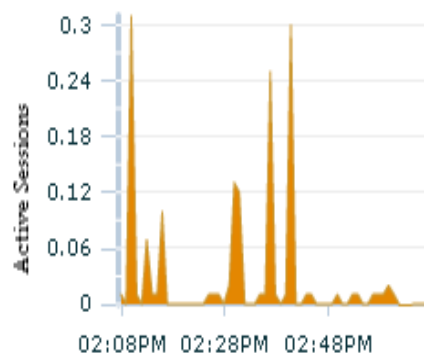
Active Sessions By Instance: Cluster

Wait Class Cluster

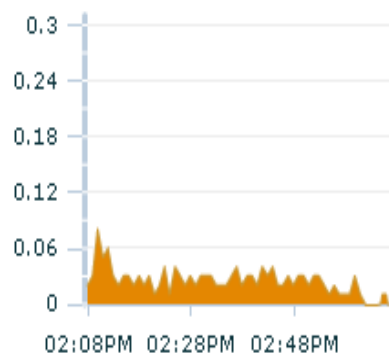
View Data Real Time: 15 Second Refresh

Customize

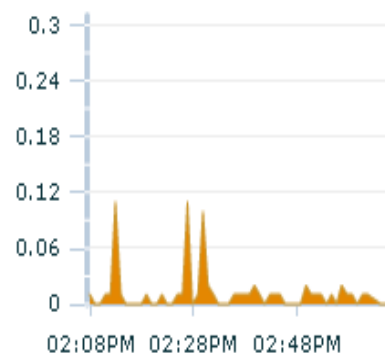
Summary Chart Tile Chart



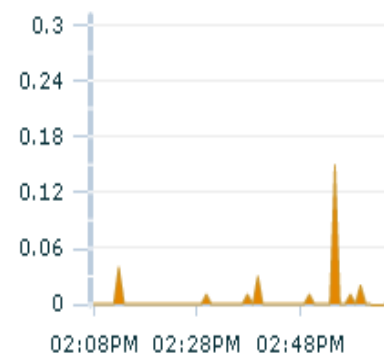
salesdb4



salesdb3



salesdb1



salesdb2

Instances Data

Instance Name	Current Value	Average Over Last Hour ▾	Maximum Over Last Hour
salesdb4	0.00	0.02	0.31
salesdb3	0.00	0.02	0.08
salesdb1	0.00	0.01	0.11
salesdb2	0.00	0.01	0.15

Diagnose as many

Cluster: stbdg_cluster > Cluster Database: salesdb >

Logged in As SYS

Customize Chart Display

Customize by changing the chart order option. For any selected ordering, you can limit the tile chart display to the instances selected in the table below. Cancel OK

Number Of Charts Per Row

Chart Order Option Average Over Last Hour Maximum Over Last Hour Instance ID User Defined

Chart Contents

[Select All](#) | [Select None](#)

Select	Name	Current Value	Average Over Last Hour	Maximum Over Last Hour
<input checked="" type="checkbox"/>	salesdb4	0.00	0.02	0.31
<input checked="" type="checkbox"/>	salesdb3	0.00	0.02	0.08
<input checked="" type="checkbox"/>	salesdb1	0.00	0.01	0.11
<input checked="" type="checkbox"/>	salesdb2	0.00	0.00	0.15

- Customizable tile charts
 - Number of charts per row
 - Order by Metric
 - Average value over 1 hr
 - Maximum over 1 hr
 - Instance ID
 - User defined



Demo

Oracle's Highly Available Grid – Manage

- Manage as one
- HA Console – Dashboard to Manage Highly Available Grid
- Manage RAC
- Manage ASM
- Manage Data Guard

ORACLE Enterprise Manager 10g Grid Control

Home Targets Deployments Alerts Compliance Jobs Reports

High Availability Console

Cluster Database : salesdb

Page Refreshed September 20, 2008 2:25:18 PM PDT Refresh Manually

Availability Summary

Status **Up**

Instances **1**

Up Since **Sep 19, 2008 6:38:22 PM**

Availability **100.0%**

Cluster **sbddg_cluster**

Advisor [Details](#)

Availability Events

Message	Target	Time
✗ The Data Guard status of salesdb is Error ORA-16810: multiple errors or warnings...	salesdb	Sep 20, 2008 9:23:11 PM
✗ Metrics "CPU Time Per User Call" is at 1513754.75 for service "shipments"	salesdb salesdb3	Sep 20, 2008 4:23:25 PM
✗ Metrics "Elapsed Time Per User Call" is at 566148.94444 for service "shipments"	salesdb salesdb3	Sep 20, 2008 4:23:25 PM
⚠ Metrics "Elapsed Time Per User Call" is at 65493.92809 for service "reports"	salesdb salesdb4	Sep 20, 2008 2:40:41 PM

Availability History

Day

Week

Month

Backup/Recovery Summary

Last Backup **✓** Sep 20, 2008 1:34 AM

Output Size **80.00 KB**

Backup Type **SPFILE**

Next Backup **N/A**

Flashback **Disabled**

Flash Recovery Area Usage

Flash Recovery Area **oradbfnas/flash_recovery_area** (8.0 GB)

Unused 55.71 MB
Used (Reclaimable) 2.77 GB
Used (Non-reclaimable) 5.17 GB

Used (Non-reclaimable) Flash Recovery Area (%)

Current Value **64.68%**

Data Guard Summary

Overall Status **✗ Error**

Protection Mode **Maximum Performance**

Fast-Start Failover **Disabled**

Primary Database **⚠ salesdb**

Primary Redo Rate **1.08 MB/sec**

Standby Databases

Name	Host	Role	Status	Transport Lag	Apply Lag
salesdb3	stajv16.us.oracle.com	Physical Standby	✓	Normal 98.0 sec	59.0 min

Primary Database Redo Rate (MB/sec)

Redo Rate **1.08 MB/sec**

Services Summary

Problem Services **✗ 1**

Clusterware Version **11.1.0.7.0**

Services Details

Name	Status	Running Instances	Avg Response (msec/call)	% CPU Load	Alerts
shipments	↑	2	601.27	.90	✗ 2
reports	↑	1	26.56	.12	⚠ 2
forecast	↑	2	0	0	✓
orders	↑	1	0	0	✓

Top Services % CPU Load

Additional Links

[High Availability Operations](#)

Manage ASM

Disk Group: DATA

General Performance Templates Files

General

Name **DATA**
 State **MOUNTED**
 Redundancy **EXTERN**
 Total Size (GB) **8**
 Pending Operations [0](#)

Advanced Attributes [Edit](#)

Database Compatibility **10.1.0.0.0**
 ASM Compatibility **10.1.0.0.0**

Current Disk Group Usage (GB)

Disk Group Daily Space Usage History (Last 7 Days)

Member Disks [Add](#)

[Resize](#) [Online](#) [Offline](#) [Recover Bad Blocks](#) [Remove](#)

Select All | Select None

Select Disk	Failure Group	Path	Read/Write Errors	State	Mode	Size (GB)	Used (GB)	Used (%)
<input type="checkbox"/> DATA_0000	DATA_0000	/oradbnas/oow_disks/asmdsk1	0	NORMAL	ONLINE	4.00	0.09	2.22
<input type="checkbox"/> DATA_0001	DATA_0001	/oradbnas/oow_disks/asmdsk2	0	NORMAL	ONLINE	4.00	0.09	2.15

General Performance Templates Files

- Monitor ASM Instance
- Monitor Diskgroups (Size, rebalance, etc.)
- Real-time performance monitoring
 - Response time, Throughput and Operations/sec

Administration

- Startup/shutdown
- Diskgroups
 - Create/Delete
 - Mount/Un-mount
 - Rebalance
 - Add, Resize Disks

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Cluster Database : salesdb

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Availability Summary

Status **Up**

Instances **1**

Up Since **Sep 19, 2008 6:38:22 PM**

Availability **100.0%**

Cluster **sbtdg_cluster**

Advisor **Details**

Availability Events

Message	Target	Time
✗ The Data Guard status of salesdb is Error ORA-16810: multiple errors or warnings...	salesdb	Sep 20, 2008 9:23:11 PM
✗ Metrics "CPU Time Per User Call" is at 1513754.75 for service "shipments"	salesdb salesdb3	Sep 20, 2008 4:23:25 PM
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Availability History

Day

Week

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Last Backup **✓** **Sep 20, 2008 1:34 AM**

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Backup Type **SPFILE**

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Flashback **Disabled**

Data Guard Summary

Overall Status **✗ Error**

Protection Mode **Maximum Performance**

Fast-Start Failover **Disabled**

Primary Database **⚠ salesdb**

Primary Redo Rate **1.08 MB/sec**

Flash Recovery Area Usage

Flash Recovery Area **oradbnas/flash_recovery_area (8.0 GB)**

Unused 55.71 MB
Used (Reclaimable) 2.77 GB
Used (Non-reclaimable) 5.17 GB

Standby Databases

Name	Host	Role	Status	Transport Lag	Apply Lag
salesdbs	stajv16.us.oracle.com	Physical Standby	✓	Normal 98.0 sec	59.0 min

Services Summary

Problem Services **✗ 1**

Clusterware Version **11.1.0.7.0**

Services Details

Name	Status	Running Instances	Avg Response (msec/call)	% CPU Load	Alerts
shipments		2	601.27	.90	✗ 2
reports		1	26.56	.12	⚠ 2
forecast		2	0	0	✓
orders		1	0	0	✓

Used (Non-reclaimable) Flash Recovery Area (%)

Current Value **64.68%**

Primary Database Redo Rate (MB/sec)

Redo Rate **1.08 MB/sec**

Top Services % CPU Load

Manage Standby Database

- Monitor Physical, Logical Standbys
- Real-time and Agent based monitoring for Data Guard Status, Transport, and Apply lags
- Fast-start failover
- Edit Configuration
- Single click Switchover and Failover
- Verify Configuration
- Support new 11g features



Data Guard

Page Refreshed September 20, 2008 3:10:37 PM PDT

View Data Real Time: Manual Refresh

Overview

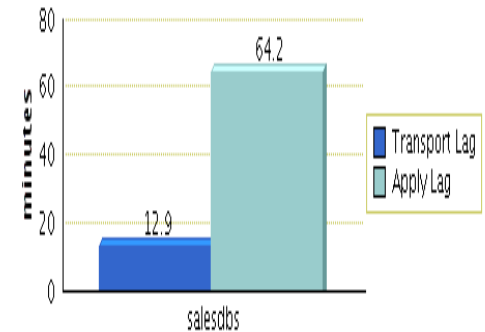
Data Guard Status ✓ Normal
 Protection Mode Maximum Performance
 Fast-Start Failover Disabled

Primary Cluster Database

Name salesdb
 Cluster stbdg_cluster
 Data Guard Status ✓ Normal
 Current Log Multiple Threads
 Properties Edit

Standby Progress Summary

Transport lag is the time difference between the primary last update and the standby last received redo.
 Apply lag is the time difference between the primary last update and the standby last applied redo.



Standby Databases

Add Standby Database

Select	Name	Cluster	Data Guard Status	Role	Last Received Log	Last Applied Log	Estimated Failover Time
<input type="radio"/>	salesdbs	Unknown	✓ Normal	Physical Standby Cluster Database	Multiple Threads	Multiple Threads	69.6 minutes

Manage Standby Database

- Snapshot Standby support
 - Read-write copy of primary database
 - Preserves zero data loss with continuous redo transport while standby is open for read-write
 - Can be used for in Real Application Testing
 - Data Guard Management extended to manage Snapshot standbys
- Active Data Guard
 - Enable Read-only access to Physical standby databases for optimal resource utilization
 - Changes from primary database are continually applied on the standby
 - Disaster Recovery protection while standby is used to offload queries, reports, backups, etc.
 - Monitored as any physical standby database

Manage Standby Database

- Automatic Migration of EM Jobs and monitoring settings upon role changes **NEW!**
 - User created jobs such as backups can be setup to be migrated between primary/standby databases as part of the switchover
 - Customized thresholds for metrics are swapped between the databases upon switchover
- Fast-start Failover enhancements
 - Enterprise Manager monitors to ensure observer is Highly Available
 - Helps setup alternative observer hosts to ensure Fast-start Failover is not disabled in event of failure with observer host
 - Configure Fast-start Failover in Maximum Performance and Maximum Availability modes (11g DB)
 - Setup user configurable Fast-start Failover conditions (11g DB)
 - Archiver stuck, named ORA- errors, corrupted control file, inaccessible log files, etc.

Other key HA enhancements



- LogMiner and Flashback Transaction integration workflows to
 - Search/Browse transactions by user/time range/SCN range
 - View transaction details and dependent transactions
 - To recover from human errors, Undo using Flashback Transaction
- Wizard driven Data Recovery Advisor workflows

Perform Recovery

Oracle Advised Recovery

Oracle did not detect any failures.

Advise and Recover

User Directed Recovery

Recovery Scope

Recover

- Operation Type
- Recover to the current time or a previous point-in-time
Datafiles will be restored from the latest usable backup as required.
 - Restore all datafiles
Specify Time, SCN or log sequence. The backup taken at or prior to that time will be used. No recovery will be performed in this operation.
 - Recover from previously restored datafiles

Decrypt Backups

Host Credentials

To perform recovery, supply operating system login credentials to access the target database.

* Username

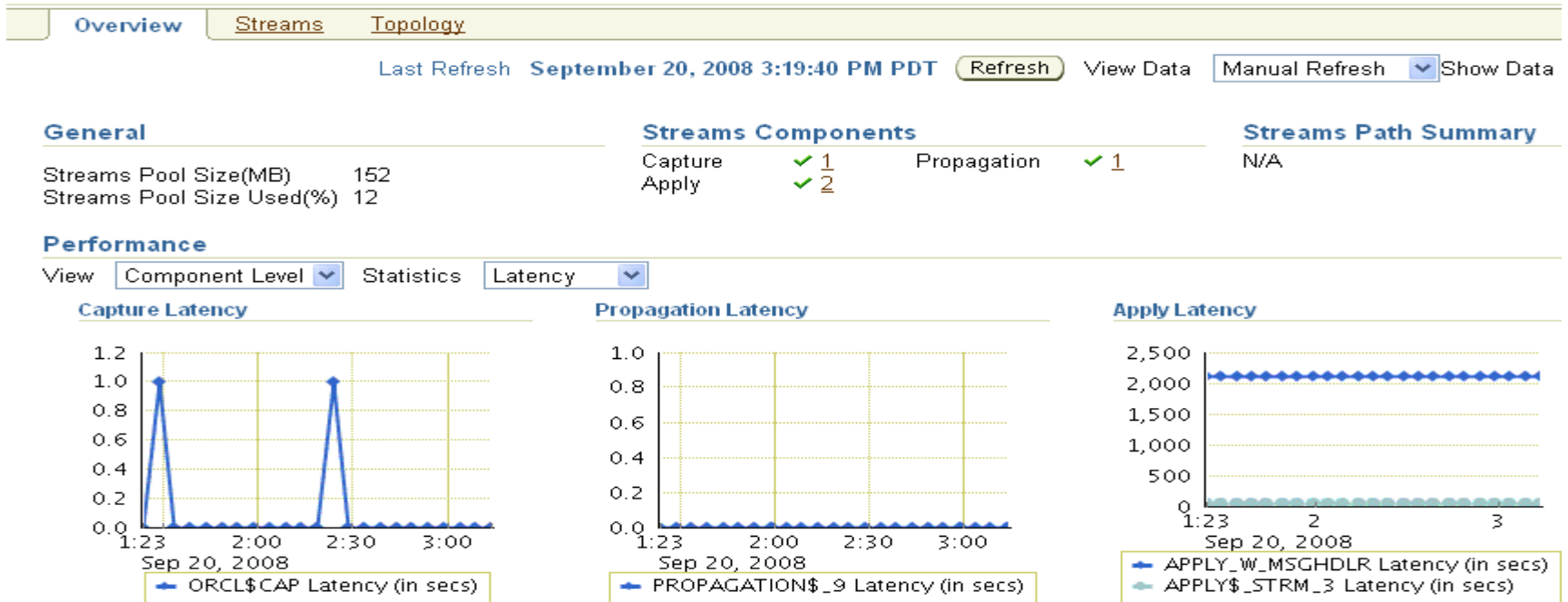
* Password

Save as Preferred Credential

Other key HA enhancements



Streams



- Oracle Secure Backup
 - Monitor Oracle Secure Backup Administrative Server as a new EM target
 - Support File system Backup/Restore jobs from Enterprise Manager
- Improved Streams management to setup and monitor
 - Simplified workflows to setup Streams based replication
 - Monitor Streams at component and path level
 - Monitor Latency and Throughput

Summary

Enterprise Manager helps Setup and Manage Highly Available Grid

Setup

Setup RAC, ASM and Standby configurations

Automate Oracle recommended Best practices

Avoid maintaining custom scripts or time consuming and error prone manual procedures

Manage

Manage as One, Diagnose as Many

Manage RAC, ASM and Standby configurations

Reduce Total Cost of Ownership

Q&A



HA Sessions, Labs, Demos From Oracle Development

Mon, Sep 22

- 2:30 pm - Database 11g: Next-Gen HA, Moscone South 103

Tue, Sep 23

- 9:00 am - Active-Active Data Centers, Moscone South 103
- 11:30 am - Sharding with Oracle, Moscone South 302
- 11:30 am - HA with Oracle VM, Moscone West 3024
- 1:00 pm - Active Data Guard, Moscone South 104

Wed, Sep 24

- 9:00 am - Fusion Middleware Grid HA, Marriott Nob Hill AB
- 11:30 am - RMAN Best Practices, Moscone South 103
- 1:00 pm - Database in the Cloud, Moscone South 305
- 5:00 pm - Data Guard & Real Application Testing, Moscone 102

Wed, Sep 24 (contd.)

- 5:00 pm - EM in Secure MAA, Moscone West 2001
- 5:00 pm - E-Business Suite HA, Moscone West 2002/04

Thu, Sep 25

- 9:00 am - Oracle Secure Backup, Moscone South 102
- 10:30 am - Streams Replication, Moscone South 102
- 12:00 pm - Rolling Database Upgrades, Moscone South 103
- 1:30 pm - Streams Performance, Moscone South 102
- 3:00 pm - Oracle Grid Computing, Moscone South 303
- 3:00 pm - E-Business Suite R12 MAA, Moscone West 2007
- 3:00 pm - Siebel MAA, Moscone South 308
- 3:00 pm - Fusion SOA HA & Scalability, Marriott Salon 14/15

Hands On Labs - Thu, Sep 25

- 10:30 - 11:30 am, 12:00 - 1:00 pm - Active Data Guard, Marriott Golden Gate A3

DEMOgrounds, Mon-Thu

- Active Data Guard, Streams, Oracle Secure Backup, RMAN/Flashback, MAA

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