The Oracle Stack Promise for Siebel Customer Relationship Management

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Oracle MAA Dev

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Oracle RAC Dev

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Siebel PM
Outline

• Introduction
• The Oracle Stack
• Customer Case Studies
• Scalability and Performance
• Siebel Maximum Availability Architecture
Introduction
Grid Competency for Oracle Enterprise Applications

• Part of RAC Development Group

• Mission / Goals
  • Work closely with Siebel Engineering/PM group to integrate RAC features into the Siebel Applications
  • Publish whitepapers such as Siebel on RAC best practices, case studies, etc
  • Knowledge Transfer:
    • Seminar: Siebel Grid Event
Maximum Availability Architecture (MAA)
Maximum Availability = Unbreakable Architecture + Best Practices

- **Oracle's best practices blueprint** based on proven Oracle high availability technologies and recommendations
  - Technology + Configuration + Operational Practices
  - Applications, Enterprise Manager, Application Server, Collaboration Suite and Database
  - Constantly validated and enhanced as new products and features become available
  - Focused on reducing unplanned and planned downtime

- Papers published to the Oracle Technology Network (OTN)
The Oracle Stack
The Oracle Stack
Target Architecture

Primary Site
- Siebel Gateway Server
- Oracle RAC and ASM
- Oracle Database
- Siebel File System
- Oracle HTTP Servers on OEL
- Siebel Servers on OEL

Secondary Site
- Oracle RAC and ASM
- Oracle Standby Database
- Siebel File System

OEL = Oracle Enterprise Linux
The Oracle Stack
Oracle Enterprise Linux and Oracle VM

- Siebel runs Siebel Server, Gateway Server and Web Server on Oracle Enterprise Linux (Siebel 8.0+)
- Siebel runs on Oracle VM (Siebel 8.0+)
- Siebel 8.0 VM Templates are available for download from OTN
  - Siebel database and mid-tier installation and configuration in less than an hour
The Oracle Stack
Database Technologies

- Real Application Clusters & Clusterware
  - Fault Tolerant
  - Open-ended Scalability

- Online Upgrade
  - Upgrade Hardware and Software
  - Online

- Data Guard
  - Active Failover
  - Replica

Primary Site
- Database Servers
- Storage

- Automatic Storage Management
  - Fault Tolerant
  - Storage Scale-Out

Secondary Site
- Database Servers
- Storage

- Flashback
  - Correct Errors by Moving Back in Time

- Recovery Manager & Oracle Secure Backup
  - Low Cost High Performance
  - Data Protection and Archival
### The Oracle Stack

#### Siebel RAC Support

<table>
<thead>
<tr>
<th>Siebel</th>
<th>7.7.2</th>
<th>7.8</th>
<th>8.0</th>
<th>8.1</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oracle RAC</td>
<td>9.2.0.6*</td>
<td></td>
<td></td>
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<tr>
<td>Oracle RAC</td>
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<td>Oracle</td>
<td>11.1.0.6+</td>
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</tbody>
</table>

10gR2 onwards is generally recommended

* All Database Nodes Active is supported w/ Siebel, except when Siebel Remote is used w/ Oracle 9.2.
The Oracle Stack

Oracle Data Guard

- Siebel supports both physical and logical standby databases
- Physical standby database provides a physically identical copy of the primary database
  - Kept synchronized through applying redo records
  - With Active Data Guard (11g), the physical standby can open for read-only access while receiving and applying redo
- Logical standby database contains the same data as the primary database, although the physical organization and structure can be different
  - Kept synchronized through applying sql
  - Can be used to upgrade the database software and apply patch sets while Siebel is online – demo later
Customer Case Studies
Deutsche Telekom

Business Drivers

• Up to 25,000 concurrent users
• Reduce maintenance costs
• Use new features
• Be prepared for future requirements
• Ability to Scale
• Maximize availability
• Reach necessary performance
Deutsche Telekom
Siebel / RAC Footprint

<table>
<thead>
<tr>
<th>Application</th>
<th>Siebel 7.8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Database</td>
<td>Oracle RAC 10.2.0.3 running on AIX 5.3 ML5</td>
</tr>
<tr>
<td>Platform</td>
<td>4-node IBM p570-595 (32-way Power-2 core)</td>
</tr>
<tr>
<td>Storage</td>
<td>11TB DB on IBM Storage connected by fiber</td>
</tr>
<tr>
<td>Cluster</td>
<td>Oracle Clusterware with data files on ASM</td>
</tr>
<tr>
<td>Interconnect</td>
<td>UDP over 1 GB Ethernet with 2 switches using trunking NIC teaming software</td>
</tr>
<tr>
<td>Features</td>
<td>RAC, ASM, Streams, Replication</td>
</tr>
</tbody>
</table>
Deutsche Telekom

Outcome

• Cost-saving – save on maintenance fees
• Ability to scale up
• Higher Availability
• Benefited on new database features such as ASM, ASSM
Financial Services Company

Business Drivers

- Scalability
  - 10,000 connected users
  - 5,000 concurrent active sessions

- Increase Availability
  - Supporting 24 x 7 operation

- Reducing Hardware & Software Costs
  - Scale-out instead of scale-up - replace high-end server with mid-size server machines
  - Moving from proprietary OS to Linux
# Financial Services Company

## Siebel / RAC Footprint

<table>
<thead>
<tr>
<th>Application</th>
<th>Siebel 7.8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Database</td>
<td>Oracle RAC 10.2.0.3 running on RHEL 3 Update 6</td>
</tr>
<tr>
<td>Platform</td>
<td>4 HP DL 580 (4 duo-core CPUs, 64GB RAM)</td>
</tr>
<tr>
<td>Storage</td>
<td>2TB DB - 4TB EMC SAN</td>
</tr>
<tr>
<td>Cluster</td>
<td>Oracle Clusterware with data files on ASM</td>
</tr>
<tr>
<td>Interconnect</td>
<td>UDP over 1 GB Ethernet</td>
</tr>
<tr>
<td>Features</td>
<td>RAC, ASM</td>
</tr>
</tbody>
</table>

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Financial Services Company

Outcome

- Better UI performance
  - Average View (scenarios under test) response time: reduced from 2.6s to 1.8s
- EIM load run
  - Before RAC: Throughput: 40000 rows / 17.4 min
  - After RAC: Throughput: 40000 rows / 9.2 min
- Observe a reduction of backlog for their EAI and Workflow run
- Cost-saving on hardware
Performance and Scalability
Performance and Scalability
RAC and ASM Implementation

• RAC and ASM offer considerable benefits in terms of fault tolerance and open-ended scalability
• Siebel on RAC is not a silver bullet to resolve Siebel performance issues
  • A poorly performing query on a single instance Oracle database will perform poorly on RAC
  • The Siebel application must be tuned to take full advantage of RAC
• Skills required:
  • Siebel Configuration and Architecture
  • Oracle RAC
  • Systems and Network Architecture
Performance and Scalability
RAC and ASM Best Practices

• Size RAC nodes appropriately
• Configure storage appropriately
• Tune database sequences
• Tune “Hot” Blocks
• Tune batch for scalability
• Use Siebel connection pooling
• Use services to allocate work to resources
• Test and tune
• Monitor performance
RAC and ASM Best Practices

Size RAC nodes appropriately

- Assume workload is constant, cater
  - 10% more buffer cache
  - 15% more shared pool is needed
  - Additional requirements are used for GES, GCS, Buffer cache layer
  - Query v$resource_limit for actual resource used in your environment
RAC and ASM Best Practices
Configure Storage Appropriately

- Use Automatic Storage Management (ASM) to simplify storage management
- Use Automatic Segment Space Management (ASSM)
- Use 8K block size for most tables
  - Smaller in some cases
RAC and ASM Best Practices

Tune Database Sequences

- Increase cache size (target 10000)
- Remove ordering (except S_DOCK_TXN_LOG_S)
RAC and ASM Best Practices
Tune “Hot” Blocks

- Identify serializing contention based on segment statistics
  - On single instance - buffer busy waits or row lock waits
  - On RAC - gc buffer busy waits
- Common Example: S_SRM_REQUEST
- Solutions:
  - Right growing index:
    - Hash partition or
    - reverse key index (this is case specific)
  - Table:
    - Reduce block size (2-4K)
    - Increase PCTFREE
RAC and ASM Best Practices
Tune Batch for Scalability

• Use smaller EIM batch size - 3000/4000 rows per batch
• Use parallel EIM sessions
• Move to off-peak times
• Consider enlarge initrans on related tables and indices
  • #CPUs per node * # of nodes
RAC and ASM Best Practices
Use Siebel Connection Pooling

• Reduced number of database connections
  • Rule of thumb – max 3000 DB connections per node

• Siebel 8.0+
  • Object Manager sessions switch connection if blocked - DBC_LOCK_TIMEOUT (default 100ms)
  • Reduces Impact of Siebel Connection Pooling
RAC and ASM Best Practices
Use Services to Allocate Work to Resources

Distribute OM sessions across RAC nodes
RAC and ASM Best Practices
Test and Tune

• Any system change should be rigorously tested, and transitioning to RAC is no exception
• Test environments must be representative of production
• Multiple iterations will be required
• Siebel Load
  • For example, using Oracle Application Testing Suite
  • Representative set of user journeys and batch work
  • Expand and refine until representative of production
  • Vital for full stack testing
  • Make sure tests are sensitive to failure for availability testing
• SQL Load
  • Easier and simpler to build
  • Useful for DB performance and stress tests
RAC and ASM Best Practices

Monitor Performance

- AWR / ADDM (see note: 250655.1 & note: 276103.1)
- Enterprise Manager
  - Performance advisories
  - Thresholds and Alerts for performance goals
- OS Watcher (see metalink note: 301137.1)
Siebel Maximum Availability Architecture (MAA)
Siebel MAA
Target Architecture

Primary Site

- Siebel Gateway Server
- Oracle RAC and ASM
- Siebel File System
- Oracle Database

Secondary Site

- Siebel Gateway Server
- Oracle RAC and ASM
- Oracle Data Guard
- File Synchronization
- Oracle Standby Database
- Siebel File System

Web Servers
Siebel Servers
DB Servers
Siebel MAA
Siebel HA Deployment

HTTP Load Balancers
Redundant Configuration

Web Servers
Load Balanced

Siebel Servers

Clustered Siebel Servers
Typically hosting Gateway Server, Siebel Remote, etc.

Load Balanced Siebel Servers
Typically hosting Object Managers, Workflow, etc.
Siebel MAA
Transparent Application Failover

1. Siebel Connected to RAC Instance
2. Instance Crash
3. Siebel Fails Over to Surviving Instance

Works for:
- RAC Instance or Node Failure
- Local Data Guard Standby Failover and Switchover
- Database Shutdown/Startup
# Siebel MAA

## Unplanned Outage Solutions

<table>
<thead>
<tr>
<th>Outage Type</th>
<th>Oracle Solution</th>
<th>Benefits</th>
<th>Recovery Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Siebel Node or Component Failures</td>
<td>Load Balancing</td>
<td>Remaining nodes pick up the slack</td>
<td>Affected users reconnect</td>
</tr>
<tr>
<td></td>
<td>Distributed Services</td>
<td>Remaining nodes continue processing</td>
<td>No downtime</td>
</tr>
<tr>
<td></td>
<td>Clustering</td>
<td>Automatic failover to surviving nodes</td>
<td>Seconds to minutes</td>
</tr>
<tr>
<td>Database Node or Instance Failures</td>
<td>RAC</td>
<td>Automatic recovery of failed nodes and instances, transparent application and service failover</td>
<td>Users failover transparently</td>
</tr>
<tr>
<td>Site Failure</td>
<td>Data Guard</td>
<td>Fast Start Failover</td>
<td>Minutes *</td>
</tr>
</tbody>
</table>

* It will be necessary to re-extract Siebel Remote users after site failover
<table>
<thead>
<tr>
<th>Outage Type</th>
<th>Oracle Solution</th>
<th>Benefits</th>
<th>Recovery Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage Failures</td>
<td>ASM</td>
<td>Mirroring and online automatic rebalance</td>
<td>No downtime</td>
</tr>
<tr>
<td></td>
<td>RMAN with flash recovery area</td>
<td>Fully managed database recovery and disk-based backups</td>
<td>Minutes to hours</td>
</tr>
<tr>
<td></td>
<td>Data Guard</td>
<td>Fast start failover</td>
<td>Seconds to minutes</td>
</tr>
<tr>
<td>Human Errors</td>
<td>Oracle Flashback</td>
<td>Fine grained and database rewind capability</td>
<td>&lt; 30 minutes</td>
</tr>
<tr>
<td>Data Corruption</td>
<td>RMAN with flash recovery area</td>
<td>Online block media recovery and managed disk-based backups</td>
<td>Minutes to hours</td>
</tr>
<tr>
<td></td>
<td>Data Guard</td>
<td>Automatic validation of redo blocks before they are applied, fast failover to an uncorrupted standby database</td>
<td>Seconds to minutes</td>
</tr>
</tbody>
</table>
## Siebel MAA

### Planned Siebel Maintenance Solutions

<table>
<thead>
<tr>
<th>Maintenance Activity</th>
<th>Solution</th>
<th>Siebel Outage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating system and hardware upgrade</td>
<td>Load balancing, distributed services and clustering</td>
<td>No downtime</td>
</tr>
<tr>
<td>Siebel patching</td>
<td>Rolling patch application</td>
<td>No downtime</td>
</tr>
<tr>
<td>Siebel application configuration change</td>
<td>Application Restart</td>
<td>Minutes</td>
</tr>
<tr>
<td>Siebel upgrades</td>
<td>Siebel Upgrade and Upgrade Tuner</td>
<td>Hours to days (depending on DB size)</td>
</tr>
</tbody>
</table>
### Siebel MAA

**Planned Database Maintenance Solutions**

<table>
<thead>
<tr>
<th>Maintenance Activity</th>
<th>Solution</th>
<th>Siebel Outage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating system and hardware upgrade</td>
<td>Oracle RAC</td>
<td>No downtime</td>
</tr>
<tr>
<td>Oracle Database interim patching</td>
<td>Oracle RAC rolling apply</td>
<td>No downtime</td>
</tr>
<tr>
<td>Oracle Clusterware upgrade and patches</td>
<td>Rolling apply/upgrade</td>
<td>No downtime</td>
</tr>
<tr>
<td>ASM upgrade</td>
<td>10g: Oracle Data Guard</td>
<td>Seconds to minutes</td>
</tr>
<tr>
<td></td>
<td>11g: Rolling upgrade</td>
<td>No downtime</td>
</tr>
<tr>
<td>Database storage migration</td>
<td>Oracle ASM</td>
<td>No downtime</td>
</tr>
<tr>
<td>Migrating to ASM or migrating a single-instance database to Oracle RAC</td>
<td>Oracle Data Guard</td>
<td>Seconds to minutes</td>
</tr>
<tr>
<td>Patch set and database upgrades</td>
<td>Oracle Data Guard logical standby</td>
<td>Seconds to minutes</td>
</tr>
</tbody>
</table>
Demo
Siebel Database Upgrade using Data Guard Logical Standby
Siebel MAA
Siebel Database Upgrade Using Logical Standby

1. Pre-upgrade

2. Create Logical Standby and Upgrade

3. Bring Standby Up-to-date and Switchover

Siebel MAA
Siebel Database Upgrade Using Logical Standby

1. Pre-upgrade

2. Create Logical Standby and Upgrade

3. Bring Standby Up-to-date and Switchover
Siebel MAA Demonstration
Test Configuration

• The demonstration was developed and executed using HP Systems hardware and software

• Hardware
  • HP DL145 G2 running HP Load Runner v8.1 for load generation
  • HP Integrity rx2620 servers for the application tier
  • HP Integrity rx4640 servers for the database tier
  • HP StorageWorks EVA4000 for database storage

• Software
  • HP-UX 11i v2 B.11.23 for Web and Siebel Servers
  • HP-UX 11i v3 B.11.31 for Database Servers
Siebel MAA
Tips and Best Practices

• Automate
  • Siebel Startup
  • Siebel Shutdown
  • Data Guard Broker
  • Consider Fast Start Failover

• Test, Tune and Practice Recovery Procedures
  • RAC node failure
  • Site failure
  • Database Recovery
  • Online and background workload
Oracle Application Expert Services
Siebel/RAC Offering

• Proven effective methodology that helps choose the right combination of configurations
• Pre-designed failover test cases
• Pre-designed environment calibration process
• End-to-end project management and delivery
Siebel Core Technology - Presentations

Mon, Sep 22
• 2:30 pm – Siebel Global Deployments: Best Practices and More (S300064), Moscone West 2010
• 3:00 pm – Siebel Desktop and Mobility Roadmap (S300064), Moscone South 310

Tue, Sep 23
• 9:00 am – Siebel Reporting: Oracle Business Intelligence Publisher (S300059), Moscone South 310
• 9:00 am - Siebel Application Management: Three Steps to Better Performance and Better User Adoption (S298532) Moscone West 2001
• 2:00 pm - Siebel Customer Relationship Management: Anywhere, Everywhere (S300065), Moscone South 310

Wed, Sep 24
• 9:00 am – Siebel and Microsoft: Working Together for Your Organization's Benefit (S300067), Moscone South 310
• 1:00 pm - Manageability: Enabling Administrators Around the Globe (S300058), Moscone South 310

Thu, Sep 25
• 10:30 am – Integrating Siebel in an Oracle Landscape (S300056), Moscone South 307
• 12:00 pm - Business Process Automation with Siebel (S300057), Moscone South 308
• 12:00 pm - Agile Development Using Siebel Deployment Strategies (S300071) Moscone South 307
• 1:30 pm - A Day in the Life of a Siebel Mobile User (S300061), Moscone South 307
• 3:00 pm - The Oracle Stack Promise for Siebel: MAA, Clusterware RAC (S300068), Moscone South 308

Meet the Experts Session : (Moscone West 2nd floor )

Tuesday 12:00 pm – 2:30 pm : Siebel CRM: Business Process Integration, Infrastructure, Platforms, Database and Manageability

Wednesday 12:00 pm – 2:00 pm : Siebel CRM: Usability – Accessibility, Desktop Integration, PIMSync and Mobile Solutions and Siebel Reporting
<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Session</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mon, Sep 22</td>
<td>2:30 pm</td>
<td>Database 11g: Next-Gen HA</td>
<td>Moscone South 103</td>
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<tr>
<td>Tue, Sep 23</td>
<td>9:00 am</td>
<td>Active-Active Data Centers</td>
<td>Moscone South 103</td>
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<tr>
<td></td>
<td>11:30 am</td>
<td>Sharding with Oracle</td>
<td>Moscone South 305</td>
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<tr>
<td></td>
<td>11:30 am</td>
<td>HA with Oracle VM</td>
<td>Moscone West 3024</td>
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<tr>
<td></td>
<td>1:00 pm</td>
<td>Active Data Guard</td>
<td>Moscone South 104</td>
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<tr>
<td>Wed, Sep 24</td>
<td>9:00 am</td>
<td>Fusion Middleware Grid HA</td>
<td>Marriott Nob Hill AB</td>
</tr>
<tr>
<td></td>
<td>11:30 am</td>
<td>RMAN Best Practices</td>
<td>Moscone South 103</td>
</tr>
<tr>
<td></td>
<td>5:00 pm</td>
<td>Data Guard with Real Application Testing</td>
<td>Moscone South 102</td>
</tr>
<tr>
<td></td>
<td>5:00 pm</td>
<td>EM in Secure MAA</td>
<td>Moscone West 2001</td>
</tr>
<tr>
<td>Wed, Sep 24 (contd.)</td>
<td>5:00 pm</td>
<td>E-Business Suite HA</td>
<td>Moscone West 2002/04</td>
</tr>
<tr>
<td>Thu, Sep 25</td>
<td>9:00 am</td>
<td>Oracle Secure Backup</td>
<td>Moscone South 102</td>
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<tr>
<td></td>
<td>10:30 am</td>
<td>Streams Replication</td>
<td>Moscone South 102</td>
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<tr>
<td></td>
<td>12:00 pm</td>
<td>Rolling Database Upgrades</td>
<td>Moscone South 103</td>
</tr>
<tr>
<td></td>
<td>1:30 pm</td>
<td>Streams Performance</td>
<td>Moscone South 102</td>
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<tr>
<td></td>
<td>3:00 pm</td>
<td>Oracle Grid Computing</td>
<td>Moscone South 303</td>
</tr>
<tr>
<td></td>
<td>3:00 pm</td>
<td>E-Business Suite Release 12 MAA</td>
<td>Moscone West 2007</td>
</tr>
<tr>
<td></td>
<td>3:00 pm</td>
<td>Siebel MAA</td>
<td>Moscone South 308</td>
</tr>
<tr>
<td></td>
<td>3:00 pm</td>
<td>Fusion Middleware SOA - HA and Scalability</td>
<td>Marriott Salon 14/15</td>
</tr>
</tbody>
</table>

**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