Oracle Exadata and Oracle Exalogic: Deployment Experiences and Best Practices

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Program Agenda

- Deploying Exadata for Mission Critical Applications
- Deploying Exalogic for Mission Critical Applications
- Exadata with Exalogic the Optimal Platform for Oracle Applications
- Q & A
Deploying Exadata for Mission Critical Applications
Standardized and Simple to Deploy

• All Oracle Exadata Database Machines are the same
  – Delivered ready-to-run
  – Tested
  – Highly supportable
  – No unique configuration issues
  – Identical to configuration used by Oracle Engineering

• Runs existing OLTP and DW applications
  – Full 30 years of Oracle DB capabilities
  – No Exadata certification required

• Leverages Oracle ecosystem
  – Skills, knowledge base, people and partners

Deploy in Days, Not Months
General Deployment Advice

- Use the defaults as much as possible
  - Use the tested configuration
  - Avoid customizations and non-standard installs

- MAA best practices installed at deployment
  - Customers should review and observe before any reconfiguration
  - Use Linux Hugepages (they are configured by default)
  - Ensure Database is using RDS protocol
  - Understand ASM Redundancy options

- For databases use templates and clean out your init.ora
Oracle Exadata Deployment Assistant
Utilize Exadata Storage Management & Administration Tools

- Enterprise Manager (MOS 1110675.1)
  - Manage & administer Database and ASM
  - Monitor the Exadata Database Machine Hardware (use plugins)

- Auto Service Request (ASR)
  - File SRs automatically for common hardware faults

- Comprehensive CLI
  - Local Exadata Storage cell management
  - Distributed shell utility to execute CLI across multiple cells (DCLI)

- Embedded Integrated Lights Out Manager (ILOM)
  - Remote management and administration of hardware
Comprehensive, Oracle-aware protection from outages of any type
Solutions for both unplanned downtime and planned maintenance
High return on investment, all systems active
Oracle Support for Exadata

- 24/7 support
- Specialized Engineered Systems Support Team
- 2-hour onsite response to hardware issues
- New Updates and Upgrades for Database, Server, Storage, and OS software
- My Oracle Support proactive support portal
- "Phone home" automated service requests (ASR)

ORACLE PLATINUM SERVICES

- Higher support levels for the complete Oracle stack
  - Includes higher support levels for Database software
- Proactive remote monitoring for faults
- Industry leading service level response times:
  - 5 Minute Fault Notification
  - 15 Minute Restoration or Escalation to Development
  - 30 Minute Joint Debugging with Development
- Oracle Engineers perform quarterly patching and updates

Available for certified configurations on Exadata
Take Advantage of Exadata

- Exadata Smart Flash Cache (now includes write back)
- Exadata Smart Flash Log
- Resource Management
  - IORM - distribute disk bandwidth among the databases.
  - Instance caging for cpu management with consolidation
  - DBRM for cpu, I/O, PQ, and run away query management
MAA Best Practices
Extensive Resource Library (www.oracle.com/goto/MAA)

MAA Best Practices - Oracle Database

Oracle Database 11g
- Oracle Database 11g Release 2 High Availability Best Practices Now!
- Oracle Database 11g Release 2 High Availability Documentation
- Oracle Database 11g Release 1 High Availability Documentation
- Preventing, Detecting, and Repairing Block Corruption; Oracle Database 11g New!
- Validation Report: Active Data Guard 11g, RMAN Network Duplicate, Snapshot Standby, Apply Performance and Fast-Start Failover by Hitachi Ltd./Oracle Japan GRID Center
- Validation Report: Data Guard Redo Transport Compression and Proper Network Configuration by Hitachi Ltd./Oracle Japan GRID Center
- Database Cloning using Oracle Sun ZFS Storage Appliance and Oracle Data Guard
- Database Cloning using Oracle Sun ZFS Storage Appliance and Oracle Recovery Manager New!
- PeopleSoft MAA Best Practices
- Reducing PeopleSoft Downtime with a Local Data Guard Standby Database
- Siebel MAA Best Practices
- Reducing Siebel Downtime with a Local Data Guard Standby Database
- Client Failover Best Practices for Data Guard 11g Release 2 Now!
- Active Data Guard 11g Best Practices (includes best practices for Redo Apply) Updated!
- Offloading E-Business Suite Reporting to Active Data GuardInstances Now!
- Configuring Oracle TopLink Applications with Oracle Active Data Guard
- Configuring Oracle Business Intelligence Enterprise Edition Server with Oracle Active Data Guard

- HA Overview Book
- HA Best Practices Book
- MAA Papers
- Migration
- Corruptions
- Active Data Guard/DR
- GoldenGate
- Migration
- PeopleSoft
- Siebel
- E-Business Suite
- ASM and ZFS Storage
Exadata Best Practices
Extensive Resource Library (search Exadata MAA)

MAA Best Practices - Exadata Database Machine

- Oracle Exadata Database Machine Consolidation: Segregating Databases and Roles New!
- Oracle University MAA Best Practices Series (course videos) New!
- Backup and Recovery Performance and Best Practices for Exadata Database Machine - Oracle Database 11.2.0.2
- Backup and Recovery Performance and Best Practices for Exadata Database Machine - Oracle Database 11.2.0.1 and prior
- Monitoring Exadata Database Machine Using Enterprise Manager and Plugins - Oracle Support Note 1110575.1
- Oracle Data Guard: Disaster Recovery Best Practices for Exadata Database Machine Updated!
- Oracle GoldenGate on Exadata Database Machine
- Best Practices for Migrating to Exadata Database Machine
- PeopleSoft on Exadata New!
- Siebel on Exadata New!
- Oracle E-Business Suite on Exadata New!
- Migrating Oracle E-Business Suite to Exadata Database Machine Using Oracle Data Pump
- Migrating Oracle E-Business Suite to Exadata Database Machine Using Transportable Tablespaces
- Installing Oracle E-Business Suite Release 12 with Exadata Database Machine
## Operationalizing Exadata

### Key Elements

<table>
<thead>
<tr>
<th>Support Note</th>
<th>Description</th>
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<tbody>
<tr>
<td>1070954.1</td>
<td>Exachk – Extensive Healthcheck</td>
</tr>
<tr>
<td>1306814.1</td>
<td>Oplan – Customized patching instructions</td>
</tr>
<tr>
<td>888828.1</td>
<td>Exadata Supported Versions</td>
</tr>
<tr>
<td>1353073.1</td>
<td>Exadata Diagnostics Collection Guide</td>
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<td>1270094.1</td>
<td>Exadata Critical Issues</td>
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<tr>
<td>1373255.1</td>
<td>Upgrade Guide to 11.2.0.3 on Exadata</td>
</tr>
<tr>
<td>1110675.1</td>
<td>Recommended Monitoring</td>
</tr>
</tbody>
</table>
Deploying Exalogic for Mission Critical Applications
Exalogic Vision | Exalogic 2.x

- **Better Management**
  - Engineered Cloud-based application deployment
  - Policy driven Cloud automation

- **Better Consolidation**
  - High Performance Virtualization
  - Intelligent consolidation and provisioning of workloads

- **Even Better Performance: X3-2**
Exalogic Configuration Utility

Enter Configuration

- Physical Network
  - Compute Nodes
  - ILOMs
  - Storage
  - GW Switches
- Virtual Network/Partitions for EL Control Stack
- Exalogic Control/OVMM Components

Preview

- Enable iterative exchange
- Onsite/Offsite Review

Generate Configuration File

- Single source
- Maintained for Diagnosis

Execute Scripts

- Network Reconfigure
  - Compute Nodes & ILOM
  - ZFS Storage Appliance
  - NM2 Gateway Switches
  - Exalogic Control Components
    - OVM Configuration
    - VM Launch and Configure
    - IPoIB/EoIB setup
Exalogic Networking …

- Datacenter
- Client Network
- EL Control
- EoIB Network
- Exadata
- 10GbE
- Ethernet Gateway
- Compute Servers
- Storage
- InfiniBand Fabric
- Management Network
Network

- Plan Network design
  - EoIB network
  - External vLAN

- Oracle Exalogic Virtual Deployments
  - Separate VLANs for EL Control Components and Customer Virtual Machines

- IPoIB vs 10GbE
  - No Firewalls on IB

- Multirack Environment
  - Plan IP ranges for Multi-rack topologies (EL/EL, EL/ED)
  - Creates a single fabric
Storage

- Use default storage configuration as much as possible
  - Tested and optimized for most workloads by Oracle
- Recommend using NFSv4
- Enterprise Deployment Guide’s project/share layout
- Mount using IPoIB
  - See mount options in Enterprise Deployment Guide
- Keep your Storage Utilization < 80%
- Set IPMP failback to false
- IPMP failure detection interval must match across all IB network interfaces
MAA Best Practices

- **Patching**
  - Regular patching 3 – 6 months
  - Apply patches in test environment first

- **Backup and Recovery**
  - Backup the OS, configuration data, application data on a regular basis
  - Define RPO/RTO to drive backup frequency
  - Test the documented restore procedures
  - Backup either to an external ZFS Storage Appliance or to Tape

- Extensive Resource Library (www.oracle.com/goto/MAA)
MAA Recommendations

- **Disaster Recovery**
  - The primary site and the standby site must be on separate Infiniband fabrics
  - Perform regular switchover and switchback tests to validate the defined procedures and readiness of the standby sites
  - Plan standby site based on production capacity

- **Monitoring & Alerts**
  - Enable monitoring using Enterprise Manager Cloud Control 12c and Enterprise Manager Ops Center
  - Create well defined thresholds, and be prepared to react to them [automatically]
Operational Best Practices

- Schedule regular health checks with Exachk
  - Detects bad disks, faulty hardware, incorrect configuration
  - At least every 90 days
  - Before and after patching/upgrades
  - Follow recommended best practices

- Define repair procedures for unplanned and planned outages
  - Validated and optimized to work within RTO/RPO
  - Rigorous testing (using test environment) so that repairs are fast and efficient
  - Staff training is a must
  - Clear chain of command to make decisions quickly
## Exalogic Reference Notes

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<tbody>
<tr>
<td>1314535.1</td>
<td>Exalogic Patch Set Updates (PSU) Master Note</td>
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<tr>
<td>1301247.1</td>
<td>Master Note for Oracle Exalogic</td>
</tr>
<tr>
<td>1449226.1</td>
<td>Exachk Health-Check Tool for Exalogic</td>
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<td></td>
<td>Managing Exalogic with Oracle Enterprise Manager</td>
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<tr>
<td></td>
<td>Disaster Recovery for Oracle Exalogic Elastic Cloud</td>
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<tr>
<td></td>
<td>Oracle Fusion Middleware Disaster Recovery Guide</td>
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</table>
Exadata with Exalogic: Deploying Oracle Applications
70,000
APPLICATIONS CUSTOMERS RELY ON ORACLE

60+
ORACLE APPS BENCHMARKED

ORACLE UNDERSTANDS APPS
Engaging with Oracle

Pre-purchase
• Fully understand the stack
• Set realistic expectations
• Engage with SI
• Solution architecture

Pre-launch
• Ensure custom app KPIs match reference app
• Figure out how to use Oracle support
• Leverage Oracle’s performance tuning tools

Solution Setup
• Set up according to documentation
• Use reference app to ensure desired KPIs
• Perform an audit
• Configure Platinum Services

Post-launch
• Perform ongoing testing
• Keep patches up-to-date
• Continue to optimize
SI Recommendations

- Socialize the solution
  - Likely to represent a change in process
  - Exalogic and Exadata require fewer people to “keep the lights on”
    - Instead, focus on activities that improve top-line revenue

- Full training
  - Partner Training Services
  - Pre-sales training
Verify Supported Configurations

- Oracle products are certified to work with specific versions of other Oracle products
- Apps in particular are sensitive
- Fallout from not running a supported configuration is incredibly challenging bugs to resolve
Use a Checklist

- Entire Oracle team contributed to ATGLaunchChecklist.com
- 203 point cross-disciplinary pre-launch checklist
- Checklist contains absolute best practices for deploying ATG on Exalogic
- Topics in checklist include:
## Exadata Sessions on Thursday

<table>
<thead>
<tr>
<th>Time &amp; Room</th>
<th>Session Title</th>
</tr>
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<tbody>
<tr>
<td>11:15am, Moscone South Room 303</td>
<td>Oracle Exadata and Exalogic: Deployment Experiences and Best Practices (CON8278)</td>
</tr>
<tr>
<td>12:45pm, Moscone South Room 104</td>
<td>Exadata Database Machine Security Best Practices (CON8274)</td>
</tr>
<tr>
<td>12:45pm, Moscone South Room 300</td>
<td>Backup and Recovery of Oracle Exadata: Experiences and Best Practices (CON8277)</td>
</tr>
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Hardware and Software
Engineered to Work Together