Oracle Open World 2015
Oracle Exadata Case Studies: Drive Application Performance, Lower Business Costs

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Business Objective of Platform Upgrade

• Business Background
  — Serving customers for over 125 years
  — Rapidly growing organization
    • #3 insurer by total premium of bank-owned life insurance sold to U.S. banks
    • #2 Record Keeper of retirement plans
      — $400 billion in assets
      — $7 million participants

• Objective of Upgrade
  — Accommodate rapid growth
    • Need platform that can scale with us
  — Substantially increase performance from previous platform
    • Must make noticeable difference to business units
  — Minimal application changes to handle this growth
    • Application teams are taxed with developing software
  — Handle new security requirements
  — Be on a supportable platform
    • Heritage M8000 environment was reaching end of life
Why did we choose Exadata?

• Future “Proof” solution
  — Needed a solution that we could bet on for the next 5 years
• Platform faired best in reference and analyst calls
• Performance per “Oracle Core” highest of solutions tested
• Exadata achieved highest scores in our internal rating system
  — Extensive benchmarks performed
    • Benchmarks took place over 3 years on multiple platforms
  — Weighted scoring system (Oracle did not score highest on all fronts)
    • Performance (Response Time & Throughput)
    • Scalability
    • Cost (Acquisition Cost & Ongoing cost)
    • Vendor Relationship (Sales & Support)

• This was a growth positioning decision and not a consolidation exercise
  — Using more “Oracle Cores” after migration than before
  — Cost avoidance for making application changes to handle additional backend databases
Overview of Solution – Application Stack

• Proprietary Record Keeping Platform
  — External Web Stack
    • Angular
    • REST
    • JSON
    • Java Services Layer
  — Internal Customer Service Applications
    • Oracle Forms
    • J2EE stack
  — Batch Processes
    • Java
    • Oracle Pro*C

• Production Databases (3 x 1/4 Rack HP)
  — 12 Total Record Keeping Databases
    • 4 OLTP RW
    • 4 Standbys
    • 4 Reporting
  — 6 Compliance Databases
  — 2 Job Scheduling Databases
  — 5 Third Party Application Databases
  — 2 “Common” databases

• Data Warehouse (1/8 Rack HC)
  — 1 Data Warehouse
  — Multiple Data Marts

• QA/UAT
  — 5 Full size copies of record keeping databases
  — 1 Job Scheduler
  — 2 Common Databases

• All production databases also have hot standbys in our secondary data center
Overview of Platform – Primary Data Center

3x ¼ Rack X4-2
Separated by Line of Business
High Performance Disk
Memory Expansion

1/8 Rack X4-2
Data Warehouse/Mart
High Capacity Disk
Memory Expansion

1 x 1/8 X4-2 HC -Development
1 x ¾ X4-2 HC QA/UAT
Overview of Platform – Secondary Data Center

3x 1/8th Rack X4-2
Separated by Line of Business
High Capacity Disk
Memory Expansion

1/8 Rack X4-2
Data Warehouse/Mart
High Capacity Disk
Memory Expansion
# Before/After Technology Comparison

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<td>2 x Enterprise Class Storage Devices</td>
<td>1 x 8 Rack X4 HC Disk</td>
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<td>5 x Oracle SPARC Servers</td>
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<td></td>
<td>2 x SunFire 4900</td>
<td>1/8 Rack X4 HC Disk</td>
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Overview of Platform

• Total implementation is 10 Exadata Racks

• Exadata solution designed to support 70+ database instances
  — Production, Reporting, Local/Remote Standby, Development/QA/UAT

• Designed each rack to scale up as business scales up
  — Fully provisioned network to handle full rack for each rack installed

• We performed each migration from SPARC technology to Exadata during the maintenance window
  — Each line of business database migrated separately
  — Added compression, partitioning, encryption, golden date, 12c during upgrade
  — Highly skilled DBA team managed migration
Benefits

• On a non end of life platform with a known upgrade path
• Able to meet complex security requirements of clients
  — Encryption at rest did not show a not noticeable impact on performance or resource utilization
• Performance!
  — Saw an average of a 4x improvement with online transactions
  — Saw linear scalability in benchmarks
    • Only platform in our 20+ year history that has show this
    • Performance metrics hit in first 2 days of benchmarks with no-tuning on platform
  — Batch programs have shown a 2x-8x improvement throughput
  — Business users reached out to IT executive to thank them for this implementation
• Scalability
  — Our solution is designed to scale in each cabinet to accommodate future growth
  — Did not need to add additional databases to accommodate our growth
• Availability
  — We have had nodes reboot themselves during the day with little to no impact on the end users and batch processes
• Overall Tech Staff Happiness
  — Technical Teams get excited over new technology
  — It makes the long hours easier to tolerate when there is a clear technology vision
Key Takeaways

• Take the time in the beginning to setup them right
  — Make sure implementation team implements same versions across all racks
  — Dedicate someone to filling out the OEDA’s and working to resolve issues
    • Person does not have to be a DB

• Be clear on plan to support the Exadata environment
  — Understand scope of Platinum support
  — 4 x ¼ Racks != 1 Rack
    • Each rack requires a basic level of support to maintain, fewer racks take less support
  — Worked with Storage, Networking and UNIX teams prior to implementation
  — Understand patching is a significant effort

• No vendor is perfect, expect bugs when going into uncharted territory
  — Combing 12c, platform shift, partitioning, encryption upgrade into one upgrade is sure to find at least one Oracle bug
  — Oracle did escalate case and had support on our critical issue
  — During the issue we did remain online for the duration of the bug fix
  — When critical incidents occur do not be afraid to escalate with Oracle
    • Oracle has a vested interest in your success

• Performance/Scalability will encourage application and business teams to work with you to make it work
  — If application development resources do not have to change their code to make it perform better they will advocate for the technology