Move Oracle applications, middleware and databases to AWS

David Payne,
Head, Enterprise Applications and Database Segment, APAC
24 May 2018
Customers in 190 countries

18 geographic Regions & 1 Local Region

55 availability zones

103 edge locations

New Region (coming soon) – Bahrain, Hong Kong SAR, Sweden, AWS GovCloud (US-East)
DO YOU RECOGNIZE WHO SCARED YOU LAST NIGHT?

THE ONE WITH THE GOATEE.
## Why Oracle customers migrate to AWS

<table>
<thead>
<tr>
<th>Retire technical debt</th>
<th>Tech refresh</th>
<th>New applications</th>
<th>New architectures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve security</td>
<td>Automate operations</td>
<td>Improve performance</td>
<td>Simplification of s/w</td>
</tr>
<tr>
<td>AWS options for Oracle customers</td>
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<tr>
<td>Oracle Databases on AWS</td>
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<tr>
<td>Database migration to AWS</td>
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<tr>
<td>Fusion Middleware on AWS</td>
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<tr>
<td>Oracle Enterprise Applications on AWS</td>
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</tbody>
</table>

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## Customers migrating Oracle to AWS include

<table>
<thead>
<tr>
<th>Oracle to Amazon Aurora</th>
<th>Oracle Database on AWS</th>
<th>Fusion Middleware</th>
<th>Enterprise Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AstraZeneca</strong></td>
<td><strong>News UK</strong></td>
<td><strong>McGraw Hill Education</strong></td>
<td><strong>SEAOIL</strong></td>
</tr>
<tr>
<td>Reduced processing time from 26 hours to 40 minutes</td>
<td>Closed 2 of 6 datacenters “Enabling the business, no constraints”</td>
<td>Supported 4x peak load, but cheaper than data center</td>
<td>20% TCO reduction 6x faster provision &gt; 99.5% app availability</td>
</tr>
<tr>
<td><strong>Trimble</strong></td>
<td><strong>esa</strong></td>
<td><strong>FAST RETAILING</strong></td>
<td><strong>SAGE</strong></td>
</tr>
<tr>
<td>ROI &lt;6 months 400% lower infra TCO</td>
<td>1b star projections, 6 years data €500k less than on-prem</td>
<td></td>
<td>“We didn't encounter any roadblocks based on cost, functionality, or performance; we moved forward quickly and well within Sage's budget.”</td>
</tr>
</tbody>
</table>
Six Common Application Migration Strategies

**Determine Migration Path**

1. **Lift and Shift**
   - **RE-HOST**
   - Lift and Shift
   - Automate
   - Use Migration Tools
   - Manual Install
   - Manual Config
   - Manual Deploy

2. **Lift and Reshape**
   - **RE-PLATFORM**
   - Lift and Reshape
   - Purchase COTS/SaaS & licensing
   - Manual Install & Setup
   - Integration
   - Validate
   - Transition
   - Production

3. **Drop & Shop**
   - **REPLACE**
   - Drop & Shop
   - Manual Install
   - Manual Config
   - Manual Deploy

4. **Re-architect/Decoupling apps**
   - **REFACTOR**
   - Re-architect/Decoupling apps
   - Redesign Application/Infrastructure Architecture
   - App Code Development
   - Full ALM/SDLC
   - Integration

5. **Assess/Prioritize Applications**
   - Discover
   - Determine Migration Path

6. **RETAIN**
   - Not Moving

7. **RETIRE**
   - Decommission

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## AWS migration strategies for Oracle customers

<table>
<thead>
<tr>
<th>Solution</th>
<th>Oracle Databases</th>
<th>Oracle Fusion Middleware on AWS</th>
<th>Oracle Middleware to AWS</th>
<th>Oracle Enterprise Applications on AWS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Migration path</td>
<td>Rehost</td>
<td>Rehost</td>
<td>Refactor</td>
<td>Rehost</td>
</tr>
<tr>
<td>Post migration</td>
<td>Customer runs Oracle Database EE, SE, NoSQL, TimesTen, MySQL, Golden Gate on AWS</td>
<td>Customer shifts Oracle EE, SE to AWS RDS for Oracle</td>
<td>Customer migrates from Oracle EE, SE, NoSQL to AWS RDS OSS, Aurora or Redshift</td>
<td>Customer runs Oracle SOA Suite, WebLogic, OBIEE, BPM and more on AWS</td>
</tr>
<tr>
<td>AWS Services</td>
<td>EC2/EBS, VPC</td>
<td>Oracle RDS</td>
<td>RDS OSS, Aurora, Redshift, Schema Conversion Tool, Database Migration Service</td>
<td>EC2/EBS, VPC</td>
</tr>
</tbody>
</table>

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# Oracle to AWS license and support - considerations

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<tr>
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<th>Oracle Databases</th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Oracle Databases on AWS EC2</td>
<td>Oracle Databases on AWS RDS</td>
<td>Oracle database migration to AWS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Migration path</td>
<td>Rehost</td>
<td>Replatform</td>
<td>Refactor</td>
<td>Rehost</td>
<td>Refactor</td>
</tr>
<tr>
<td>License consideration</td>
<td>BYOL. Review Oracle Cloud Licensing Policy. 2 vCPU= 1 Oracle Proc with Hyper threading enabled</td>
<td>License included or BYOL</td>
<td>MySQL and PostgreSQL open source</td>
<td>BYOL</td>
<td>Consider open source e.g. JBoss</td>
</tr>
<tr>
<td>Support consideration</td>
<td>Standard Oracle support. Oracle Database &gt;=11.2.0.4 &amp; &gt;= 12.1.0.2. AWS EC2 DB optimized instances.</td>
<td>Supported for Oracle Database &gt;=11.2.0.4 &amp; &gt;= 12.1.0.2. AWS EC2 DB optimized instances.</td>
<td>AWS RDS and Redshift are managed services.</td>
<td>Standard Oracle support. Fully compatible</td>
<td>AWS Elastic Beanstalk provides management features</td>
</tr>
</tbody>
</table>
Introducing Optimize CPUs for Amazon EC2 Instances

- a) specify a custom number of vCPUs for new instances, while enjoying the same memory, storage, and bandwidth of a full-sized instance

- b) disable Intel Hyper-Threading Technology for workloads that perform well with single-threaded CPUs

Enables Bring Your Own license (BYOL) customers to optimize their vCPU-based licensing costs!
## Evolution of databases

<table>
<thead>
<tr>
<th>Relational databases</th>
<th>Non-relational databases</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AURORA</strong></td>
<td><strong>KEY VALUE DOCUMENT</strong></td>
</tr>
<tr>
<td>MySQL</td>
<td>Amazon DynamoDB</td>
</tr>
<tr>
<td>PostgreSQL</td>
<td>Amazon ElastiCache</td>
</tr>
<tr>
<td>COMMERCIAL</td>
<td>IN-MEMORY STORE</td>
</tr>
<tr>
<td>Oracle</td>
<td></td>
</tr>
<tr>
<td>SQL Server</td>
<td></td>
</tr>
<tr>
<td>COMMUNITY</td>
<td></td>
</tr>
<tr>
<td>MySQL</td>
<td></td>
</tr>
<tr>
<td>MariaDB</td>
<td></td>
</tr>
</tbody>
</table>
Database Migration the Easier Way

Step 1: Convert or copy your schema

Source DB or DW → Copy or convert → Native tool → Destination DB or DW

Source DB or DW → Copy → AWS SCT → Destination DB or DW

Step 2: Move your data

Source DB or DW → Database → AWS SCT → AWS DMS → Destination DB or DW

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Freeing our Enterprise Data
Migrating Off Proprietary Databases

Maribeth Tiu
VP - Globe Information Systems Group, Solutions Delivery

May 24, 2018
One of 2 major players in the mobile and fixed communication services in the Philippines

We are passionate about innovations as we invest in non-core telco services

62.8 MILLION MOBILE SUBSCRIBERS

$2.6B SERVICE REVENUES

1.3 MILLION HOME BROADBAND SUBSCRIBERS

55.5% REV MARKET SHARE

7,200 EMPLOYEES

1.1 MILLION RETAILERS, DISTRIBUTORS, AND BUSINESS PARTNERS NATIONWIDE
The road to a digital nation:

The 8-point IT Transformation goals will enable us to shift from a traditional telco to a Digital Services Provider

1. **Customer Focus**
   - We are a customer-centric organization that is value-creating for the business. We apply user-centric design thinking in our services.

2. **Innovation**
   - We have ingrained innovation as an organization norm and pursue innovation in all areas, be it processes, solutions or customer offerings.

3. **Infrastructure at Scale**
   - We build intelligent and optimized infrastructure, managed in a standardized, shared services model.

4. **Ka-Globe Empowerment**
   - We empower Ka-Globe with new ways of working and provide digital solutions that improve collaboration and productivity.

5. **Operational Excellence**
   - We ensure stable and agile operations of our systems with best user experience to achieve efficiency and effectiveness in the IT organization.

6. **Bi-Modal Operating Model**
   - We equip the business with the agility to adapt quickly to market dynamics and stay ahead of the competition.

7. **Digital Transformation**
   - We provide the foundation that underpins Globe’s digital transformation journey to succeed in the digital economy.

8. **IT Workforce Enablement**
   - We have engaged, competent and purpose-driven people equipped with the right information to perform their jobs.
Globe Cloud Journey

2009
Physical to Virtual
Conversion of Physical Machines to VMs

2014
Cloud FIRST
Organization Evangelization
50% of New Infra to Cloud
Provisioning – from 80 days to 5 days

2015 - 2016
Cloud RE-ENERGIZED
1800 Physical Servers reduced to 1200
90% of new Infra to Cloud
Provisioning – from 5 days to 2 days

2017
Cloud OPTIMIZED
1200 Physical Servers reduced to 800
Cloud Optimized Applications
Internal + Partner Training & Certification

2018-2019
Cloud NATIVE
800 Physical Servers under accelerated migration program
Cloud Native Applications
Cloud Native Vendors
Cloud Native Globe ISG

2019 - 2020
UNIFIED Cloud
Bi-Modal IT
End-to-end Automation
Self-Healing Applications
Self-optimizing Cloud

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Program: migrating off proprietary databases

- **Optimise**
  - Collaborate with Oracle to optimise current portfolio

- **Migrate**
  - Create and execute migration plan for selected services

- **Limit**
  - Redefine DB selection framework for new requirements

- **Negotiate**
  - Engage Partner to limit usage and price adjustment
Oracle in Globe: A Significant Opportunity for Cost Savings

There are many types of unique transaction characteristics & requirements.

Storage
- Record Oriented or Query Heavy?

Performance
- Response Time or Throughput?

Workload
- High Variance or Predictable?

Access Method
- Random Access or Continuous?

Availability
- Do we really need Five Nines?

Query Style
- Transaction, Batch or Real-Time?

...and there are many kinds of databases available to support them.

General RDBMS
- Key-Value Direct Access
- Column-Oriented RDBMS
- Document Store DB

Hadoop
- In-Memory Data Caching
- Graph Database
- Datagrid

Wide Column Store
- New SQL

However we use Oracle for 90% of all our services...

...as the default “go-to” platform
AWS and *Danateq co-invested to certify their LINK solution on AWS, and ported it from Oracle to PostgreSQL.

*Danateq Pte Ltd is a Singapore-based ISV and APN partner that supplies real-time loyalty, campaign management, and rewards solution called LINK. This solution is deployed at customers worldwide including Globe, Ericsson, and the Telenor Group.

Key enablers are: 1> Clear directive and executive sponsorship, 2> Partnerships w AWS and ISVs like Danateq

Outcome: An ISV-certified solution that reduced Globe's dependency on Oracle while providing an open source alternative.

The success is also paving the way for other ISVs like Amdocs to partner as well.

Freed up 16 processors/ 32 cores for DBEE, RAC, and Partitioning in Production.

Freed up 4 processors / 8 cores for DBEE in Development.

Even at a significant discount, this is an avoided 3 year cost of close to $1M!!!
Mega Mart
Mega Mart – Cloud migration case study

• Subsidiary of Nongshim Group - famous for Ramen and snack products

• Fourth largest distribution company in Korea

• Operates 15 large discount stores in Korea and two overseas stores
Mega Mart – Cloud migration case study

- Online Shopping mall Migration (In-house)
- Education System, CMS Migration
- Next Generation System Development (SAP Hybris)
- AWS Region Migration (Seoul Region)
- Drugstore System Development (Pandora)
- Salesforce Commerce Cloud installation
- ERP, POS System Migration

PoC (WAS, Personal Information Protection etc.)

Timeline:
- 2014.12
- 2015.1
- 2015.6
- 2015.8
- 2016.10
- 2017.3
- 2017.9
- 2017.12
Mega Mart – Solution Architecture
Mega Mart – Approach

- Hybrid architecture with 300Mbps Direct Connect link and duplex VPN connections
- Migration downtime was minimized using AWS Database Migration Service (< 4 hours)
- Business systems configured as a VPN. Online stored protect with WAF
- Database encrypted, identities and access managed with 3rd party solutions
- Optimized solution for serving static content using Amazon Cloud Front and Amazon Elastic Transcoder
- AWS Well Architected approach
Mega Mart – Benefits of AWS

- **Flexibility** – Mega Mart scales up its infrastructure whenever it wants (e.g. sales promotion) And automated shutdown or startup of dev systems
- **Security posture** - improved by using WAF layer
- **Compliant with Personal Data Protection Law laws**
- **Cost optimized** - AWS has enabled Mega Mart’s online store to increase sales transactions by 40% but at 30% lower TCO over 6 years
## APN Oracle Competency Partners’ capabilities

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<th>Technical assessments</th>
<th>S/W license advisory</th>
<th>Business cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Migration services and tools</td>
<td>Managed services</td>
<td>Applications and solutions</td>
</tr>
</tbody>
</table>
SoftwareONE
Oracle Advisory Services

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Oracle Practice Lead - GCC & APAC
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Mobile: +65 90156366

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SoftwareONE Oracle Advisory | Advisory, Optimization, Strategy

ENTITLEMENT ASSESSMENT
Understanding your Oracle Spend
- CSI / ULA ANALYSIS
- BENCHMARKING
- Oracle Product Catalog
- Discount Pattern
- Product Bundle

COMPLIANCE ASSESSMENT
- Effective License Position
- GAP Analysis
- Deployment Optimization
- Technology Roadmap
- Oracle Database alternative strategy (AWS Aurora, RDS, PostgreSQL)

DEPLOYMENT OPTIMIZATION
- Usage Scan
- Optimization

CONTRACT ASSESSMENT
- Contract Modernization and Oracle Negotiation Support
- Oracle CSI Cancellation / Termination
- BYOL Strategy
- Oracle contract Risk Assessment
- AWS Cloud commercials

COMMERCIAL OPTIMIZATION
- RESULT ORIENTED STRATEGY

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Case Study 1

Scenario

- Oracle future purchase requirement: USD 8 Million based on compliance gap.
- SoftwareONE advisory assisted them with financial and contractual assessment to migrate Oracle workload to AWS Infrastructure.
- Final cost savings: **USD 7 Million**

Results

**Oracle TCO cost savings USD$7million**

Additional Considerations

- Amazon RDS, PostgreSQL on AWS and Amazon Aurora as alternatives were considered for Oracle Database workload migration.
- SoftwareONE advisory outlined mandatory Oracle Database requirement with deployment optimization on VMware environment to reduce Oracle licensing requirement.
- Oracle CSI contracts to be cancelled based on assessment.
- Detailed risk analysis with measures are implemented as part of proposed Oracle managed service.
Blue Crystal Solutions

Assisting AWS prospects & clients to retire technical debt.

Servicing Global Clients

Oracle Database, Migration, Transformation and Infrastructure Optimization for the Cloud.
Examples of Oracle to AWS

Customer A - Emagine International (Software and Services Company)
• Halved response time to end customer
• Streamlined the implementation process for a new environments in AWS
• Post completion BCS passed a stringent AWS independent security audit with flying colours! This provided us with an International Case Study.

Customer B – Large Oil and Gas Company
• Customer needed a partner with expertise in migrating Exadata to AWS
• AWS needed a partner to guide them on infrastructure design that globally impacts Oracle licensing clients, this directly resulted in driving the new “Optimize CPUs for Amazon EC2 Instances” and the new Amazon “EC2 X1e Memory Optimized” instance family features.
• POC with subsequent multi phase approach
• Developed Exadata/Oracle RAC Automation Tools
Lessons Learnt

• Pick a partner who knows the facts
• Failure to plan is planning to fail
• Customer B was led to believe that Oracle Exadata could not be moved to AWS. In a POC/production we proved this to be incorrect
• Customer A & B had issues with vendor relationships and costs. By migrating of that vendor we fixed the problem, rather than treating the symptoms.
• Customer A takes a customer centric approach to business, by paying attention to the customer's customer BCS improved customer A’s market share and retention
• It’s not only about cost. Customer B had been pressured by the vendor for years.
Exclusive Offer – Complimentary Workshop

• Objective: Clear definition of a POC scope of work that will deliver measurable benefit to you (e.g. lower cost, better performance, flexibility).
• How that works: Evaluate the where you are now against the desired state, including brainstorming the following topics:
  • Cloud Design Strategy
  • Understand your business strategy
  • Resources (Infrastructure and human)
  • Tools
  • Benefits to be gained
  • Budget and timeframe
  • Alternatives (Estimated cost comparisons)

Offer valid until 31st July
# Getting Started

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<th>Customer Success Stories</th>
<th>APN Partners</th>
<th>Example architectures for Oracle applications</th>
<th>AWS Quick Starts for Oracle Database</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amazon RDS – launch a DB in minutes</td>
<td>AWS Cloud Economics</td>
<td>DB Freedom Program</td>
<td>Migration Acceleration Program</td>
</tr>
</tbody>
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Database Freedom with AWS

### Innovation
- Database Migration Service and Schema Conversion Tool
- Aurora MySQL and Aurora PostgreSQL, RDS for Open Source databases
- DynamoDB with DAX, EMR, Redshift and Spectrum, and other services
- New EC2 instance types

### Expertise
- Professional Services, Partners, Service Teams
- Workload Qualification Framework
- Patterns and Recommendations

### Programs
- Workshops
- Proofs-of-Concepts
- Incentives (e.g. MAP)
Key Steps in the Migration Journey

**ASSESSMENT**

- Migration Readiness Assessment (MRA)

**READINESS & PLANNING**

- Migration Readiness and Planning (MRP)
  - Discovery & Planning
  - Landing Zone
  - Skills/CoE
  - Migration Business Case

**APPLICATION MIGRATIONS**

- Immersion Day
- POC and/or Rapid Migration Test
- Security & Compliance
- Operating Model
- Migration Expertise
- Migration Plan

**Migration**

- Discover
- Design
- Build
- Integrate
- Validate
- Cutover

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Migrating Oracle Databases to Amazon Aurora (Level 200)

Migrating your Oracle database to Amazon Aurora can substantially reduce your database costs, while improving reliability and performance. This session will guide you through the considerations, tools, processes and best practices to help you understand how to plan, execute and troubleshoot a migration from an Oracle database to Amazon Aurora. We will also review actual customer migration projects to learn how they approached their migrations and the benefits they obtained.

Webinar Details

Date: 24th May 2018

Time:
(Session 1)
10.00am - 11.00am (AEST)
8.00am - 9.00am (SGT)

(Session 2)
1.00pm - 2.00pm (SGT)
10.30am - 11.30am (IST)

REGISTER NOW
Resources

https://aws.amazon.com/oracle/resources/
https://aws.amazon.com/migration-acceleration-program/
https://aws.amazon.com/rds/aurora/
https://aws.amazon.com/dms/

David Payne
dspayne@amazon.com

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Want to Learn More?

Get Started with Free Digital Training
Access free digital training to learn about AWS services and solutions for migrating to AWS.

Learn more with Classroom Based Training
Take the two-day, classroom-based training course covering the entire migration process:

• Application portfolio discovery
• Migration planning and design
• Application migration
• Post-migration validation and application optimization

Visit https://www.aws.training/
Thank You For Attending AWS Migrating to the Cloud Webinar Series.

We hope you found it interesting! A kind reminder to complete the survey. Let us know what you thought of today’s event and how we can improve the event experience for you in the future.