Introducing Oracle's Autonomous Data Warehouse Cloud

Presented by: John Jay King

Download this paper from: http://www.kingtraining.com

http://www.kingtraining.com

Session Objectives

- Learn the promise of the Oracle Data Warehouse Cloud (ODWS)

- Understand that Oracle ODWS is a set of cloud services on top of a standard Oracle database

- Realize what is being automated and what is not

- Appreciate the freedom and flexibility offered by the automation

http://www.kingtraining.com

Who Am I?

- John King – King Training Resources

- Oracle Ace Director

- Member Oak Table Network

- I help customers use technology through training and consulting in Oracle and other topics (http://www.kingtraining.com)

- "Techie" who knows Development, Java, Oracle, and SQL along with many other topics

- Member of AZORA, ODTUG, IOUG, and RMOUG

- One of those "dog-spoiling" people

http://www.kingtraining.com

King Training Resources

- Providing customized training solutions since 1988 in the US and internationally

- Oracle topics include: SQL, PL/SQL, Database, Cloud, APEX, ADF, MAF, Forms, Reports, Pro*C

- Non-Oracle topics include: UX, Web Services, IoT, Cloud Foundry, REST, Blockchain, Java, JavaScript, SQL Server, DB2, and more

- Visit us at www.kingtraining.com for more information and free downloads of presentations and code

- Contact Peggy at 1.303.798.5727 to schedule training today (email: peggy@kingtraining.com)

Arizona, USA

http://www.kingtraining.com

Who Are You?

- Application Developer
- Cloud Developer
- DBA
- Data Scientist
- Solutions Architect or Business Analyst
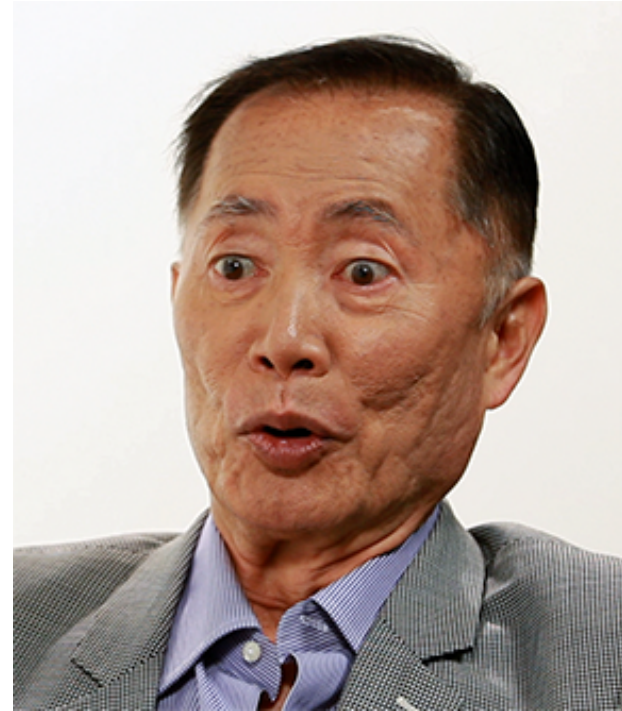- Manager-type…
- Other?

http://www.kingtraining.com

Introduction to Oracle ADWC

- Announced just before Oracle Open World 2017

> **Oracle Revolutionizes Cloud with the World's First Self-Driving Database**

- Efficient
- Highly Available
- Lower Cost

- Oracle **Autonomous** Data Warehouse Cloud built on top of Oracle Database 18c

Larry's After My Job! --- Oh-My!

Not Really…

Cloud Services on top of Database

- Somehow "Autonomous" became synonymous with Oracle 18c – NOPE!
  - OADWC is built upon the Oracle database; the corresponding release happens to be 18c
  - Oracle 18c has many new features in its own right but it's really an incremental improvement of Oracle 12c (different day, different talk…)
- According to Maria Colgan:
  Autonomous Database =
     Oracle 18c
     + Oracle Cloud Automation and Innovation
     + Secret Sauce

http://www.kingtraining.com

What Do DBA's Do?

- DBA's tasks can be loosely grouped into 2 types:
  - Standard Database Tasks
    - Configuration of systems, network, and storage
    - Provisioning, patching
    - Optimizing database
    - Backups, High-Availability, Disaster Recovery
  - Business-Related Tasks
    - Architecture, planning, data modeling
    - Security and data lifecycle
    - Application-related tuning
    - Managing SLAs

http://www.kingtraining.com

Is it Scripted/Scriptable?

- Many of the day-to-day tasks DBAs are asked to do are boring, mundane, repetitive, and error-prone
  - Most DBA's I know have created or obtained scripts for these activities
  - Running of the scripts is then automated or delegated to junior people

```
SQL*Plus: Release 12.2.0.1.0 Production on Wed Jan 24 21:24:
42 2018

Copyright (c) 1982, 2016, Oracle.  All rights reserved.

Last Successful login time: Wed Jan 24 2018 21:24:27 -05:00

Connected to:
Oracle Database 12c Enterprise Edition Release 12.2.0.1.0 -
64bit Production

SQL> @runMonthlyBackup
```
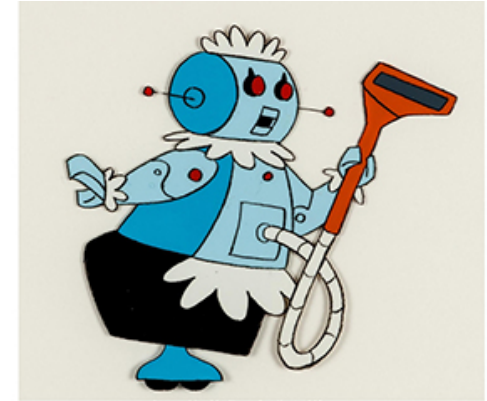
http://www.kingtraining.com

We All Know The Answer…

- If something can be automated…

  IT WILL BE

Imaged by Heritage Auctions, HA.com

- The time is now to automate the boring stuff our lives

Should I Be Worried?

- If you've allowed your job to become one of repetitive, scriptable tasks – YES !

- If you're known as "the one" who has the answers that bring value to your organization – NO !

http://www.kingtraining.com

Oracle's Journey to Autonomy

- Oracle has been automating our work for years:

Oracle Database 9i, 10g	Oracle Database 9i, 10g
Automatic Storage Management (ASM)	Automatic SQL Tuning
Automatic Memory Management Automatic	Automatic Workload Replay
DB Diagnostic Monitor (ADDM)	Automatic Capture of SQL Monitor
Automatic Workload Repository (AWR)	Automatic Data Optimization
Automatic Undo tablespaces	Automatic Storage Indexes
Automatic Segment Space Management	Automatic Columnar Cache
Automatic Statistics Gathering	Automatic Diagnostic Framework
Automatic Standby Management	Automatic Refresh of Database Cloning
(Broker)Automatic Query Rewrite	Autonomous Health Framework

- How many of these do you use regularly?

http://www.kingtraining.com

Autonomous Data Warehouse Cloud

- Oracle's first Autonomous Database product is the Oracle Autonomous Data Warehouse Cloud; at the time this paper is being written (Jan 2018) the product is not yet GA

Platform > Data Management > Autonomous Data Warehouse Cloud

Autonomous Data Warehouse Cloud COMING SOON

- To follow the progress of ADWC check:

  cloud.oracle.com/datawarehouse

ADWC Vision

- Oracle's Autonomous Database vision is that it be:
  - Self-driving
    Database automatically follows user-defined service agreements
  - Self-securing
    Safe from both internal and external attack
  - Self-repairing
    Robust and highly-available

http://www.kingtraining.com

What is Oracle ADWC?

- Easy
  - Automated provisioning, patching & upgrades
  - Automated backups
  - Automated performance tuning
- Fast
  - Exadata: high performance, scalable, reliable
  - Uses Oracle Database capabilities: parallelism, columnar processing, compression
- Elastic
  - Elastic compute & storage scaling; 0 downtime
  - Pay only for resources consumed

http://www.kingtraining.com

ADWC Selling Points

- Benefits:
  - Lower labor costs and Fewer human errors
  - More secure and More reliable
  - Frees DBAs from generic operational tasks allowing more innovation
  - Runs on worlds #1 database platform either on the Public Cloud or Cloud at Customer

On-Premises

Same Architecture
Same Tools
Same Skills

Autonomous
Data Warehouse
Cloud

Oracle's Promise to Customers

- Here's the list of promises Oracle makes:
  - Automated Testing
  - Security
  - Runtime Monitoring and Error Handling
  - Performance Diagnosis & Optimization (AI)
  - Elasticity and Scaling
  - Backups
  - Fault Resistant (Oracle SLA 99.995NRX%)
  - Fully Autonomous , world's simplest database
  - Automation End-to-End
  - Online Automated Patching

http://www.kingtraining.com

End-to-End Planning

- Autonomy requires tough decisions concerning:
  - Provisioning
  - Security
  - Updates
  - Availability
  - Performance
  - Change Management
  - Errors

Autonomous Database

http://www.kingtraining.com

Automatic Patching

- Full stack patched each quarter using Gold images
  - Firmware, OS, VM, Clusterware, Database
  - Pre-checks before patching ensure success
  - Rolling updates for availability
- Customer may override automatic timing
- Oracle Cloud patches thousands of systems every day; they are getting pretty good at it

http://www.kingtraining.com

Automatic Security

- **Secure from External Attacks**
  - Latest security updates applied online, quarterly & as-needed for high-impact threats
  - Native encryption
- **Secure from Internal Attacks**
  - Data Vault keeps admins from user data
  - Data masking hides sensitive data
- Oracle operations team is locked out; access allowed only via customer-approved "break glass" procedure

http://www.kingtraining.com

Automatic Monitoring

- Monitors key components:
  - CPU, Memory, Storage, Network
  - Eliminates outages due to resource exhaustion
- Keeps individual users or databases from monopolizing resources
- Uses Machine Learning via Cluster Health Monitor to recognize anomalies and recommend (or make) corrections

http://www.kingtraining.com

Automated Elasticity

- Scaling of Compute and Storage independently
  - Add/remove CPUs
  - Add/remove whole servers (compute/storage)
- Instantly auto-scale within customer-defined limits
- Pay for what you use; eliminate over-provisioning

http://www.kingtraining.com

Automated Backups

- Nightly backups using Database Backup Cloud Service
  (in the future will use faster, cheaper, more accurate Zero Data Loss Recovery Cloud Service)

  Backup retention time is configurable

http://www.kingtraining.com

Automatic Failure Avoidance

- "Must be safer than manual database"
- Exceptional SLA GUARANTEE:
  - 99.995% (NRX)
  - Guarantee kicks in if > 2.5 min downtime in 1 month (includes patching, upgrades, bugs, outages)
- HA-architected applications will see "brown-outs" but won't fail
- Protection works using: RAC, Data Guard, index redefinition, entity-based redefinition, flashback

http://www.kingtraining.com

RESTful Interfaces

- Automated Data Warehouse Cloud exposes all functionality via RESTful APIs including:
  - Provision / Activate / Deactivate service
  - Grow Compute or Storage
  - Start/Stop Compute
  - Create Database (RAC, Data Guard, PDB)
  - Patch Database
  - Clone Database
  - Backup and Recover Database
  - Manage Security Lists and Keys
  - Manage Virtual Network

http://www.kingtraining.com

DBA Job Evolution Continues

- The job of the DBA has changed over the years

- DBA tasks will continue to evolve, so must we:

  - Less time on maintenance

  - More time INNOVATING

  - More time on BUSINESS

  - Reduce backlogs

  - Get more value from data

  - Improve developer data access

- Experimentation is easier and cheaper in the cloud; take advantage of it

- Take charge of cloud service levels
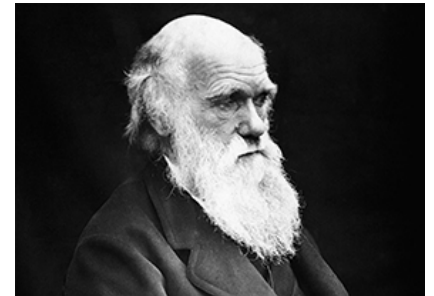
Conclusions

- Oracle's Autonomous Data Warehouse Cloud is part of the automation wave occurring today

- The Autonomous Data Warehouse Cloud eliminates many of the tedious, boring, and thus error-prone activities
(many that most DBAs have scripted already)

- DBAs will be freed up to spend their energy making real improvements to data structure and performance

http://www.kingtraining.com

ODTUG
Kscope18
ORLANDO, FLORIDA • JUNE 10-14

Register Now
www.kscope18.odtug.com

ORLANDO

WALT DISNEY WORLD
SWAN
Logo © Disney

WALT DISNEY WORLD
DOLPHIN
Logo © Disney

Please Complete Session Evaluations

Introducing Oracle's
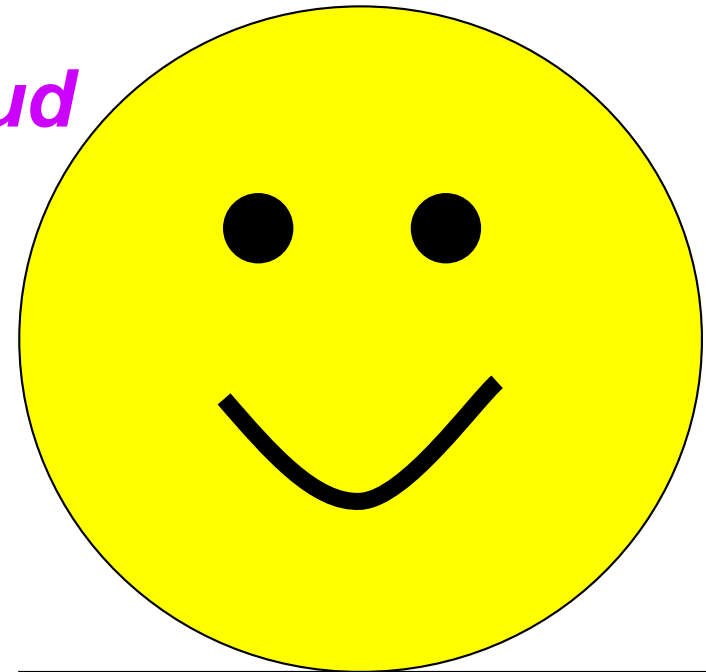*Autonomous Data Warehouse Cloud*

To contact the author:

John King

King Training Resources

P. O. Box 1780

Scottsdale, AZ 85252   USA

1.800.252.0652 - 1.303.798.5727

Email: john@kingtraining.com

Thanks for your attention!

Today's slides and examples are on the web:
http://www.kingtraining.com

http://www.kingtraining.com

- End

http://www.kingtraining.com