

# Oracle OpenWorld and other new adventures

Fall 2017

# Welcome

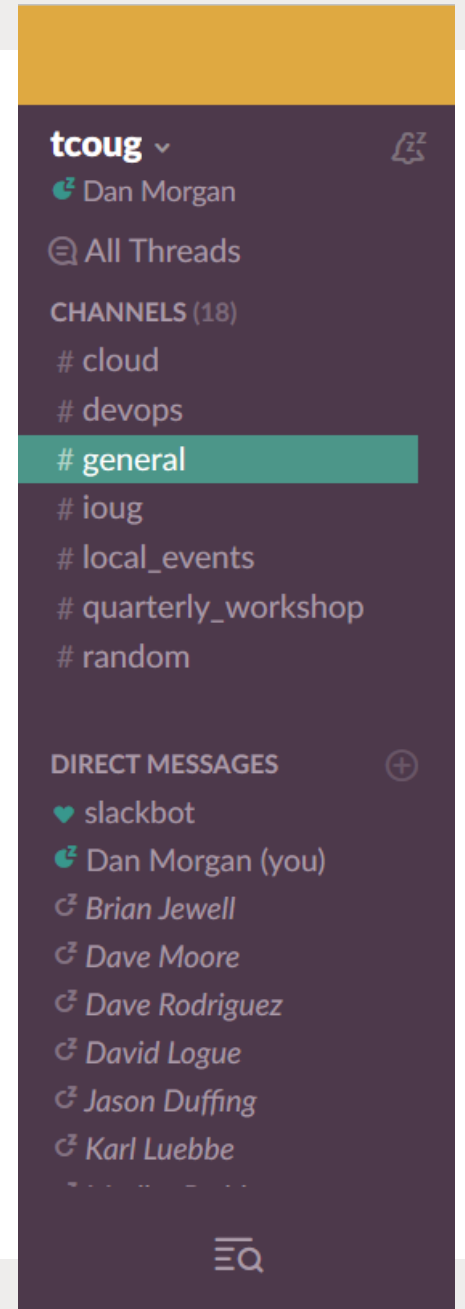
- Dan Morgan
  - Vice President TCOUG
  -  Oracle ACE Director Alumni
- Our TCOUG Slack Community
- Local Events
- TCOUG Election
- Lightning Sessions

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<https://tcoug.slack.com/>

To join the TCOUG Slack Group  
see a Board member today and  
give them your contact information



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## Search Oracle Events

Show 10 items

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1 result for **minneapolis**

IN-PERSON EVENT

**Oracle at PeopleSoft Upper Midwest Users Group Fall 2017 Meeting**

UMRUG is a regional user group for PeopleSoft & JD Edwards users in the St. Paul-Minneapolis, MN area. Oracle provides the keynote & vendors join us to help you make the most of your implementations!

October 25, 2017 08:00 CST | Minneapolis-St Paul | [Register](#) | [Share](#)

<https://www.oracle.com/search/events> ... Search: "Minneapolis"

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- **TCOUG Election ... please be sure to be here just before lunch**
- Lightning Sessions




# Lightning Sessions



- A short presentation  
5-15 minutes
- A phenomenal way to share your knowledge and experience with our group and our community
- A great way to develop your presentation skills
- I will lead workshops to help our members develop their presentations and presentation skills

# Welcome

Time	Description	Length
08:30 - 09:00	Registration and Networking	30
09:00 - 09:25	Welcoming Remarks, Sponsor and Speaker Introductions	25
09:25 - 09:40	Database Creation from a Gold Image Using RMAN, Brooks Graner @ Mayo Clinic 	15
09:40 - 10:40	New Availability Features in Oracle RAC 12c Release 2 - Anil Nair @ Oracle	60
10:40 - 10:50	Break	10
10:50 - 11:50	New Diagnosability Features in Oracle RAC 12c Release 2 - Anil Nair @ Oracle	60
12:05 - 12:10	TCOUG Elections - Kristen Spain @ TCOUG	5
12:10 - 01:00	Lunch	50
01:00 - 01:15	Tips and Traps with the new Oracle Keystore - Jim Czuprynski @ Vion 	15
01:15 - 01:30	In-Depth Schema Comparison - Ty Willingham @ Thomson Reuters 	15
01:30 - 02:30	Oracle 12cR2 Database In-Memory: Adventures with SwingBench TPC-DS - Jim Czuprynski @ Vion	60
02:30 - 02:45	Q&A and Break	15
02:45 - 03:45	Channeling Oracle OpenWorld 2017, Dan Morgan @ Meta7	60
03:45 - 04:00	Giveaways, Prizes, and Closing Remarks	15

# Sponsor Introductions





**THOMSON  
REUTERS**



COLLIER



**META7**

# Sponsors



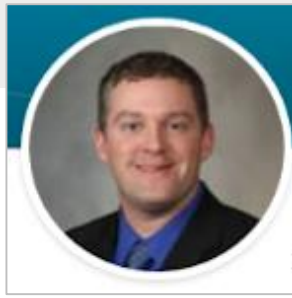
**ORACLE®**  
DATABASE

# Speaker Introductions



# Brooks Graner

- Sr. IT Systems DBA at the Mayo Clinic



# Ty Willingham

- Lead Database Engineer (Legal) at Thomson Reuters



# Jim Czuprynski



- Jim Czuprynski has 35+ years of professional experience in his career in information technology, serving diverse roles at several Fortune 1000 companies before becoming an Oracle DBA in 2001
- He was awarded the status of Oracle ACE Director in March 2014 and is a sought-after public speaker on Oracle Database technology features, presenting topics at Oracle OpenWorld, IOUG COLLABORATE, Hotsos Symposium, Oracle Technology Network ACE Tours, and Oracle User Group conferences around the world
- Jim has authored over 100 articles focused on facets of Oracle Database administration to his credit since 2003 at [databasejournal.com](http://databasejournal.com) and [ioug.org](http://ioug.org).
- He has also co-authored two books on Oracle database technology. Jim's blog, *Generally ... It Depends* (<http://jimczuprynski.wordpress.com>), contains his regular observations on all things Oracle





- Senior Principal Product Manager Oracle Corp. (2015-present)
- Previously a Consulting Member of the Oracle Technical Staff (2010-2015)
- Global Technical Lead / RAC & Parallel Clusterware (1997-2010)
- Technical Team Lead for 150 Global Engineers helping Fortune 500 customers plan, implement and support cutting edge technologies like Oracle Clusterware, RAC, ASM, Exadata, and Data Guard
- Responsibilities include deep-down technical training, follow up reviews on Customer satisfaction, follow up with Product Development on defect reviews and improving overall product experience
- Conversant with auxiliary availability technologies like Virtualization, HACMP, VIOS, NIC bonding and multi-pathing
- Specialties: Oracle Clusterware, Oracle Real Application Clusters, Oracle Data Guard, Oracle Virtualization and Exadata

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- 🏆 Oracle ACE Director Alumni
  - Oracle Educator
    - 🏛️ Curriculum author and primary program instructor at University of Washington
    - 🏰 Consultant: Harvard University
  - University Guest Lecturers
    - APAC: University of Canterbury (NZ)
    - EMEA: University of Oslo (Norway)
    - Latin America: Universidad Latina de Panama and Technologico de Costa Rica
  - IT Professional
    - First computer: IBM 360/40 in 1969: Fortran IV
    - Oracle Database since 1988-9
    - Beta Tester 10g, 11g, 12c, GoldenGate, TimesTen
    - The Morgan behind [www.morganslibrary.org](http://www.morganslibrary.org)
    - Member Oracle Data Integration Solutions Partner Advisory Council
    - Co-Founder International GoldenGate Oracle Users Group
    - Vice President Twin Cities Oracle Users Group
  - Principal Adviser: Forsythe **Meta7**



# Learning Experience Alert

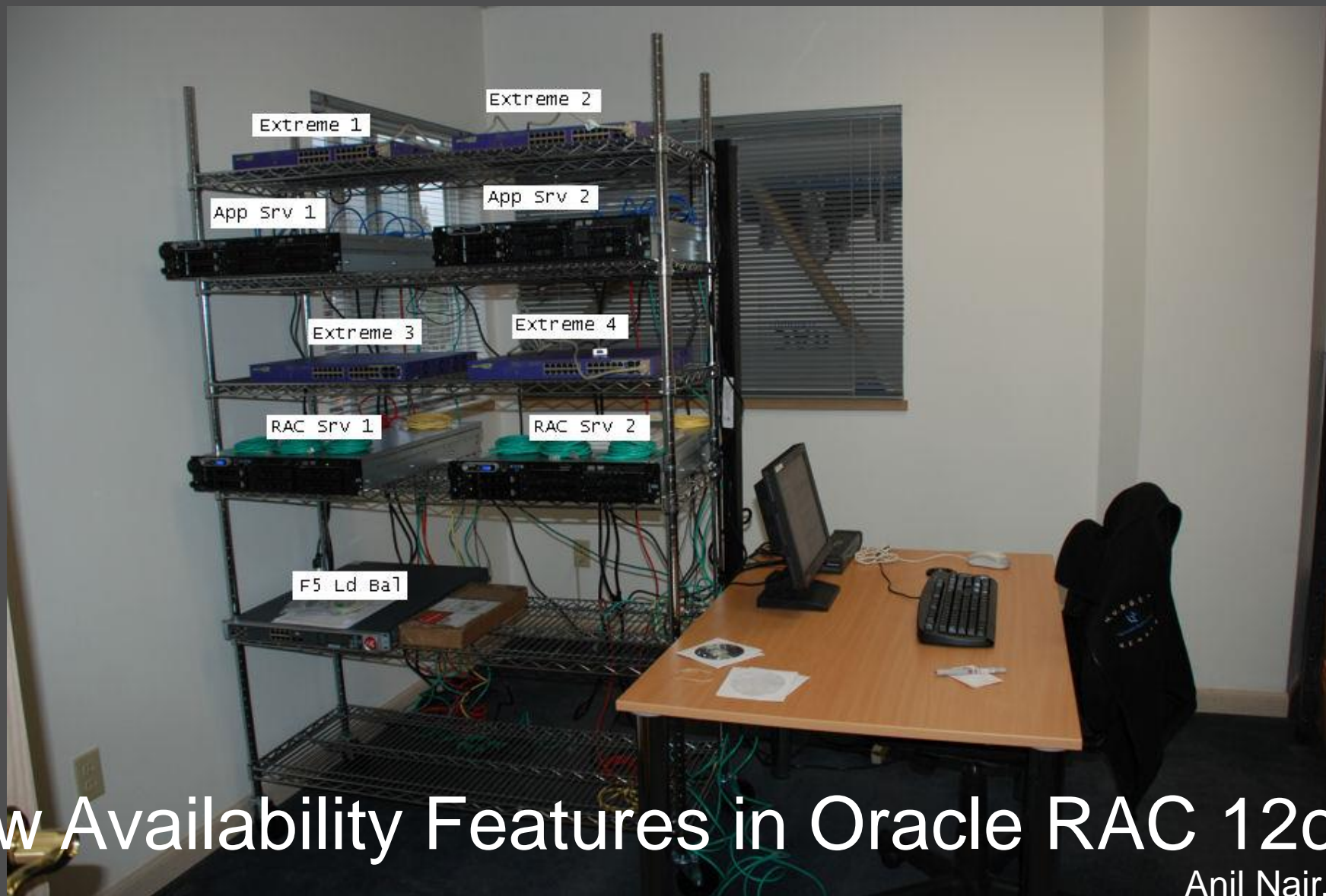






# Database Creation from a Gold Image Using RMAN

Brooks Graner, Mayo Clinic

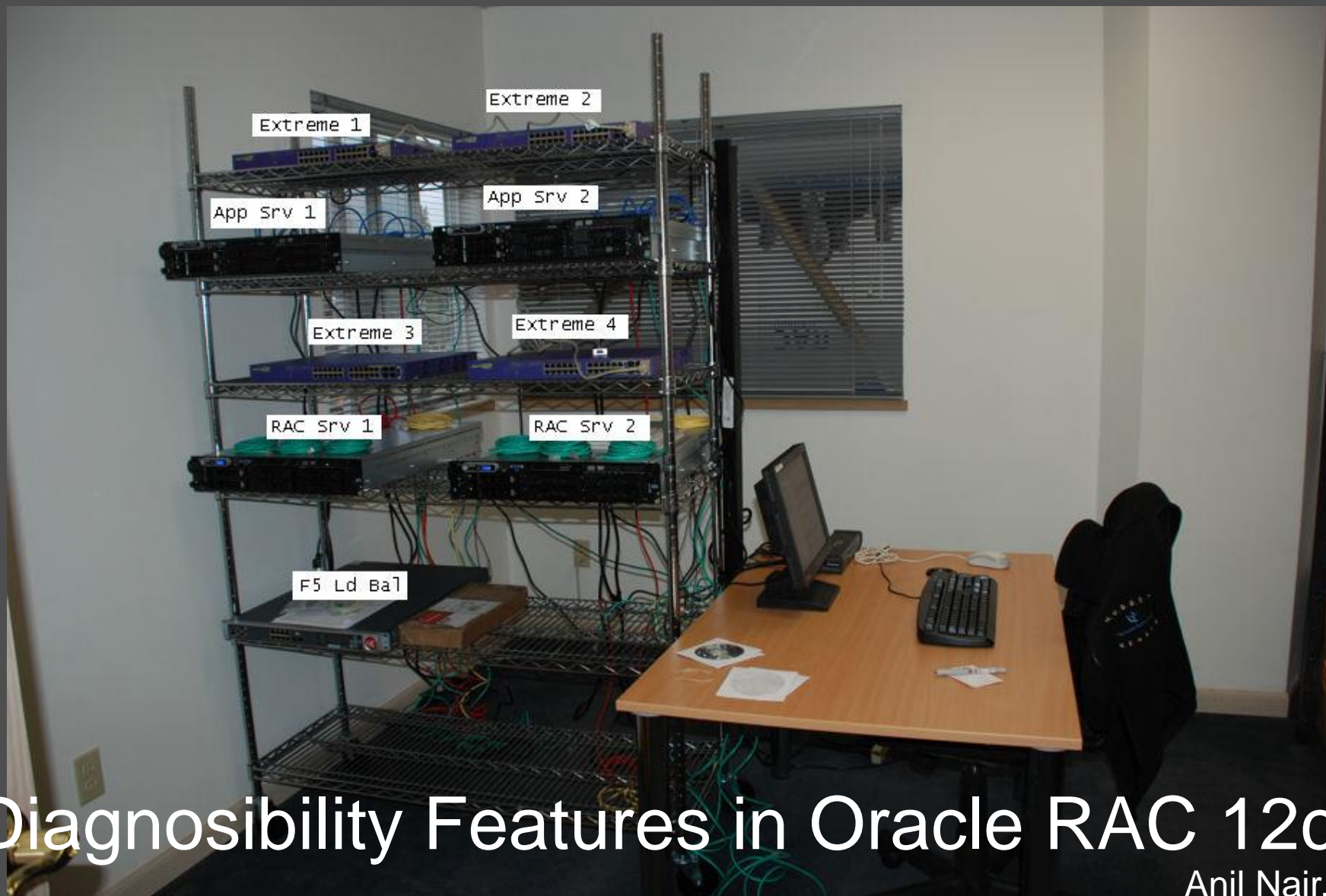


# New Availability Features in Oracle RAC 12c Rel. 2

Anil Nair, Oracle Corp.

Break





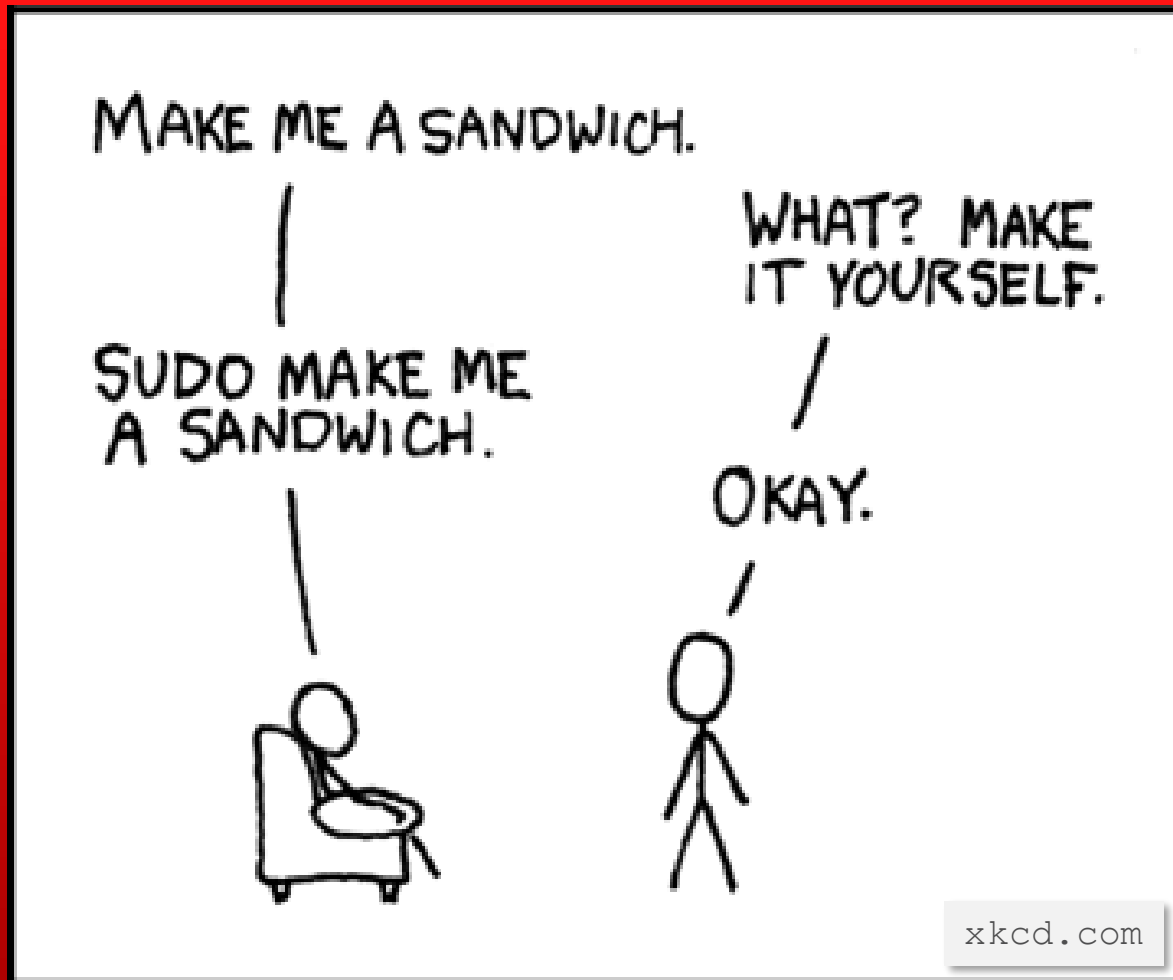
# New Diagnosability Features in Oracle RAC 12c Rel. 2

Anil Nair, Oracle Corp.



# TCOUG Election

Kristen Spain, TCOUG Secretary



Lunch





# Tips & Traps for the New Oracle Keystore

Jim Czuprynski, Vion





# In-Depth Schema Comparison

Ty Willingham, Thomson Reuters



The background of the slide is a digital tunnel. The walls and floor are composed of a dense, glowing orange-red binary code (0s and 1s). The tunnel recedes into the distance, where a bright, glowing yellow light source creates a lens flare effect. The overall color palette is dominated by dark reds, oranges, and yellows, giving it a high-tech, futuristic feel.

# Oracle 12cR2 Database In-Memory: Adventures with SwingBench TPC-DS

Jim Czuprynski

Break



# Channeling Oracle OpenWorld 2017

Daniel Morgan, Meta7




# Welcome To Our Future

- Two different new products were the focus of Larry Ellison's keynotes
- Both based on a single underlying technology that Oracle is working to build into a lot of different products throughout the tech stack
- On the first day Larry focused primarily on what he called:

"The new, greatest, version of Oracle 18c which is the world's first autonomous database"




A photograph of Larry Ellison, Oracle's CEO, speaking on a stage. He is wearing a dark grey V-neck sweater and is gesturing with his right hand. The background is a dark red wall.

>

## Oracle Autonomous **Database** and Highly Automated **Cyber** Defense

Larry Ellison  
Chief Technology Officer

**Robots  
Prevent Data Theft**

The Oracle logo, consisting of the word "ORACLE" in white capital letters on a red rectangular background.

ORACLE



Based on a Technology  
As Revolutionary  
As the Internet



# The Premise Is As Ground-Shaking As It Is Obvious (1:2)

- There can be a variety of threats to our data, our databases, and our organizations
- The threats include
  - Stability Issues
  - Security Threats
    - Denial of Service Attacks
    - Data Theft
    - Data Corruption
  - Performance Issues
- The solution Oracle has chosen in Machine Learning
  - Not Artificial Intelligence ... but very specifically "machine learning"
  - The point is that "We do everything we can to avoid human intervention"
- The "cold war" has moved from the military to our computers
- We are the front line ... and while there is no blood or burning buildings ... make no mistake about it ... this is escalating and our ability to pretend that we are not on the front line is evaporating

# The Premise Is As Ground-Shaking As It Is Obvious (2:2)



- It is now "Our computers" vs "Their Computers" in cyberwarfare
  - If it is their computers vs us ... we will lose
  - If you don't believe me try to beat Deep Blue at chess or AlphaGo at go
  - If the opposition is an organized crime family you will find your data being sold on the dark web
  - If the opposition is a nation-state expect your data to be used to attack your country, your community, your family
  - The worst data thefts have occurred after a patch was available
  - Because we all know we do not patch the instant the patch is available
  - We schedule downtime
  - Patching is never a top priority for our employers
- To win we must
  - The instant a patch is available
  - The instant the database detects a threat
- We no longer have the luxury of scheduling dev, scheduling test, taking an outage and scheduling prod ... not a strategy, not a tactic, a guaranteed failure

# Oracle Management & Security Cloud (1:2)

- Log Analytics (Splunk) doesn't fix anything ... it just tells you that you have a problem ... if you have time to look
- OMC is a highly automated cyber defense ... but not 100% autonomous
- Originally designed as a Splunk killer ... but implemented as far more
- With the 18c database ... co-designed to stop data theft
- We need to reprioritize
- We need to rethink how we protect our systems
- What happened at Equifax?
  - For one thing they couldn't find all of the installed instances of Apache Struts
  - Which prevented them from patching them
  - And they made the mistake of focusing on perimeter defense rather than defense in depth

# Oracle Management & Security Cloud (2:2)


- We don't tolerate airplane crashes ... but we tolerate security failures daily
- We need to elevate the priority of security
- We need to reprioritize ... to do security without being a speed bump
- Humans can't keep up ... we must have more automation
- Automatically fixing vulnerabilities and, if there is an attack, detect it and shut it down
- There should be no human intervention and no downtime required
- Which means we need to
  - Identify normal events
  - Distinguish normal from abnormal events



**Cyber Attacks: More Data Stolen Every Year**  
**Cyber Criminals and State Actors are Winning the Cyber War**

- Equifax: Records of 143,000,000 Americans plus...
  - **Credit Card Numbers**, Social Security Numbers, home addresses...
  - Equifax CEO, executives and IT management team resigns
- Office of Personnel Management: Records of 20 Million Federal Employees
  - **Security clearance data**, finger print data, social security numbers, home addresses
  - White House, Foreign Embassies, State Department, Defense Department...
  - Director of OPM Resigns
- Cyber Criminals and **State Actors** steal more data every year
  - **Formidable and sophisticated adversaries** stealing corporate & government data





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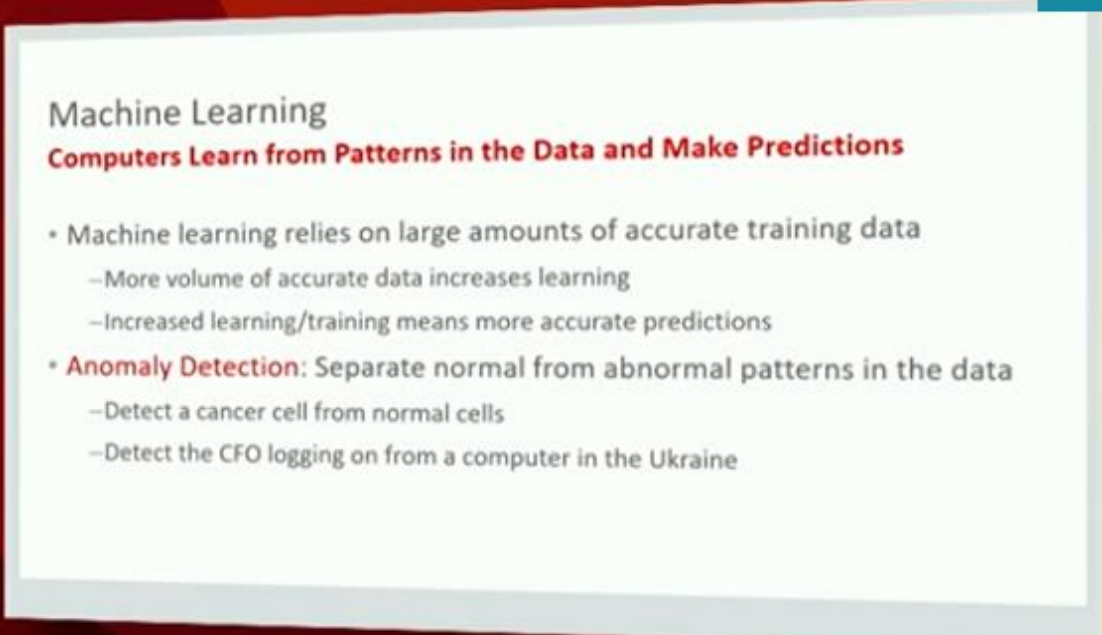

**Modern Cyber Security Requires More Automation**  
**Cyber Defense: Our People versus Their Computers**

- Most Data Thefts Occur **After** Security Fix Available
  - Target did not detect the attack
  - Target behind in applying security patches
    - Wrong priorities
    - Waiting for downtime window



Modern Cyber Security Requires More Automation  
**Security & Database Automation Work Together to Prevent Data Theft**

- **Cyber Defense System:** Automatically Detects Attacks in Real-Time
  - Automated Intrusion Detection
- **Database System:** Automatically and Immediately Secures Your Data
  - Automated database immediately **patches itself while running**
    - No delay for downtime window, **no manual intervention**
  - Recovers data that's deleted by ransomware, etc.




The slide is titled "Machine Learning" and has a subtitle "Computers Learn from Patterns in the Data and Make Predictions". It contains two main bullet points. The first bullet point is "Machine learning relies on large amounts of accurate training data", which has two sub-points: "More volume of accurate data increases learning" and "Increased learning/training means more accurate predictions". The second bullet point is "Anomaly Detection: Separate normal from abnormal patterns in the data", which has two sub-points: "Detect a cancer cell from normal cells" and "Detect the CFO logging on from a computer in the Ukraine".

## Machine Learning

**Computers Learn from Patterns in the Data and Make Predictions**



- Machine learning relies on large amounts of accurate training data
  - More volume of accurate data increases learning
  - Increased learning/training means more accurate predictions
- **Anomaly Detection:** Separate normal from abnormal patterns in the data
  - Detect a cancer cell from normal cells
  - Detect the CFO logging on from a computer in the Ukraine



>

**Announcing:** Oracle Management and Security Cloud

- **Complete and Integrated “Cloud Native” System**
  - Monitor, manage, analyze ALL operational & security data in one system
- **Powered by Machine Learning (ML)**
  - ML-based system discovers anomalies in the data – **Security Threats**
- **Automated Remediation**
  - Automated operational workflows for real-time security remediation



>

## Machine Learning (ML)

**The Applications are Revolutionary**

- Autonomy: "Self-Driving" cars
- Computer Vision: Facial Recognition
- New ML Applications: Autonomous Database & Automated Cyber Security

>

## Machine Learning

**Computers Learn from Patterns in the Data and Make Predictions**

- Machine learning relies on large amounts of accurate training data
  - Higher volumes of accurate data increases learning
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- **Anomaly Detection:** Separate normal from abnormal patterns in the data
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**Huge Amounts of Computer Systems Data in Event Logs**  
**Enable New Database and Security Applications for Machine Learning**

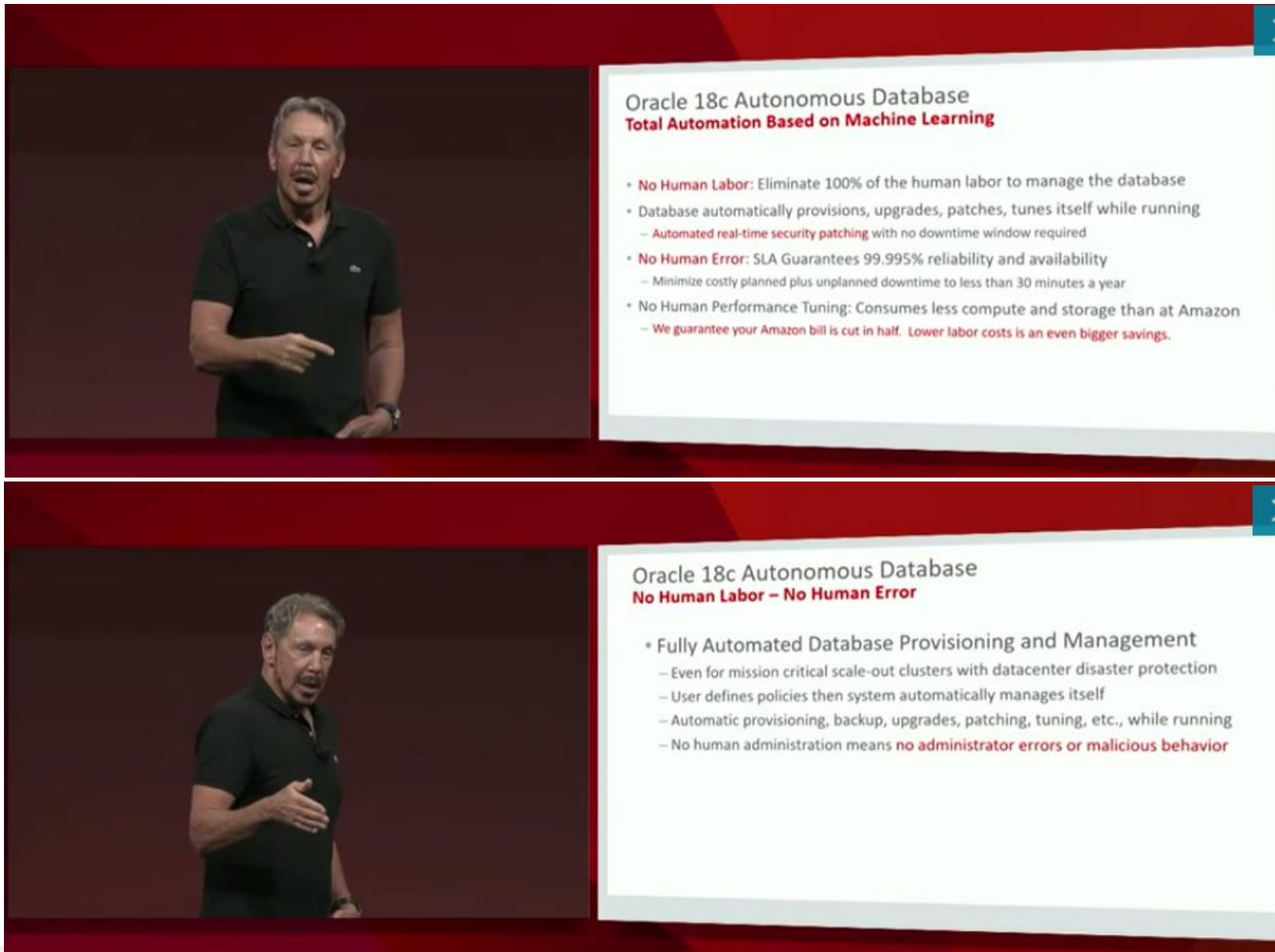
- Lots of Event Logs
  - Infrastructure logs: Network, Server, Storage, VM, OS
  - Platform logs: Database, Java, Analytics, etc.
  - Applications logs: ERP, CX, HCM, Custom, etc.
- Event Log Training Data Enables New Machine Learning Applications
  - **Security**: Detect and connect anomalous events: Login from Ukraine and unique SQL
  - **Database**: Classify normal query patterns and automatically tune database

**Database Autonomy & Highly Automated Cyber Security**

- Database Autonomy: Fully automated 100% “self-driving” database
- Automated Cyber Defense: Detect & remediate attacks in real-time
- They Work Together:
  - **Discover attack**: Real time ML log processing detects security anomaly in data
  - **Remediate**: Database automatically patches itself while running

**Lots of Other Benefits Come with Total Database Automation**





The image shows two slides from a presentation about Oracle 18c Autonomous Database. Each slide features a video of a man in a black polo shirt speaking on the left, and a list of bullet points on the right. The slides are set against a dark red background with a white text box on the right. A blue arrow icon is visible in the top right corner of each slide's header area.

## Oracle 18c Autonomous Database

### Total Automation Based on Machine Learning



- **No Human Labor:** Eliminate 100% of the human labor to manage the database
- Database automatically provisions, upgrades, patches, tunes itself while running
  - Automated real-time security patching with no downtime window required
- **No Human Error:** SLA Guarantees 99.995% reliability and availability
  - Minimize costly planned plus unplanned downtime to less than 30 minutes a year
- **No Human Performance Tuning:** Consumes less compute and storage than at Amazon
  - We guarantee your Amazon bill is cut in half. Lower labor costs is an even bigger savings.

## Oracle 18c Autonomous Database

### No Human Labor – No Human Error

- **Fully Automated Database Provisioning and Management**
  - Even for mission critical scale-out clusters with datacenter disaster protection
  - User defines policies then system automatically manages itself
  - Automatic provisioning, backup, upgrades, patching, tuning, etc., while running
  - No human administration means **no administrator errors or malicious behavior**





## Oracle 18c Autonomous Database

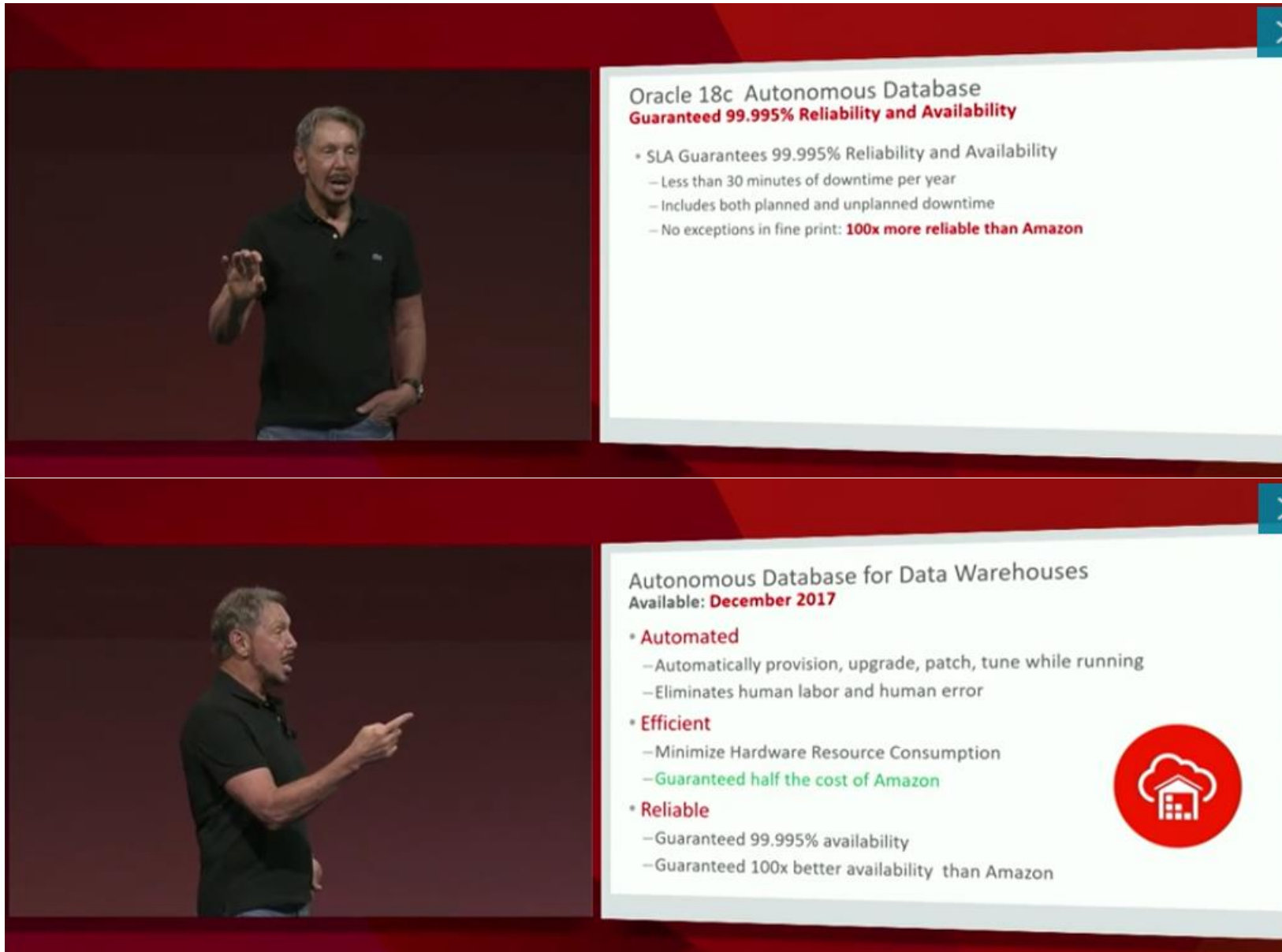
### Dynamic Elastic Hardware Allocation

- Fully Automated Hardware Resource Elasticity
  - Instantly expand/shrink compute and storage without downtime
  - Minimizes cost by delaying resource allocation until time needed
  - No overpaying for partially used fixed configurations

## Oracle 18c Autonomous Database

### Non-Stop Availability: Fault Tolerant plus On-line Recovery and Upgrades

- System Failure or Scaling	- Exadata, RAC, ASM
- Regional Outage or DB Corruption	- Active Data Guard
- Patches (Updates)	- RAC Rolling Upgrade
- Major Release Upgrades	- Transient Logical Standby
- Table/Index/Schema Changes	- Online and Edition Based Redefinition
- User Error	- Flashback transaction, table, or database






**Oracle 18c Autonomous Database**  
**Guaranteed 99.995% Reliability and Availability**

- SLA Guarantees 99.995% Reliability and Availability
  - Less than 30 minutes of downtime per year
  - Includes both planned and unplanned downtime
  - No exceptions in fine print: **100x more reliable than Amazon**

**Autonomous Database for Data Warehouses**  
**Available: December 2017**

- **Automated**
  - Automatically provision, upgrade, patch, tune while running
  - Eliminates human labor and human error
- **Efficient**
  - Minimize Hardware Resource Consumption
  - **Guaranteed half the cost of Amazon**
- **Reliable**
  - Guaranteed 99.995% availability
  - Guaranteed 100x better availability than Amazon






## Autonomous Database for OLTP

Available: **June 2018**

- **Automated: upgrade, patch, tune... while running**
  - Handles OLTP and Mixed workloads
  - Provision **Mission Critical** with High-Performance 99.995% availability configuration
  - Provision **Low Cost** for non-critical workloads or test/dev with single server config
- **Efficient: Consume fewer computer resources**
  - Running faster on Exadata infrastructure consumes less compute time
  - Data Compression consumes less storage
  - Instant scaling of compute or storage only when needed with no downtime
- **Reliable: 99.995% Availability**

## Database Professionals: Evolution of Skill Set

**Problem: More data management tasks than humans to do the work**

<u>Less time on Administration</u>		<u>More time on Innovation</u>
• Less time on infrastructure		• More time on database design
• Less time on patching, upgrades		• More time on data analytics
• Less time on ensuring availability		• More time on data policies
• Less time on tuning		• <b>More time on securing data</b>

# The Future Is Just 3 Months Away

- Databases that use machine learning to detect attacks and stop
- Databases that patches themselves
- Databases that back themselves up
- A database that guarantees  $\leq 30$  minutes of downtime per year

# We've Come A Log Way ... We Have Far Further To Go



Ed Oates   Bruce Scott   Bob Miner   Larry Ellison





Giveaways, Prizes & Closing Remarks





I hope today has been valuable for you and I encourage you to contact me ... [vp@toug.org](mailto:vp@toug.org) ... with suggestions and to volunteer to present at our Fall meeting

Daniel A. Morgan  
mobile: +1 206-669-2949

