

Oracle 12c One Year of Hands-On Later



♦ Oracle ACE Director



Consultant to Harvard University



University of Washington Oracle Instructor, ret.



The Morgan of Morgan's Library on the web

- Executive Board Member: Vancouver OUG
- Upcoming Presentations & Events
 - August: LAD Tour:
Panama, Costa Rica, Peru, Ecuador
 - September: Oracle OpenWorld
 - October: Azerbaijan Oracle Users Group
 - October: Bulgarian Oracle Users Group
 - November APAC Tour:
Thailand, New Zealand
- 10g, 11g, 12c Beta Tester



Mad Dog Morgan



Morgan's Library: www.morganslibrary.org

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Morgan's 2010 - 2011 Calendar

May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
EMEA Harmony Conference Tallinn, Estonia May 20-21, 2010											

A joint conference of the Estonian, Finnish, Latvian and Russian user groups
EMEA Harmony will focus on Technology, Middleware and BI
Featured speakers include Tom Kyte, Mogen Norgaard, Tanel Poder, and Dan Morgan



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Presentations Map


The Mad Dog ACE


Morgan

aboard USA-71

Training Events

- EMEA Harmony - May 20 - 21, Tallinn, Estonia
- NoCOUG - August 2010,
- AIIOUG Sep 3 - 4, Hyderabad, India
- OOOW - Sep 19 - 23, San Francisco CA
- COLLABORATE LAD Tour - October
- DOAG - Nov 16 - 18, Nurnberg, Germany
- UKOUG - Nov 29 - Dec 1, Birmingham UK

Library News

- [Morgan's Notepad vi \(Blog\)](#) UPDATED
- [Join the Western Washington OUG](#)
- [Morgan's Oracle Podcast](#)
- [DBA Best Practice Guidelines](#)
- [Bryn Llewellyn's PL/SQL White Paper](#)
- [Bryn Llewellyn's Editioning White Paper](#)
- [Troubleshooting Performance](#)

Oracle Events

EMEA Harmony - Tallinn Estonia - May 20-21

ACE News
Would you like to become an Oracle ACE? 
Learn more about becoming an ACE


- [ACE Directory](#)
- [ACE Google Map](#)
- [ACE Nomination Form](#)
- [Stanley's Blog](#)

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Morgan's Library

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International Oracle Events 2013-2014 Calendar

Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
<u>The Library</u>			The library is a spam-free on-line resource with code demos for DBAs and Developers. If you would like to see Oracle database functionality added to the library ... just email us. Oracle 12.1.0.1.0 has been released and content will start showing up every day for weeks.								

Resources

MadDog Morgan



Training Events and Travels

- [NZOUG, Auckland, New Zealand - 08 Nov](#)
- [AIOUG, Hyderabad, India - 8 - 9 Nov](#)
- [AU SOUG, Perth, Australia - 12-13 Nov](#)
- [JOUG, Tokyo, Japan - 13-15 Nov](#)
- [ACOUG, Beijing, China - 16-19 Nov](#)
- [ACOUG, Guangzhou, China - 19 Nov](#)
- [DOAG, Nurnburg, Germany - 19-21 Nov](#)

Next Event: APAC New Zealand

Morgan



Library News

- [Morgan's Notepad vi \(Blog\)](#)
- [Join the Western Washington OUG](#)
- [Morgan's Oracle Podcast](#)
- [US Govt. Mil. STIGs \(Security Checklists\)](#)
- [Bryn Llewellyn's PL/SQL White Paper](#)
- [Bryn Llewellyn's Editioning White Paper](#)
- [Explain Plan White Paper](#)



Oracle Events



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ACE News

Would you like to become an Oracle ACE?

Learn more about becoming an ACE



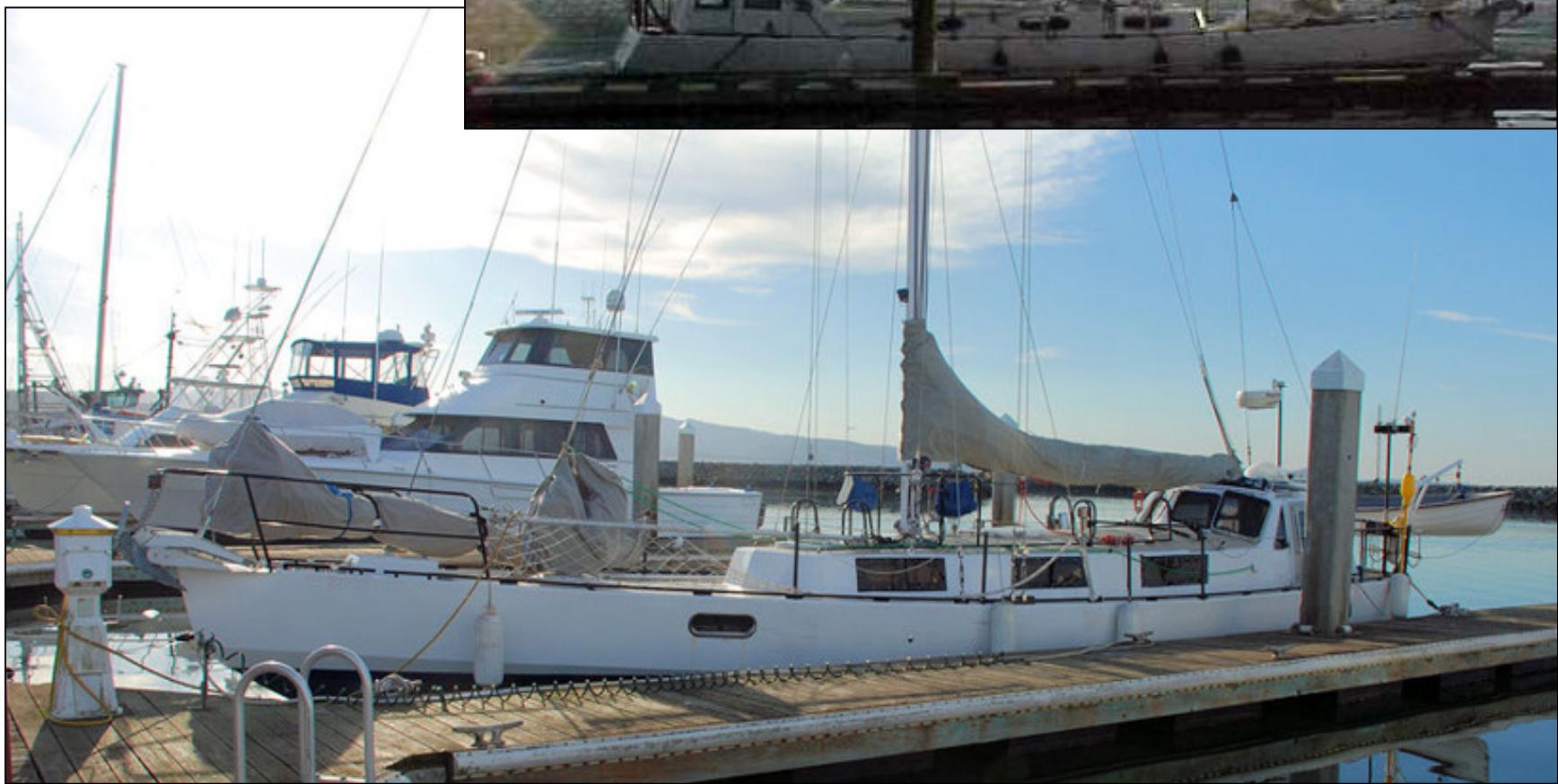
- [ACE Directory](#)
- [ACE Google Map](#)
- [ACE Program](#)
- [Stanley's Blog](#)

Congratulations to our newest ACEs and ACE Directors

```
cd $MORGAN_HOME
```



```
cd $MORGAN_BASE/San_Francisco
```



My Sled Meets Larry's



Travel Log: Amsterdam and Cuzco



Thank You SAS

Time	Flight	Gate	Destination	
0630	DY1800		Malaga	
1710	BLX692	46	Goteborg	Gate closed
1710	SK811		London/Heathrow	Cancelled
1715	SK841		Zurich	Cancelled
1715	AT660		Helsinki	Cancelled
1720	QJ4796		Bilbund	Cancelled
1725	DY1494		Paris/Orly	Cancelled
1725	KL1148		Amsterdam	Cancelled
1725	KQ1148		Amsterdam	Cancelled
1730	SK461		Kopenhagen	Cancelled
1740	DY1866		Pisa	Cancelled
1750	DY3232		Kopenhagen	Cancelled
1805	LH3145		Munchen	Cancelled
1805	SK3681		Munchen	Cancelled
1805	SK1465		Kopenhagen	Cancelled
1810	DY1306		London/Gatwick	Cancelled
1815	DY1978		Beograd	Cancelled
1820	SK1484	36	Stockholm	Cancelled
1825	DY1108		Berlin/Schoenefeld	Cancelled
1825	BA88272		Aarhus	Cancelled
1830	DY3774		Stockholm	Cancelled
1845	FI325	46	Reykjavik	New time 1925
1855	SK3621		Frankfurt	Cancelled
1855	LH3135		Frankfurt	Cancelled
1855	SK6616	39	Helsinki	
1855	KF506	39	Helsinki	
1900	SK463		Kopenhagen	Cancelled
1905	DY1256		Amsterdam	Cancelled
1915	TP509		Lisboa	Cancelled
1915	DY1132		Dusseldorf	Cancelled
1920	WF336		Goteborg	Cancelled
1920	DY1352		Edinburgh	Cancelled
1920	SK3192		Goteborg	Cancelled
1920	QJ4798		Bilbund	Cancelled

Fun things to do in Iceland ... take a tour

Home Tours Find Why Touris Photo Gallery Videos Tuesday, April 20, 2010

TOURIS tour booking - Step 1

Top Packages

- 
The Full Circle Express.
- 
Grand tour around Iceland including the Westfjords.
- 
A real 4x4 highland adventure.
- 
South Iceland at leisure.

Explore

- 

::Tour Information

Tour: TT45
Volcano in Action - This tour is currently not available!

Season: All year
Departures: Daily
Departure times: 17:30
Duration: 6,5

Price info:

- Adults: € 55,00
- Age 12-17: € 27,50
- Age 3-11: € 0,00
- Age 0-2: € 0,00

* All prices are per person.
* Please select your details here to the right and click next to determine your total price.

Included in the price:

- Bus tour with English speaking guidance

::Your details

Date of tour:

Adults:

Youth (12-17):

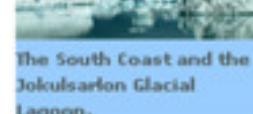
Children (3-11):

Infants (0-2):

Comments or special wishes:

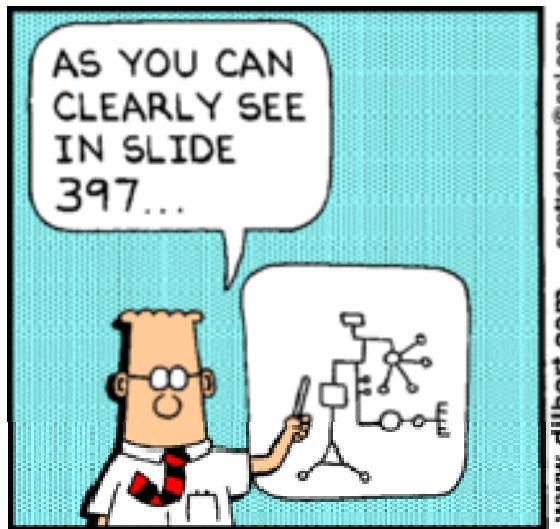
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Northern Lights Mystery.
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Reykjavik City Sightseen.
- 
The South Coast and the Jokulsarlon Glacial Lagoon.

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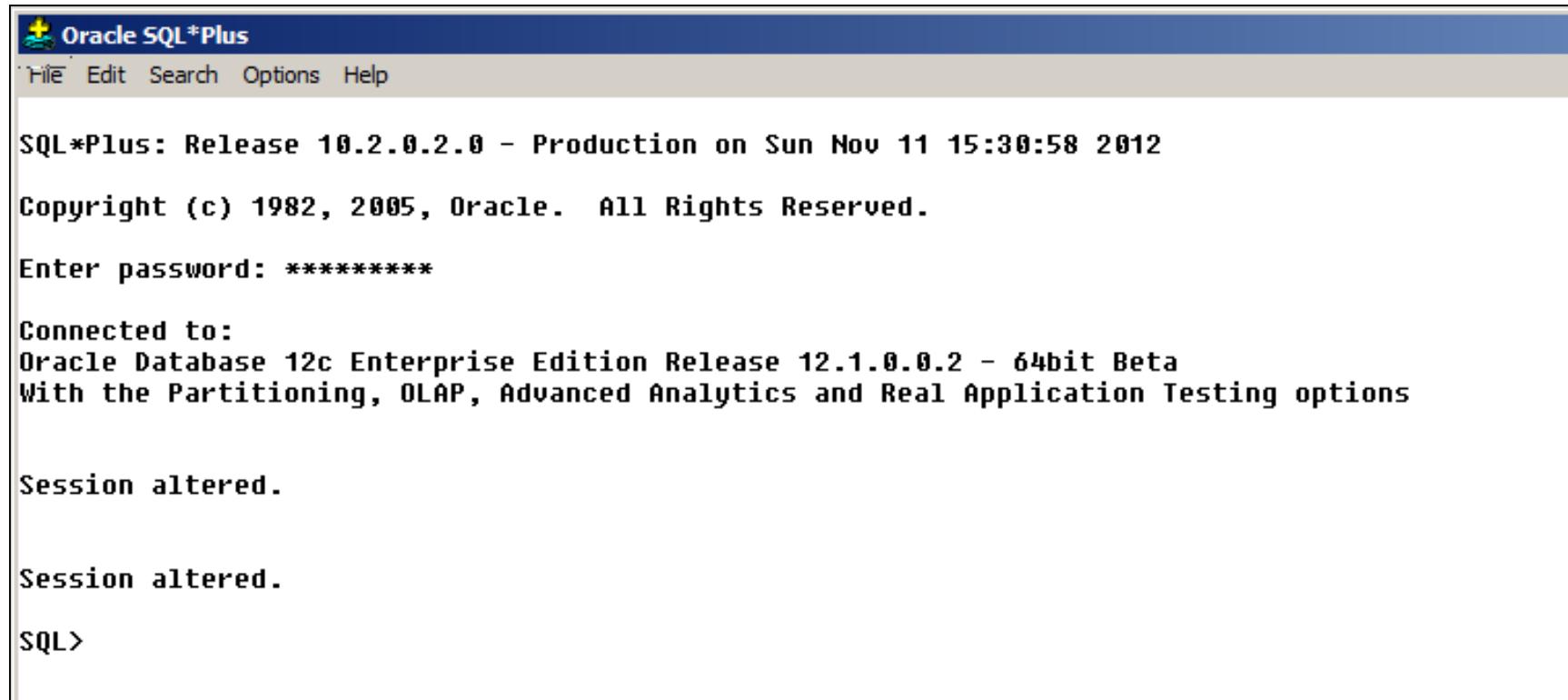
12c: The Past

Disclaimer

- This room is an unsafe harbour
- No one from Oracle has previewed this presentation
- No one from Oracle knows what I'm going to say
- No one from Oracle has supplied any of my materials
- This discussion is about a Beta and I am going to be very ... VERY ... careful to show you only what has been demonstrated at OpenWorld so as not to violate my NDA
- But what I am going to emphasize are precisely those things you need to know to move forward with your career

This disclaimer has not been approved by Oracle Legal

The SQL*Plus Prompt



Oracle SQL*Plus

File Edit Search Options Help

SQL*Plus: Release 10.2.0.2.0 - Production on Sun Nov 11 15:30:58 2012

Copyright (c) 1982, 2005, Oracle. All Rights Reserved.

Enter password: *****

Connected to:

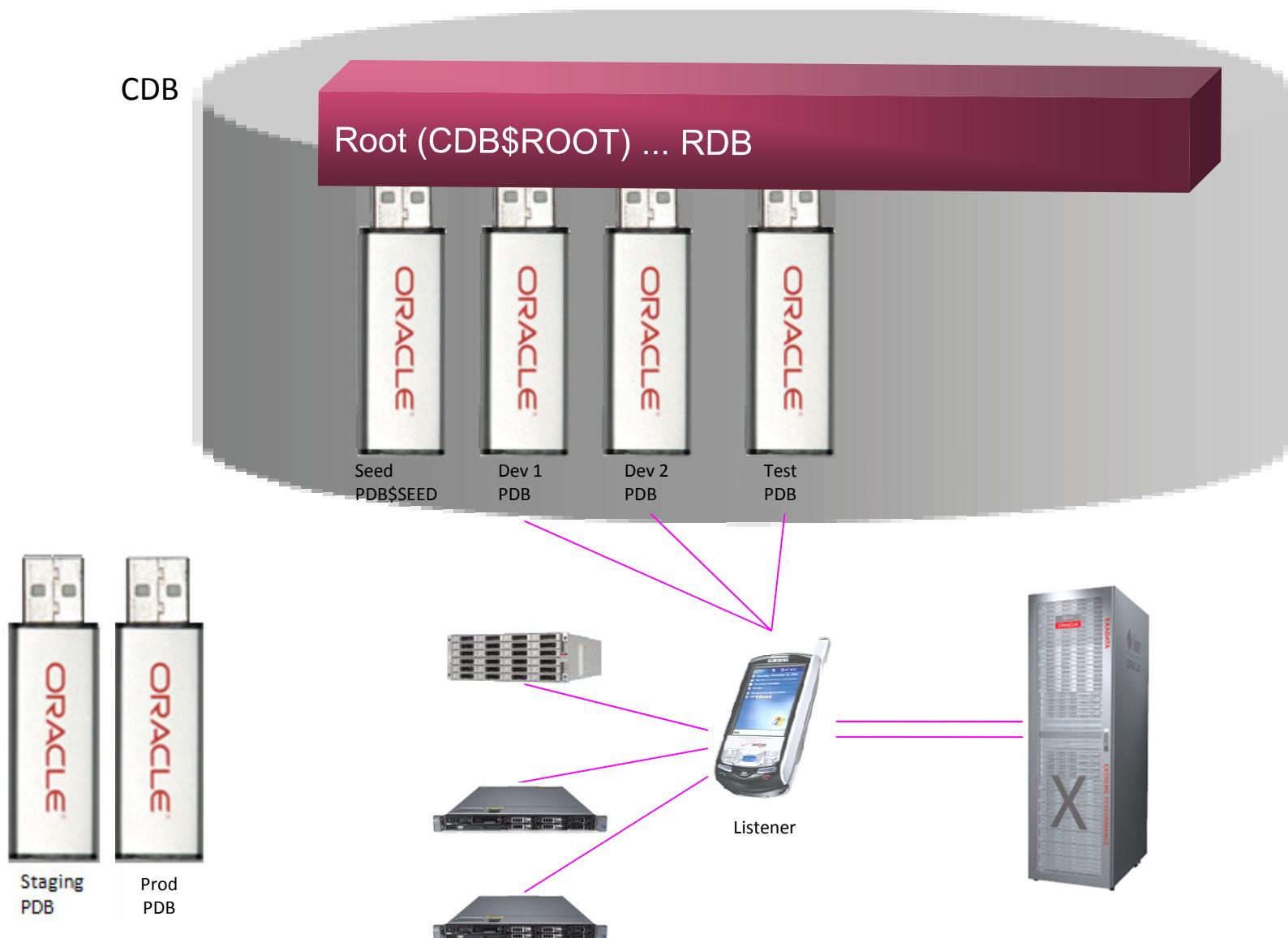
Oracle Database 12c Enterprise Edition Release 12.1.0.0.2 - 64bit Beta
With the Partitioning, OLAP, Advanced Analytics and Real Application Testing options

Session altered.

Session altered.

SQL>

Slide Two of Three



Slide Three of Three

- Oracle has changed fundamental constructs untouched since version 6.0
- What you need to pay attention to
 - Container Database (CDB)
 - Pluggable Database (PDB)
 - The DBA role ... I been warning people to stop using it?
 - As things stand today you must learn the SYS_CONTEXT function
... you are going to need it to survive
 - Take nothing for granted in a CDB
 - Throw away tools not certified to 12c
 - If you are a DBA with 20+ years experience
... you MUST read the docs: Not doing so is not an option
... unless you want a career change



The balance of this presentation will be unscripted
and will not be available in any published form
until after the product is released.

And I spent some time making the point that the word "database" has essentially lost all meaning.

- What does "start the database" mean?
- What does "backup the database" mean?
- What does "create a new database" mean?
- What does "the database crashed" mean?
- What does SHUTDOWN ABORT do?

12c: One Year Later

Should I Deploy a Container DB?

- To create a container DB: Yes or Yes?
 - Separation of duties
 - cron jobs ... they have been obsolete since version 9i
- To multi-tenant consolidate: Yes or No?
 - Patching requirements
 - Upgrade requirements
 - Backup and restore requirements
 - Security requirements
 - Infrastructure

Consolidation Effects

- What are the implications of consolidation?

- Processes
- Transactions
- Connections
- Memory
- CPU
- I/O

Do you really want to use only one TEMP tablespace?

How do you want to allocate space for UNDO?

What is "the" SYSAUX tablespace?

- Networks
- Backups and restores

Current Server Inventory Utilization

- Can we use our current servers?
or more importantly "should" we use our current servers
 - Pizza Boxes (1U, 2U, 3U)
 - Blades (H/P and Cisco UCS)
 - M10 (Fujitsu)
 - P Series (IBM)
 - Z Series (IBM)
 - T Series (Sun-Oracle)
 - M Series (Sun-Oracle)
 - ODA
 - Exadata

Security and Separation of Duties

Operating System Groups & Enhanced Priv. Users

- Legacy Operating System

- root
- oinstall
- dba
- oper

- Database

- SYS
- SYSTEM
- DBA role

Users with Escalated Privileges

```
SQL> select username from dba_users order by 1;

USERNAME
-----
ANONYMOUS
APEX_040200
APEX_PUBLIC_USER
APPQOSSYS
AUDSYS
CTXSYS
DBSNMP
DIP
DVF
DVSYN
FLOWS_FILES
GSMADMIN_INTERNAL
GSMCATUSER
GSMUSER
LBACSYS
MDDATA
MDSYS
OJVMSYS
OLAPSYS
ORACLE_OCM
ORDDATA
ORDPLUGINS
ORDSYS
OUTLN
SI_INFORMTN_SCHEMA
SPATIAL_CSW_ADMIN_USR
SPATIAL_WFS_ADMIN_USR
SYS
SYSPBACKUP
SYSDG
SYSKM
SYSTEM
WMSYS
XDB
XS$NULL
```

Roles Enhancing Separation of Duties

ROLE	PASSWORD	AUTHENTICAT	COM	O
ADM_PARALLEL_EXECUTE_TASK	NO	NONE	YES	Y
APEX_ADMINISTRATOR_ROLE	NO	NONE	YES	Y
APEX_GRANTS_FOR_NEW_USERS_ROLE	NO	NONE	YES	Y
AQ_ADMINISTRATOR_ROLE	NO	NONE	YES	Y
AUDIT_ADMIN	NO	NONE	YES	Y
CDB_DBA	NO	NONE	YES	Y
DBA	NO	NONE	YES	Y
DBFS_ROLE	NO	NONE	YES	Y
GATHER_SYSTEM_STATISTICS	NO	NONE	YES	Y
GSMADMIN_ROLE	NO	NONE	YES	Y
GSMUSER_ROLE	NO	NONE	YES	Y
GSM_POOLADMIN_ROLE	NO	NONE	YES	Y
HS_ADMIN_EXECUTE_ROLE	NO	NONE	YES	Y
HS_ADMIN_ROLE	NO	NONE	YES	Y
HS_ADMIN_SELECT_ROLE	NO	NONE	YES	Y
LBAC_DBA	NO	NONE	YES	Y
LOGSTDBY_ADMINISTRATOR	NO	NONE	YES	Y
OLAP_DBA	NO	NONE	YES	Y
OLAP_XS_ADMIN	NO	NONE	YES	Y
OPTIMIZER_PROCESSING_RATE	NO	NONE	YES	Y
ORDADMIN	NO	NONE	YES	Y
PDB_DBA	NO	NONE	YES	Y
PROVISIONER	NO	NONE	YES	Y
RECOVERY_CATALOG_OWNER	NO	NONE	YES	Y
SCHEDULER_ADMIN	NO	NONE	YES	Y
SPATIAL_CSW_ADMIN	NO	NONE	YES	Y
SPATIAL_WFS_ADMIN	NO	NONE	YES	Y
WM_ADMIN_ROLE	NO	NONE	YES	Y
XDBADMIN	NO	NONE	YES	Y
XS_CACHE_ADMIN	NO	NONE	YES	Y
XS_NAMESPACE_ADMIN	NO	NONE	YES	Y
XS_SESSION_ADMIN	NO	NONE	YES	Y

System Privileges

```
1* select distinct privilege from dba_
SQL> /

PRIVILEGE
-----
ALTER ANY SQL TRANSLATION PROFILE
CREATE ANY CREDENTIAL
CREATE ANY SQL TRANSLATION PROFILE
CREATE CREDENTIAL
CREATE PLUGGABLE DATABASE
CREATE SQL TRANSLATION PROFILE
DROP ANY SQL TRANSLATION PROFILE
EXEMPT DDL REDACTION POLICY
EXEMPT DML REDACTION POLICY
REDEFINE ANY TABLE
SET CONTAINER
USE ANY SQL TRANSLATION PROFILE
```

Auditing

- Legacy Auditing

```
AUDIT CREATE PROCEDURE;  
AUDIT TABLE;  
AUDIT CREATE TABLE;  
AUDIT CREATE TRIGGER;  
AUDIT CREATE VIEW;
```

- Unified Audit Policies

```
CREATE AUDIT POLICY uw_full_clause  
PRIVILEGES ALTER ANY TABLE  
ACTIONS LOGOFF ROLES DBA  
WHEN 'SYS_CONTEXT(''USERENV'', ''ISDBA'') = ''TRUE'''  
EVALUATE PER STATEMENT  
CONTAINER = ALL;
```

Credentials

- **DBMS_CREDENTIAL**

Interface for authenticating and impersonating EXTPROC callout functions, as well as external jobs, remote jobs and file watchers from the SCHEDULER.

```
DECLARE
  cname  user_credentials.credential_name%TYPE := 'UWCRED';
  uname  user_credentials.username%TYPE := 'UWCLASS';
  pwd    sys.scheduler$ credential.password%TYPE := 'ZzYzX6*';
  dbrole VARCHAR2(30) := NULL;
  wdom   sys.scheduler$ credential.domain%TYPE := NULL;
  comment user_credentials.comments%TYPE := 'Test Cred';
  enable  BOOLEAN := FALSE;
BEGIN
  dbms_credential.create_credential(cname, uname, pwd, dbrole,
  wdom, comment, enable);
END;
/
```

Network Access Control List Management

- DBMS_NETWORK_ACL_ADMIN **Deprecated** Objects
 - ADD_PRIVILEGE
 - ASSIGN_ACL
 - ASSIGN_WALLET_ACL
 - CHECK_PRIVILEGE
 - CHECK_PRIVILEGE_ACLID
 - CREATE_ACL
 - DELETE_PRIVILEGE
 - DROP_ACL
 - UNASSIGN_ACL
 - UNASSIGN_WALLET_ACL

Network Access Control List Management

- DBMS_NETWORK_ACL_ADMIN **Enhancements**
 - APPEND_HOST_ACE
 - APPEND_HOST_ACL
 - APPEND_WALLET_ACE
 - APPEND_WALLET_ACL
 - REMOVE_HOST_ACE
 - REMOVE_WALLET_ACE
 - SET_HOST_ACL
 - SET_WALLET_ACL

Data Dictionary and Basic Objects

Data Dictionary and Basic Objects

■ Basics

- Enhancements to the CREATE USER syntax
- Enhancements to the CREATE TABLE syntax
- Column Size Expansion in the Data Dictionary
- RMAN Single Table Recovery
- Online Drop Constraint
- ALTER DATABASE Move Datafile
- ALTER DATABASE Control File Management
- ALTER DATABASE Switchover and Failover Clauses
- New Temporal Validity Concept

Now Let's Talk About What's New

- SQL
 - MATCH_RECOGNIZE function for Map Reduce
 - Model Clause extended with new NEXT and PREV functions
 - USING TRUST CONSTRAINTS clause for materialized views and partitions
- Sequences
 - Identity Columns where sequences are created implicitly and bound to a table column
 - KEEP and NOKEEP affecting NEXTVAL during replays
 - Session and Global syntax for CREATE and ALTER sequences
- Materialized Views
 - New USING TRUSTED CONSTRAINTS clause

Now Let's Talk About What's New

- Tables

- New ON_NULL clause for CREATE AND ALTER TABLE
 - New INVISIBLE clause

- Indexes

- ALTER INDEX COALESCE includes CLEANUP syntax
 - New CASCADE clause
 - New Asynchronous Global Index maintenance clause for partitioned tables

- PL/SQL

- New ACCESSIBLE BY clause
 - New FETCH FIRST clause
 - New PL/SQL Predefined Inquiry Directives

Deprecated

Deprecated Functionality

- Control Data Capture (CDC)
- Data Mining Java API (DBMS_DATA_MINING)
- DBMS_DBLINK built-in package
- Numerous startup parameters
- Resource Role no longer grants UNLIMITED TABLESPACE
- Streams
- Stored Outlines (use Baselines)
- WMSYS CONCAT function



Thank You