

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



Morgan's Library


[www](#) [library](#)

Morgan's 2010 - 2011 Calendar

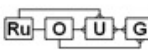



May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
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EMEA Harmony Conference

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



Training Events


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

Oracle Events




[EMEA Harmony - Tallinn Estonia - May 20-21](#)

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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](#)

ACE News


 Would you like to become an Oracle ACE? 

Learn more about becoming an ACE



- [ACE Directory](#)
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Morgan's Library

www library

International Oracle Events 2013-2014 Calendar

NovDecJanFebMarAprMayJunJulAugSepOct

The Library

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.

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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

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

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Congratulations to our newest ACEs and ACE Directors

Daniel A. Morgan | damorgan12c@gmail.com | www.morganslibrary.org
Oracle 12c: One Year of Hands-On Later

Presented: Serbian Oracle Users Group - 30 May, 2014

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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			17:44
0630 DY1800		Malaga	Gate closed
1710 BLX692	46	Goteborg	Cancelled
1710 SK811		London/Heathrow	Cancelled
1715 SK841		Zurich	Cancelled
1715 AY660		Helsinki	Cancelled
1720 QJ4796		Bilund	Cancelled
1725 DY1494		Paris/Orly	Cancelled
1725 KL1148		Amsterdam	Cancelled
1725 KQ1148		Amsterdam	Cancelled
1730 SK461		Kobenhavn	Cancelled
1740 DY1866		Pisa	Cancelled
1750 DY3232		Kobenhavn	Cancelled
1805 LH3145		Munchen	Cancelled
1805 SK3681		Munchen	Cancelled
1805 SK1465		Kobenhavn	Cancelled
1810 DY1306		London/Gatwick	Cancelled
1815 DY1978		Beograd	Cancelled
1820 SK1484	36	Stockholm	Cancelled
1825 DY1108		Berlin/Schoenef	Cancelled
1825 BA8272		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		Kobenhavn	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		Bilund	Cancelled

Time Flight Gate Destination		
1930 DY990		Bilund
1935 DY934		Kobenhavn
1940 KL1150		Amsterdam
1945 LX1217		Zurich
1950 SK8416		Tallin
1950 OV138		Tallin
2010 QJ5742		Aalborg
2015 SK815		London/Heathrow
2025 DY2028		Warszawa
2035 SK1475		Kobenhavn
2055 BA769		London/Heathrow
2055 LH3155		Hamburg
2055 SK3651		Hamburg
2100 BT154		Riga
2100 SK9624		Riga
2100 DY3782		Stockholm
2120 SK1488		Stockholm

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


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Tuesday, April 20, 2010


TOURIS tour booking - Step 1

Search


Top Packages



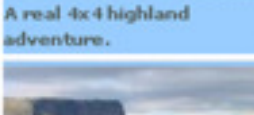
The Full Circle Express.



Grand tour around Iceland including the Westfjords.

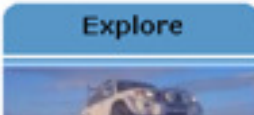


A real 4x4 highland adventure.



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:

<< Previous


Next >>




Top Day Tours




Gullfoss Geyser.




Northern Lights Mystery.



Blue Lagoon.



Reykjavik City Sightseen.



The South Coast and the Jokulsarlon Glacial Lagoon.

Daniel A. Morgan | damorgan12c@gmail.com | www.morganslibrary.org
Oracle 12c: One Year of Hands-On Later

Presented: Serbian Oracle Users Group - 30 May, 2014 11



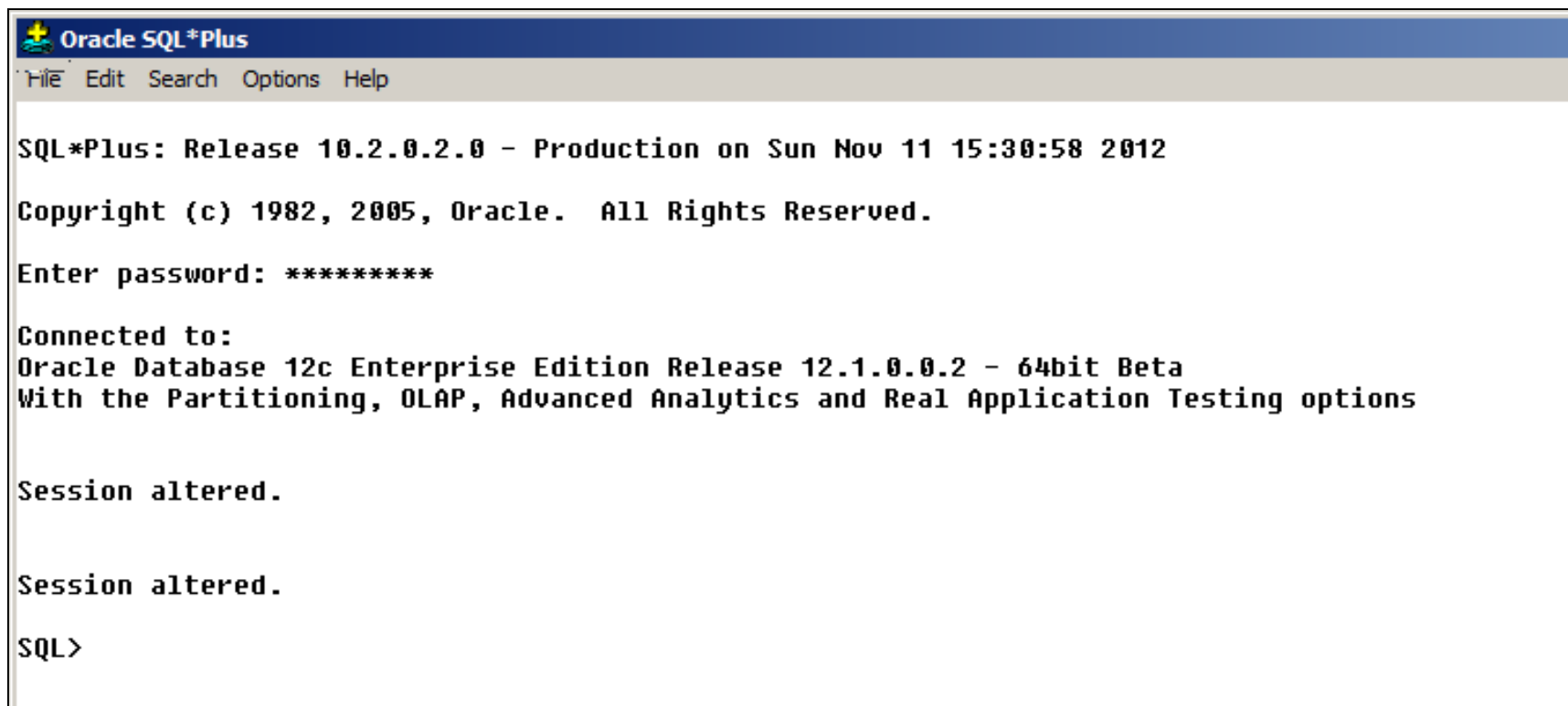
12c: The Past

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

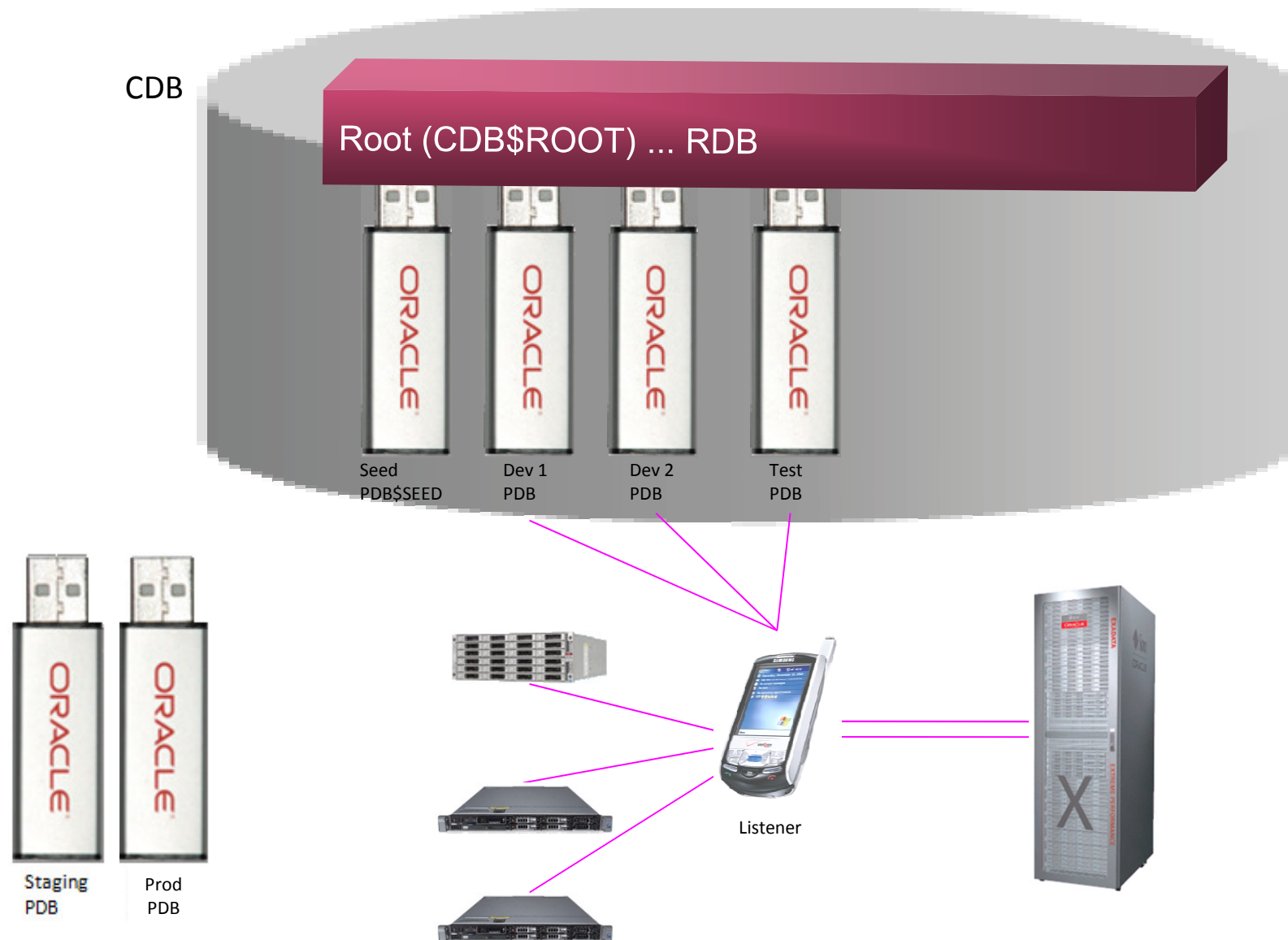
This disclaimer has not been approved by Oracle Legal

The SQL*Plus Prompt

A screenshot of the Oracle SQL*Plus command-line interface. The window has a title bar that says "Oracle SQL*Plus" with a small icon on the left. Below the title bar is a menu bar with the options "File", "Edit", "Search", "Options", and "Help". The main text area contains the following text:


```
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  
DVSYS  
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  
SYSBACKUP  
SYSDG  
SYSKM  
SYSTEM  
WMSYS  
XDB  
XS$NULL
```

Roles Enhancing Separation of Duties

```
SQL> select * from dba_roles order by 1;
```

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$_credential.password%TYPE := 'ZzYzX6*';
  dbrole   VARCHAR2(30) := NULL;
  windom   sys.scheduler$_credential.domain%TYPE := NULL;
  comment  user_credentials.comments%TYPE := 'Test Cred';
  enable   BOOLEAN := FALSE;
BEGIN
  dbms_credential.create_credential(cname, uname, pwd, dbrole,
  windom, 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