

Oracle 12c One Year of Hands-On Later

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Daniel A. Morgan



Oracle ACE Director



Consultant to Harvard University

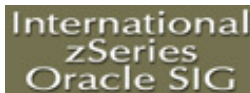


University of Washington Oracle Instructor, ret.



The Morgan of Morgan's Library on the web

- Executive Board Member: Vancouver OUG
- Upcoming Presentations
 - Mar 20: Calgary OUG's 25th Anniversary
 - Apr 25: Azerbaijan Oracle Users Group
 - May 28: Serbia Oracle Users Group
 - Jun: Oracle Users Group Finland



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 is precisely those things you need to know to move forward with your career

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.

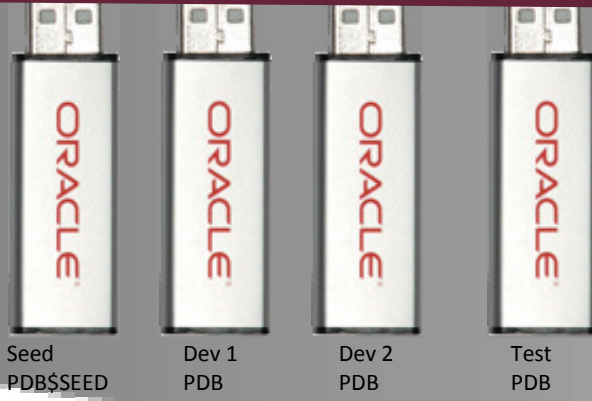
Session altered.

SQL>
```

Slide Two of Three

CDB

Root (CDB\$ROOT) ... RDB



Staging PDB



Prod PDB




Listener



Slide Three of Three

- Oracle has changed fundamental constructs untouched since version 6.0
- What you need to pay attention to
 - Container Database (CDB)
 - Root Database (RDB)
 - 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
- 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 (including UCS)
 - 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 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

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

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