Database Migration:
DBA Stuff for the Non-DBA

Danny Bryant
City of Atlanta
Information Technology Manager, Sr. – City of Atlanta

User Groups: ODTUG, OAUG, IOUG

Publications: ODTUG – Why I Joined ODTUG
RMOUG – SQL>UPDATE

XML Gateway Setup

IOUG – SELECT Journal

Regular Expressions:
A Love/Hate Relationship

Podcast – SQL Dev 4.0 City of Atlanta

@dbcapoeira
dbryant@atlantaga.gov
http://implementoracle.blogspot.com

Danny Bryant
The City of Atlanta

“You want to do WHAT?”

SQL Developer to the Rescue
  - Setup
  - Migration
  - Populating Tables
  - Reporting

Lessons Learned

Q&A
Overview

- Includes the Mayor/Executive Offices (13 Departments), Judicial and Board Officers, and City Council (16 Members)
- Metropolitan Statistical Area (MSA) is the 9th largest metropolitan area in the country
- Population of 443,775 citizens (2012 US Census estimate)
- Manages Hartsfield-Jackson International Airport, the world's busiest airport by serving over 95MM passengers in 2012
- Approximately 7,500 active employees and 5,000 retirees
- $1.8B Operating Budget
Oracle Footprint

- Enterprise Resource Planning (ERP) Applications (eBS 11.5.10.2)
  - Financials
  - Human Resources Management System
  - Procurement
  - Discoverer Reporting
- Siebel Customer Relationship Management (CRM) Applications
- Enterprise Performance Management (EPM) Applications (v11.1.2)
  - Hyperion Public Sector Planning and Budgeting
  - Hyperion Financial Management
- Oracle Business Intelligence Enterprise Edition (OBIEE v11.1.1.2)
  - Human Resources Analytics
  - Financial Analytics
In the beginning there was ....

- **Beginning of time - 2005**
- **PeopleSoft MS SQL Server**
- **MARS-G MS SQL Server**
- **Oracle EBS Database (10g)**

2 years of historical data:
- 2005 - 2007

Range:
- 2005 - 4712
We need historical data prior to 2005

- Pension Reform
- Open Records Requests
- Retiree Information
Gather Requirements

Query PeopleSoft for < 2005 data
  o Export to Excel

Query EBS for > 2005 data
  o Export to Excel

Stitch data together

Email results to requestor

Cross your fingers
There’s Got to be a Better Way

- How can we speed up this process?
- How can we empower the end users?
- How do we take advantage of our existing reporting tools? -- Discoverer
SQL Developer To the Rescue
Why SQL Developer?
- Integrated UI
- Wizard Driven
- DDL Script Generation
- Online Data Mode
- Offline Data Move
- Repository Based (we will see this shortly)
- Log File
Pre-Requisites

1. Install 3rd party driver for source DB connectivity
2. Admin access to the MSSQL database
3. Build repository in a new schema for the meta-data, the user requires the following role and system privileges:
   - RESOURCE
   - CREATE SESSION
   - CREATE VIEW
   - UNLIMITED TABLESPACE (If using 12c)
Four Phases

1. Verify Source DB Access
2. Create Migration Repository
3. Set up SQL Developer
4. Perform the Migration and Wait
For MSSQL, I needed db_owner permissions.
Create your Migration Repository in your new schema. In this example: migrationdemo
Launch the Migration Wizard
Phase III – Set up SQL Developer

Repository

Select a connection for the Migration Repository. Check Truncate to reset the repository to an empty state.

Connection: migrationdemo

If you have to start over, check this box.
This will coincide with the 3rd party driver. In this case my source was SQLServer.
Phase III – Set up SQL Developer

Databases available to the connect account
Phase III – Set up SQL Developer

I only needed the constraints, but pick what you need. They are all selected by default.
This is your Migration Repository schema
Phase III – Set up SQL Developer

Verify you source and destination DBs
Phase IV – Perform Migration
Phase IV – Perform Migration

Migration actions have completed successfully.
SET DEFINE OFF;
PROMPT Creating User Emulation ...
CREATE USER Emulation IDENTIFIED BY Emulation DEFAULT TABLESPACE USERS TEMPORARY TABLESPACE TEMP;
GRANT CREATE SESSION, RESOURCE, CREATE VIEW, CREATE MATERIALIZED VIEW, CREATE SYNONYM, CREATE PUBLIC SYNONYM TO Emulation;
SET SCAN OFF;
PROMPT Creating User dbo_PSARCH ...
CREATE USER dbo_PSARCH IDENTIFIED BY dbo_PSARCH DEFAULT TABLESPACE USERS TEMPORARY TABLESPACE TEMP;
GRANT CREATE SESSION, RESOURCE, CREATE VIEW, CREATE MATERIALIZED VIEW, CREATE SYNONYM TO dbo_PSARCH;
SET SCAN OFF;
PROMPT Creating User FMUKESHI_PSARCH ...
CREATE USER FMUKESHI_PSARCH IDENTIFIED BY FMUKESHI_PSARCH DEFAULT TABLESPACE USERS TEMPORARY TABLESPACE TEMP;
GRANT CREATE SESSION, RESOURCE, CREATE VIEW, CREATE MATERIALIZED VIEW, CREATE SYNONYM TO FMUKESHI_PSARCH;
connect Emulation/Emulation;
PROMPT Creating Table PS_COST_UNIT_TBL ...

CREATE TABLE PS_COST_UNIT_TBL (  
  COST_UNIT_CD CHAR(10 CHAR) NOT NULL,  
  DESCR CHAR(30 CHAR) NOT NULL,  
  DESCRSHORT CHAR(10 CHAR) NOT NULL,  
  COST_UNIT_TYPE CHAR(1 CHAR) NOT NULL,  
  RELATED_TIME_UNIT CHAR(10 CHAR) NOT NULL  
);

PROMPT Creating Unique Index PS_COST_UNIT_TBL on PS_COST_UNIT_TBL...

CREATE UNIQUE INDEX PS_COST_UNIT_TBL ON PS_COST_UNIT_TBL (  
  COST_UNIT_CD  
);

PROMPT Creating Index PS#COST_UNIT_TBL_14 on PS_COST_UNIT_TBL ...

CREATE INDEX PS#COST_UNIT_TBL_14 ON PS_COST_UNIT_TBL (  
  COST_UNIT_CD,  
  DESCR,  
  DESCRSHORT  
);
CREATE TABLE PS_COST_UNIT_TBL (  
  COST_UNIT_CD CHAR(10 CHAR) NOT NULL,  
  DESCR CHAR(30 CHAR) NOT NULL,  
  DESCRSHORT CHAR(10 CHAR) NOT NULL,  
  COST_UNIT_TYPE CHAR(1 CHAR) NOT NULL,  
  RELATED_TIME_UNIT CHAR(10 CHAR) NOT NULL  
);  
PROMPT Creating Unique Index PS_COST_UNIT_TBL on PS_COST_UNIT_TBL ...  
CREATE UNIQUE INDEX PS_COST_UNIT_TBL ON PS_COST_UNIT_TBL  
  (  
    COST_UNIT_CD  
  )  
;  
PROMPT Creating Index PS#COST_UNIT_TBL_14 on PS_COST_UNIT_TBL ...  
CREATE INDEX PS#COST_UNIT_TBL_14 ON PS_COST_UNIT_TBL  
  (  
    COST_UNIT_CD,  
    DESCR,  
    DESCRSHORT  
  )  
;
Phase V – Set up Reporting
1. Compatibility issues with DDL when DB versions are different.

PCTFREE 10 PCTUSED 40 INITRANS 1 MAXTRANS 255 NOCOMPRESS LOGGING STORAGE(INITIAL 131072 NEXT 131072 MINEXTENTS 1 MAXEXTENTS 2147483645 PCTINCREASE 0 FREELISTS 1 FREELIST GROUPS 1 BUFFER_POOL DEFAULT)

DB 10.2.0.4 doesn’t like this.
2. Extra Step to Populate DB Tables

3. Use Database Copy
Error starting at line 7 in command:
CREATE USER dbo_PSARCH IDENTIFIED BY dbo_PSARCH DEFAULT
TABLESPACE USERS TEMPORARY TABLESPACE TEMP
Error at Command Line:7 Column:38
Error report:
SQL Error: ORA-01031: insufficient privileges
01031. 00000 -  "insufficient privileges"
*Cause:    An attempt was made to change the current username or
password
occurs if
        attempting to install a database without the necessary
operating
        system privileges.
        When Trusted Oracle is configure in DBMS MAC, this
error may occur
        if the user was granted the necessary privilege at a
higher label
        than the current login.
*Action:    Ask the database administrator to perform the
operation or grant
        the required privileges.
        For Trusted Oracle users getting this error although
granted the
        the appropriate privilege at a higher label, ask the
database
        administrator to regrant the privilege at the
appropriate label.

Error starting at line 8 in command:
GRANT CREATE SESSION, RESOURCE, CREATE VIEW, CREATE MATERIALIZED
VIEW, CREATE SYNONYM TO dbo_PSARCH
Dear DBAs,

Please migrate the IDidThisByMyself SCHEMA to Production.

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What’s Next?
Useful Links

**3rd Party Drivers**

- **MySQL**: [http://dev.mysql.com/downloads/connector/j/5.0.html](http://dev.mysql.com/downloads/connector/j/5.0.html)

**Oracle documentation on Database Migration**

Thank You

Danny Bryant

ODTUG Marketing Committee
Kscope14 Abstract Review Committee
Editor's Choice review team
Student Day Hackathon Judge

@dbcapoeira
dbryant@atlantaga.gov
http://implementoracle.blogspot.com
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