

Migrating Applications and Data to Oracle9i OLAP – Case Studies

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IOUG Live! 2003

paper 409



Presented by:

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Vlami Software Solutions, Inc.

- **A Member of Oracle Partner Program since 1995**
- **Member of many Oracle Beta Programs, including Express, 9i OLAP, BI Beans**
- **Designs and implements databases/data marts/data warehouses using RDBMS and Multidimensional tools**
- **Specializes in Data Transformation, Data Warehousing, Business Intelligence, Applications Development**
- **Founder Dan Vlami is former developer of Sales Analyzer Application**
- **Creator of first ad hoc query tool to access 9i OLAP**
- **Oracle Certified Solutions Provider**

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Agenda

- **Background**
- **Types of Express Applications**
- **Migration Overview**
- **Migrating the Data**
- **Migrating Metadata**
- **Migrating Application Logic**
- **Migrating the Front End**
- **Migrating User Reports and Settings**



In the Past

- **Previous development of BI and OLAP Applications required proprietary development environment**
- **Each deployment model required a different tool**
- **Development effort very labor intensive**
- **Concept to Deployment takes long time**
- **Requires specialized skills**
- **The answer:
Oracle9i Database OLAP Option**



Express Features and Limitations

- **Multidimensional data store provides quick access**
- **All data in single proprietary file**
- **Express SPL powerful for calcing and extending apps**
- **GUI environment uses Visual Basic language**
- **RAM moves data from RDBMS into Express**
- **Designed for multiple read/only users**
- **Difficult for IT to adopt, Max database size**
- **Difficult to integrate and schedule back ups**
- **Long learning curve for new developers**
- **GUI not consistent with Oracle direction**
- **Star and snowflake only, performance concerns**
- **No multi-writer support**

Express Has Not Gone Away... It has just been absorbed



- **Analytic Workspaces are Express DB files**
- **Oracle marketing will downplay Express**
- **Design considerations for Analytic Workspaces same as for Express DBs**
- **Express engine still there**
- **Express SPL still there (but only operates on storage in analytic workspaces)**
- **Analytic Workspaces better at complex calculations (for now)**
- **Use OLAP Worksheet for OLAP DML commands**



Terminology Map

Express

Express database

Oracle Express Server

Express Instance Manager

Express SPL (or 4GL)

RAA

RAM

Oracle9i OLAP

Analytic Workspace

Part of Oracle9i OLAP

Part of Oracle9i OLAP

OLAP DML

OLAP folder of OEM

Automatic*



Terminology Map (continued)

Express

oesdba

SNAPI

Oracle Express Objects

Express Basic

Express Administrator

**OESCMD and Administrator
command line**

Oracle9i OLAP

olapdba

Java OLAP API

JDeveloper

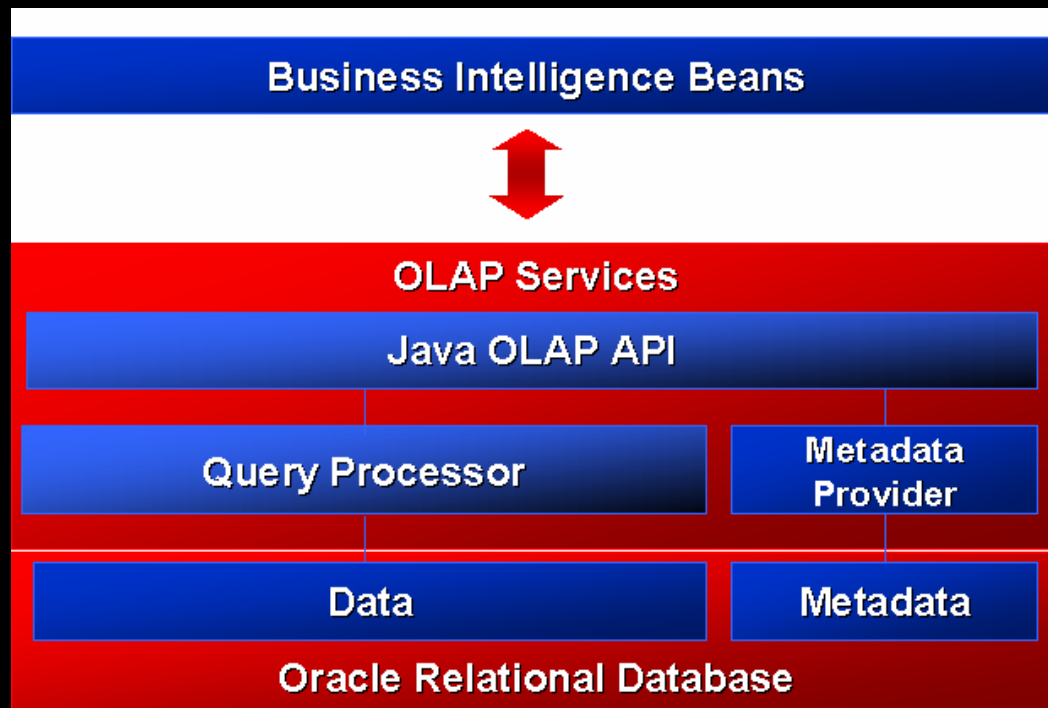
Java

AW Manager

OLAP Worksheet



Oracle 9i OLAP Architecture



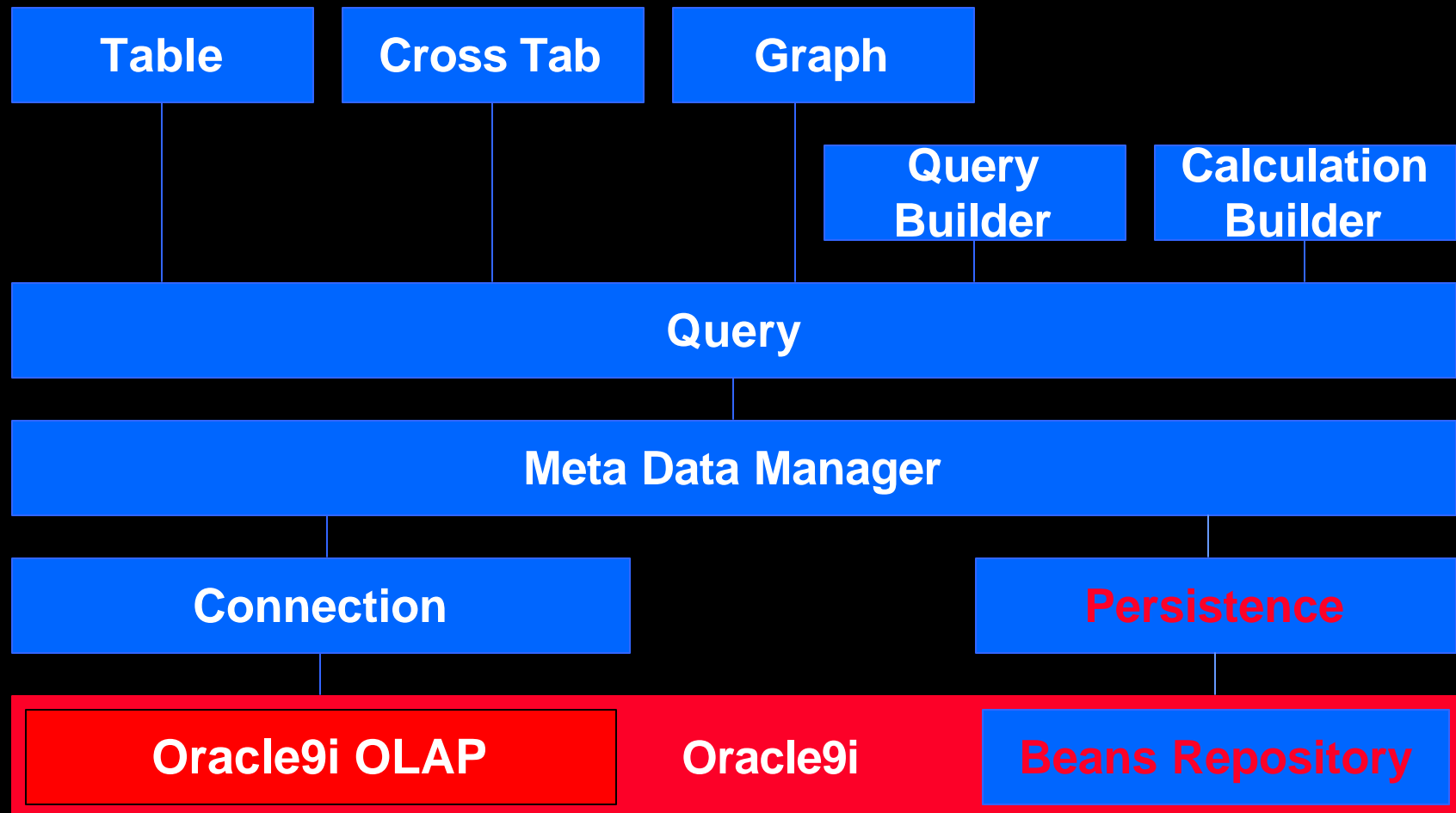
**Rapid application development
Analysis ready**

**Java OLAP API
Predictive analysis functions**

**Scaleable data store
Integrated meta data
Summary management
SQL analytic functions**



Business Intelligence Beans





Types of Express Applications (most custom to least custom)

- **Character-mode Pure Express Applications**
- **Visual Basic or C applications**
- **Express Web Agent Applications**
- **Oracle Express Objects**
- **Oracle Express Analyzer**
- **Oracle Applications (OFA, OSA, ODP)**

Migration Overview



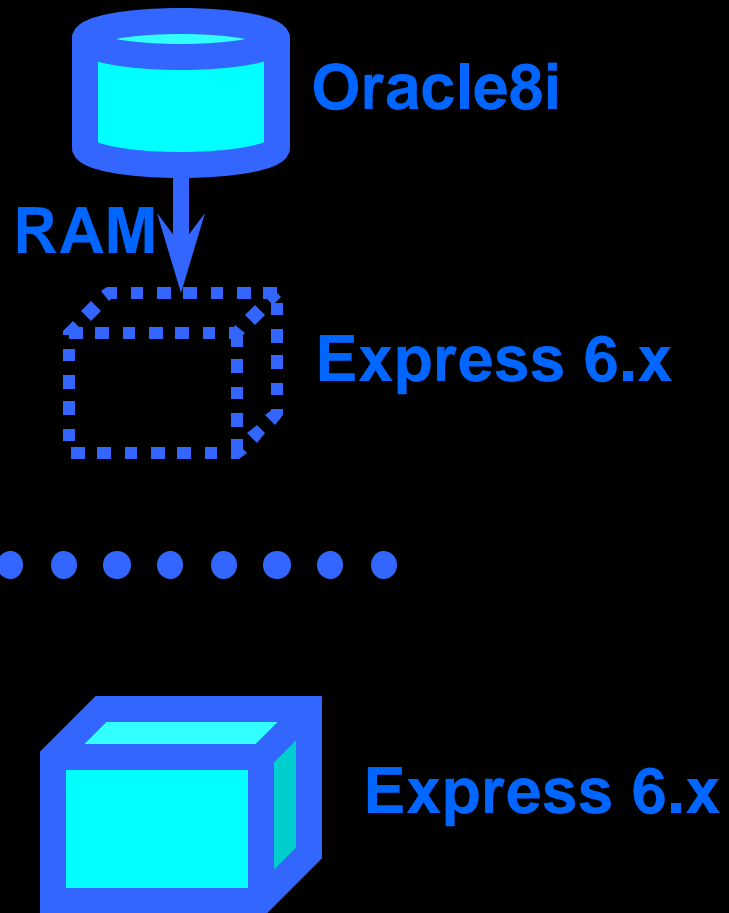
- **Migrate Data**
- **Migrate Metadata**
- **Migrate Application Logic**
- **Migrate Front End**
- **Migrate User Reports and Settings**



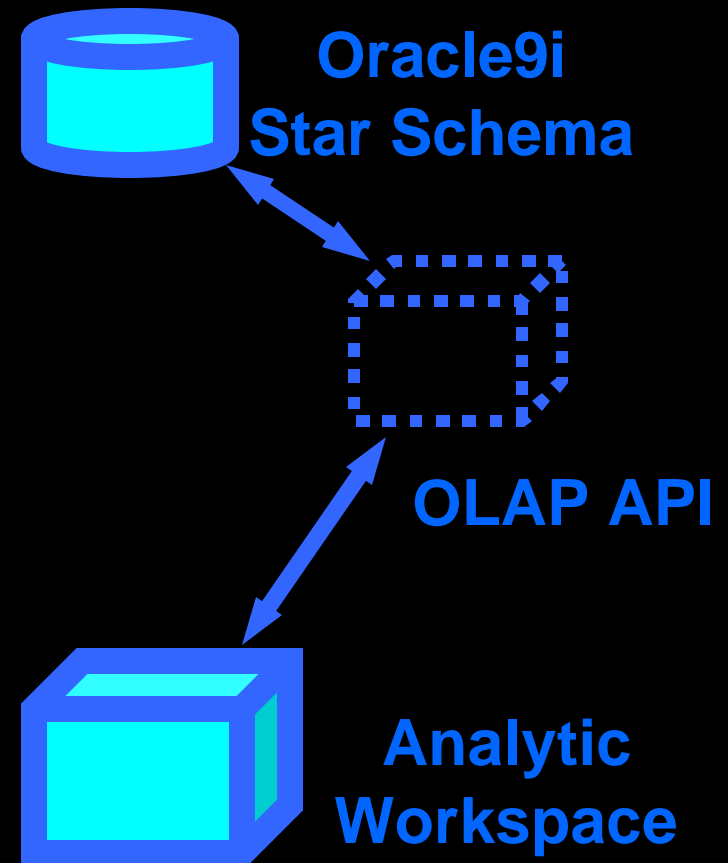
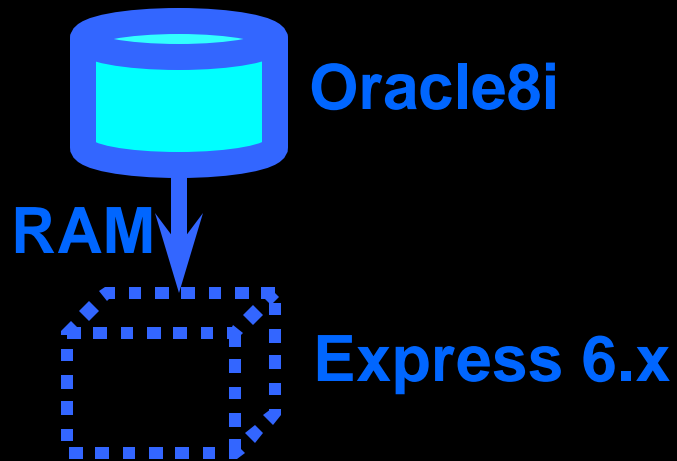
Migrating Data - Questions

- **Where is the data now?**
- **Where should the data be in 9i OLAP?**
- **Can it be a one-time migration?**
- **Are you better off redesigning data movement at same time? (reload?)**
- **Should you drop off some data?**
- **Cleanliness of data?**

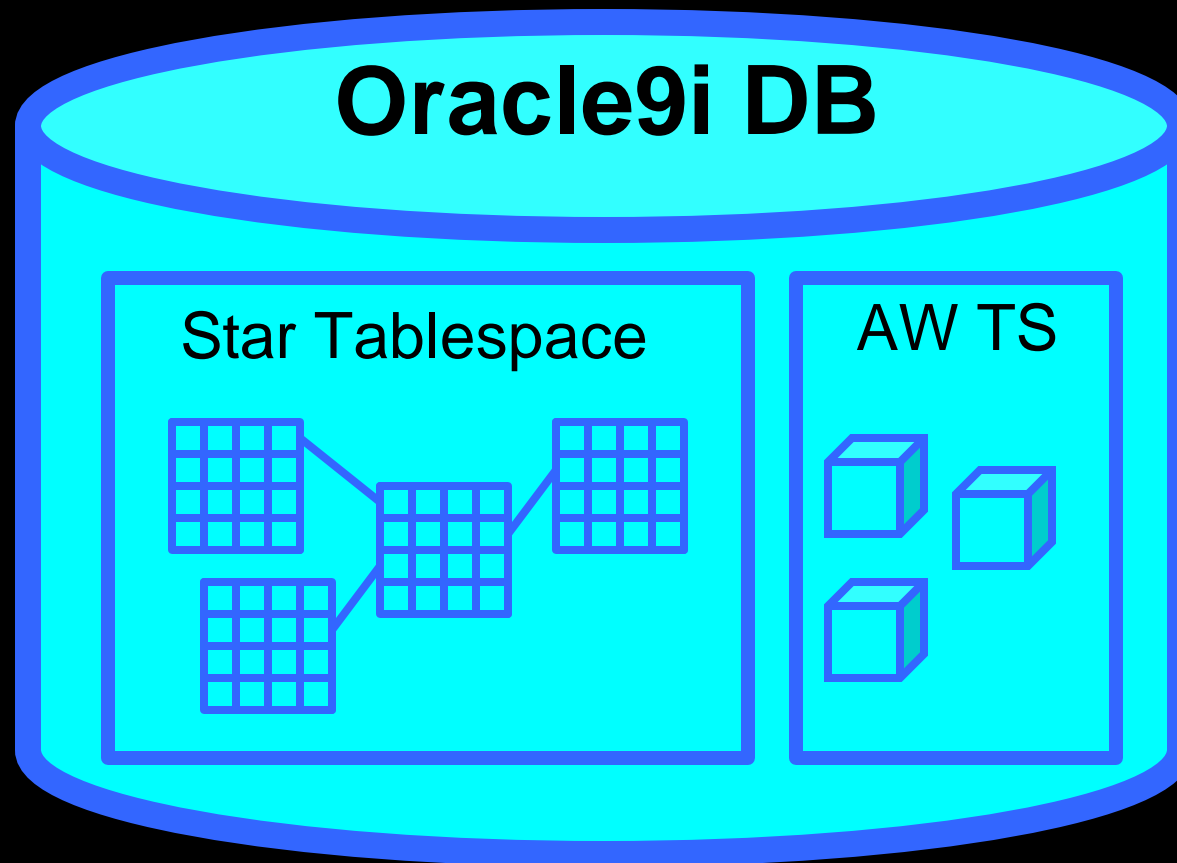
Data Storage Before 9iOLAP



New Data Storage Possibilities in Oracle OLAP 9.2



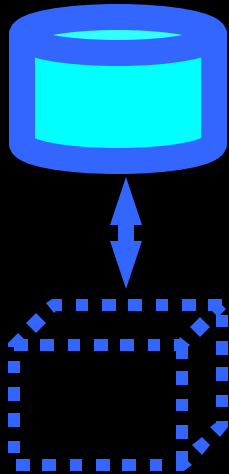
Analytic Workspaces Are Stored in Tablespaces in 9i OLAP 2



Advantages of RDBMS Storage



Oracle9i
Star Schema

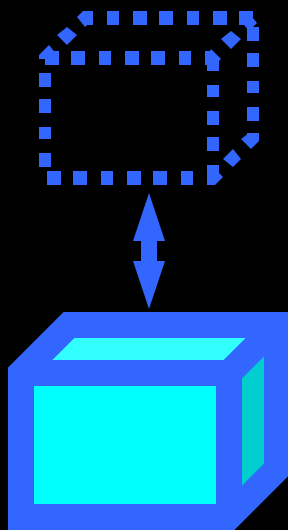


- **Store data in familiar RDBMS**
- **Easy access to data using SQL**
- **Can use materialized views**
- **Model with OWB**
- **Data may already be in schema**

Advantages of AW Storage

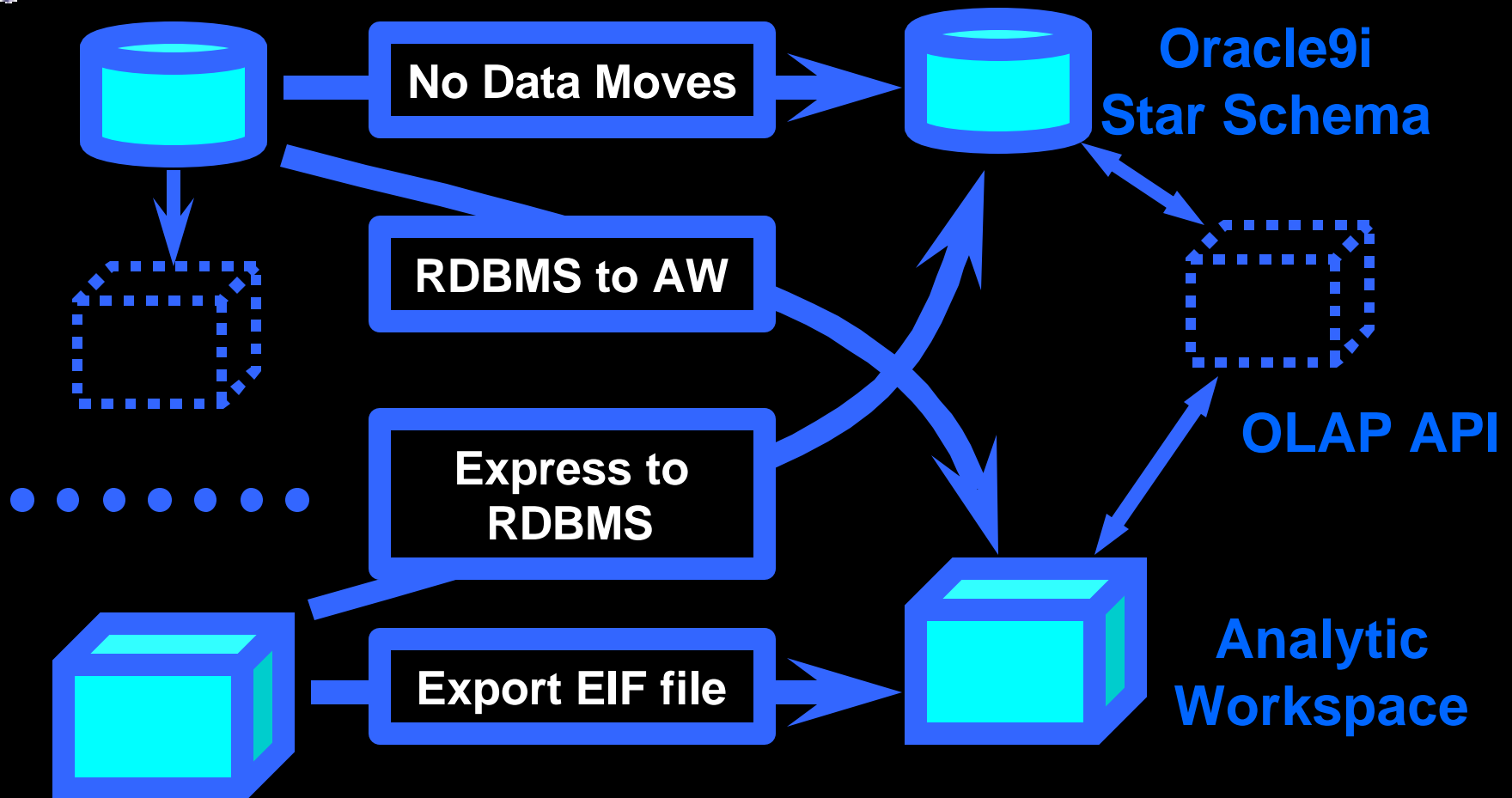


- **Faster multidimensional access**
- **Personal user workspaces**
- **Best for heavier analysis**
- **OLAP DML language**

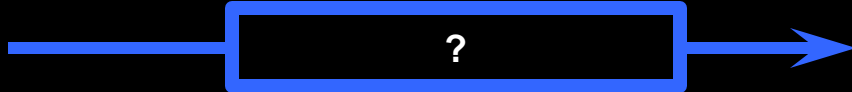
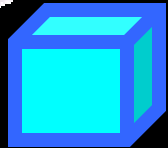


**Analytic
Workspace**

Migration Choices



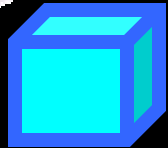
Moving Data From Express to AW



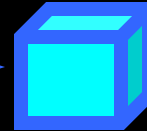
Analytic Workspace

- **Export to ELF file**
- **Write flat file and read in**

Using Export / Import to Move Data From Express to AW



Export EIF file



Analytic Workspace

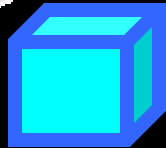
- **Connect to DB in Express 6.3**
- **Create EIF file**

```
allstat
limit name to all
export all to eif file 'data.eif' rewrite
```

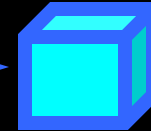
- **Set up file access rights**
- **Connect to Oracle 9i using OLAP Worksheet**
- **Create AW, import file and update AW**

```
aw create newdata
import all from eif file '/files/data.eif' data dfns
update
commit
```

Writing/Reading Files to Move Data From Express to AW



Read flat file



Analytic Workspace

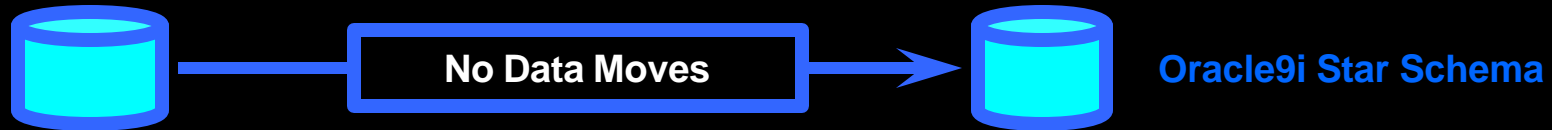
- **Connect to DB in Express 6.3 and write file**

```
outfile data.txt
report nohead down geog across time: sales
outfile eof
```

- **Set up file access rights**
- **Connect to Oracle 9i using OLAP Worksheet**
- **Create AW, read file and update AW**

```
aw create newdata
_filehandle = fileopen('/files/data.txt' r)
fileread _filehandle w 10 geog across time: sales
update
commit
```

Moving Data From Oracle 8i to Oracle 9i



- **No data to move—upgrade handles it**
- **May have "extra" Express logic to replicate**
- **RAM mappings easy to reenter in cube wizard in Oracle Enterprise Manager**
- **OWB Transfer Wizard automates process**
- **Overall very simple**



Oracle Enterprise Manager Sample Screen (replaces RAA)

Oracle Enterprise Manager Console Standalone

File Navigator Object Tools Configuration Help

ORACLE
EnterpriseManager

File Navigator Object Tools Configuration Help

EXTPROC_CONNECTION_DA
INST1_HTTP
OEMREP
ORCL - olapdba
Instance
Schema
Security
Storage
Replication
OLAP
Measure Folders
Cubes
XADEMO
ANALYTIC_CUBE
XADEMO_ACTUA
XADEMO_BUDGE
XADEMO_SALES_
XADEMO_STKPRI
Dimensions
SH
XADEMO
CHANNEL
CITY
DAY

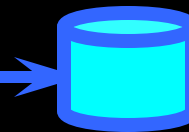
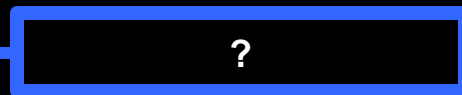
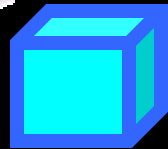
General Levels Attributes Hierarchies OLAP Options

Name: CHANNEL
Schema: XADEMO
Status: Valid
Type: ☒ Normal ☐ Time
Data Model:

CHANNEL
Levels
STANDARD_1
Columns
Attributes
CHAN_STD_CHANNEL_LL
CHAN_STD_CHANNEL_SL
STANDARD_2
Hierarchies
STANDARD
Levels
STANDARD_2

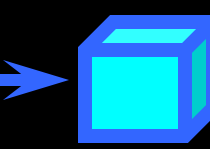
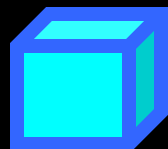
Apply Revert Show SQL Help

Moving Data From Express to Star Schema

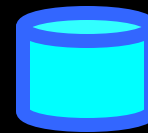


Oracle9i Star Schema

- **Write out file and SQL Load it in**
- **Alternative: Move to analytic workspace and count on migrating AW to RDBMS (futures)**



Analytic Workspace



Oracle9i Star Schema

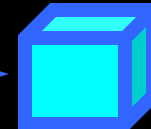
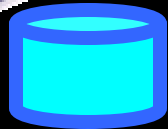




Moving AW Data to Star Schema

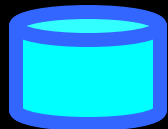
- **Write OLAP DML code that SQL inserts rows**
- **Can be sped up with SQL Prepare command**
- **OLAP Table Function allows AW data to be access from SQL, so...**
 - **SQL insert into SALESFACT as**
select * from OLAPTF('XADEMO', 'SALES')
- **Oracle will need this anyway, so perhaps they will provide efficient mechanism**
- **But why is this needed? Simply use OLAPTF views when need SQL access!**

Moving Data From RAM to AW

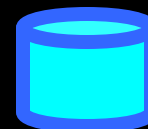


Analytic Workspace

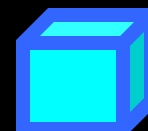
- **Write out file and fileread in using OLAP DML and use AW Manager to create metadata**
- **Alternative: Move to 9i and use DBMS_AWM package or Oracle Warehouse Builder Transfer Wizard or AW Manager Create Wizard**



No Data Moves



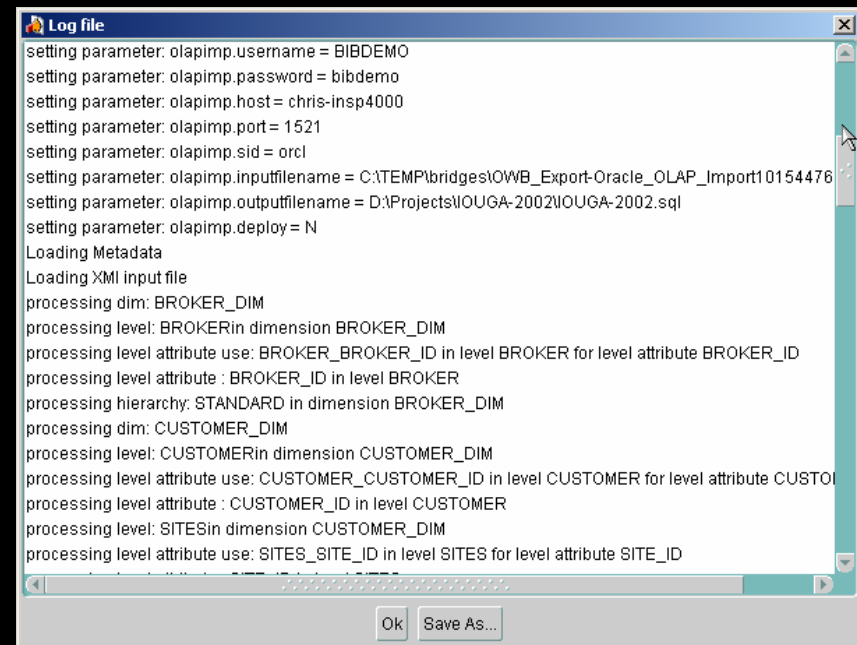
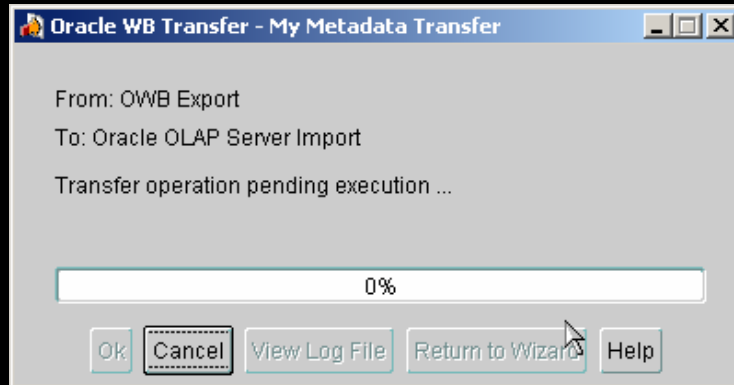
Oracle9i Star Schema



Analytic Workspace



OWB Transfer Wizard Creates AWs





AW Manager Creates AWs from Star Schema

Analytic Workspace Manager - Connected as jarosdm to Database

File View Object Tools Help

OLAP Catalog

- Measure Folders
- Cubes
 - AWDEMO
 - BIBDEMO
 - JAROSDM
 - Analytic Workspaces
 - Relational Cubes
 - AW_SALES
 - SALES
 - Find...
 - Analytic Workspace Creation Wizard...
 - Dir
 - PRODUCTS
 - TIME
 - WAREHOUSE
 - Measures
 - CANCELLED
 - FORECASTED_SALES
 - INVOICED
 - INVOICED_AMOUNT
 - ORDERED

Name	Value
Description	null
Display Name	SALES
Name	SALES
Owner	JAROSDM
Type	Cube

Connected as jarosdm using database connect string .



Migrating Metadata

- **Generally, need to remap metadata**
- **Can use OEM or OWB**
- **Can make CWM2 calls (lots of calls!)**
- **OEO Converter converts OEO metadata to "standard form" AW metadata**
- **BI Enabler enables "standard form" metadata to drive BI Beans**



Migrating Application Logic

- **OLAP DML same as Express SPL**
- **Can export-import code, compile and run**
- **All SPL functionality there:**
 - **Some operating and file system commands changed**
 - **XCA and SNAPI no longer applicable**
 - **External Call (EXTCALL) command**
 - **SQL CONNECT and SQL.DBMS not necessary**
- **Logic in Express Basic has to be rewritten**
- **Dynamic creation of objects (define commands) more complicated because of OLAP Catalog**



Migrating the Front End (most custom to least custom)

- **Character-mode Pure Express Applications**
- **Visual Basic or C applications**
- **Express Web Agent Applications**
- **Oracle Express Objects**
- **Oracle Express Analyzer**
- **Oracle Applications (OFA, OSA, ODP)**



Migrating FE – char mode Express

- **Not many systems left**
- **Based on Express FORM, TABLE, GET**
- **Did not allow for use of mouse**
- **Isolate back end code from front end code**
- **Back end code mostly still useable**
- **Replace front end code with JDev screens**
- **May be able to use "Java table command"**



Migrating FE – VB or C Apps

- **Used SNAPI to communicate**
- **Now use Java OLAP API**
- **Recode FE in Java**
- **Back end code may be OK**
- **Line between back end and front end often fuzzy**



Migrating FE-Express Web Agent

- **Very viable with Oracle9i OLAP Web Agent**
- **Virtually no changes necessary**
- **Oracle9i OLAP Web Agent uses OEO-style metadata, but accesses AW "standard form" with 9.2.0.3 OLAP patch**
- **Export-import code and copy templates**
- **OWP-based reports can run, but no equivalent of OWP to create or edit reports**



Migrating FE - OEO

- **Re-code FE in Java using JDeveloper**
- **No real help for Express Basic code**
- **Back end code may be able to be used**
- **Metadata converter coming from Oracle**



Migrating FE - OEA

- **Oracle Express Analyzer is adhoc query tool**
- **No equivalent from Oracle**
- **Can develop in BI Beans**
- **3rd-party tool, VSS Business Analyzer, has similar functionality (and more)**
- **Metadata converter coming from Oracle**



Migrating FE – OFA, OSA, ODP

- **Oracle Financial Analyzer, Oracle Sales Analyzer, Oracle Demand Planning**
- **Details still being worked out by Oracle**
- **Replacement E-Business Suite application is Enterprise Planning and Budgeting (EPB)**
- **Migration tools will follow initial release**



Migrating User Reports / Settings

- **Depends on application**
- **Need to migrate information to BI Catalog**
- **No automatic tool for OEA "briefings"**
- **VSS developing tool for OSA / OFA reports**



Case 1: Express Character FE

- **Application creates Express variables**
- **Register new variables via CWM2**
- **Uses TABLE command**
- **Replicate TABLE in Java environment**
- **Recode menu system in JDeveloper**
- **Possibly replace parts with AW Manager**



Case 2: Express Web Agent

- **Express code migrates to OLAP Web Agent**
- **Loaders have to be modified (OS calls)**
- **Re-evaluate whole loading logic**
- **FE works with OLAP Web Agent**
- **No redesign of FE**



Case 3: OSA Replacement

- **BI Beans-based app offers most of features**
- **Missing custom aggregates (for now)**
- **Redo loaders using OWB**
- **Custom measures recreated**



Migration Summary

- **Migrate Data**
not necessarily most difficult!
- **Migrate Metadata**
may be easier to simply re-map metadata
- **Migrate Application Logic**
Express code no problem, ExpressBasic big problem!
- **Migrate Front End**
Re-code FE in general. Backend OK
- **Migrate User Reports and Settings**
Still waiting for tools to automate this

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