

# OracleScene

A UK Oracle User Group publication

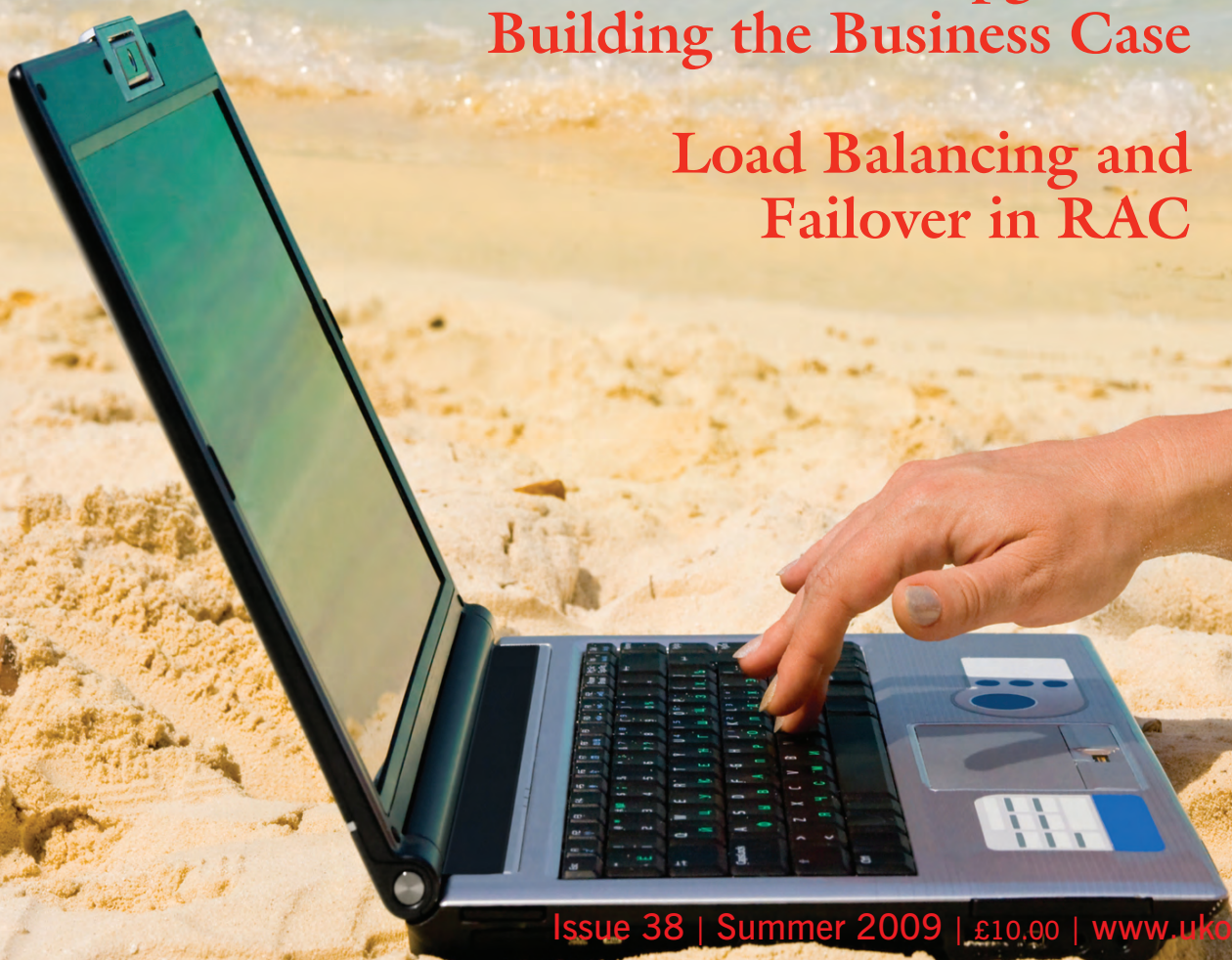
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The heat is on ...

**APEX 3.2:  
The Oracle Forms  
to APEX conversion**

**Siebel 8.0 and 8.1 Upgrades:  
Building the Business Case**

**Load Balancing and  
Failover in RAC**



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The background of the entire page is a vibrant image of several people jumping or falling against a bright sun in a cloudy sky. The sun is positioned in the upper left, creating a strong lens flare effect. The word "network" is overlaid in a large, semi-transparent blue font across the middle of the image.

network

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# Welcome

## Hello and Welcome!

Welcome everyone to this second edition of Oracle Scene for 2009. We've got a packed edition for you this time around, with articles spanning from Apex through to Siebel and with all the latest news from your favourite user group!

## In This Edition

In this edition we have a topical article from Satnam Brar on recession proofing your career in 2009, something that I think we'll all find useful given the ups and downs in the economy over the past year or so. In the applications area, Duncan Scattergood talks us through building the business case for Siebel 8.0 and 8.1 upgrades, whilst Tim Poynter takes us through some best practices for the Oracle User Productivity Kit, a great toolkit from Oracle for efficiently delivering end-user training over the internet.

From the technology perspective, Timothy Stewart writes about "Locks, the Skeleton Key" whilst Bob Mycroft finishes his two-part series on Load Balancing and Failover on RAC. David Kurtz explains how the ReUse Statement Flag can provide performance benefits when working with the Peoplesoft Application Engine, whilst Apex developers will be interested in the two articles on Apex development, one by Roel Hartman on Forms to Apex conversion and the other by Andrew Woodward on using Apex in a multi-user environment.



**Mark Rittman**  
[editor@ukoug.org](mailto:editor@ukoug.org)

You'll find news in this issue about the UKOUG Partner of the Year Awards 2009 for which voting has now opened, and of course it's not long now until the UKOUG Conference Series JD Edwards in November, and of course the Conference Series Technology & E-Business Suite in December. This year has seen big changes in the way that the UKOUG has organized its conferences, so be sure to read the news in this issue about upcoming events and of course keep an eye out for the UKOUG newsletter sent out each month to your nominated contact.

## Goodbye to Gio, Welcome Geoff

Finally, I'd like to thank Giovanni D'Alessio, our Deputy Editor (Applications) who after several years of service is leaving the editorial team, and I'd also like to extend a warm welcome to Geoff Swaffer who has agreed to take Gio's place. Thank you Gio for everything you have done for Oracle Scene over the past few years, and together with Geoff, Neil Jarvis, Iyisha and myself we look forward to working on the next edition of Oracle Scene, the bumper conference edition due at the end of the year.

Until then, enjoy this edition of Oracle Scene, and I look forward to seeing you all at one or other of the UKOUG Conference Series events later in the year!



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# Oracle User Productivity Kit (UPK) Best Practice for Existing Developers Part 1

by Tim Poynter, Larmer Brown Consulting Ltd

If you are a regular reader of Oracle Scene magazine, you will have seen our three earlier articles on UPK, providing an introduction to Oracle's invaluable tool, the key considerations when planning an implementation project and the use of UPK for blended learning. This fourth article in our UPK series takes a step away from project planning and provides best practice tips and technical advice for existing developers who may not be getting the most out of the product.

The UPK development tool enables content to be created quickly and easily; a developer can produce content by simply working through the process, recording each step using the 'PrintScreen' button on the keyboard. With its excellent object recognition across the Oracle technologies, the results from a raw recording will be sufficient to guide the user successfully through the process, interacting with the captured action areas. However, any experienced technical author, instructional developer, content developer or trainer will tell you that using this raw recording without enhancements will dramatically reduce the effectiveness of the tool. The experience that Larmer Brown has gained from using this technology for over a decade has shown that going the extra mile with your content development significantly increases end user adoption.

By applying the techniques in this article, not only will you become a more proficient UPK developer, you will reduce the time spent re-working recordings and produce

more engaging content within the time constraints of your development lifecycle.

## The Recording Process

An essential part of becoming a successful UPK developer is to understand how the tool works, in particular how and when it captures screenshots and actions, and how these are replayed in the simulated playback modes. The release of version 3.5 of UPK includes the option to automatically capture screenshots without having to press the 'PrintScreen' key. However this feature reduces the control that the developer has over the recording process and therefore this article will focus on the default manual recorder.

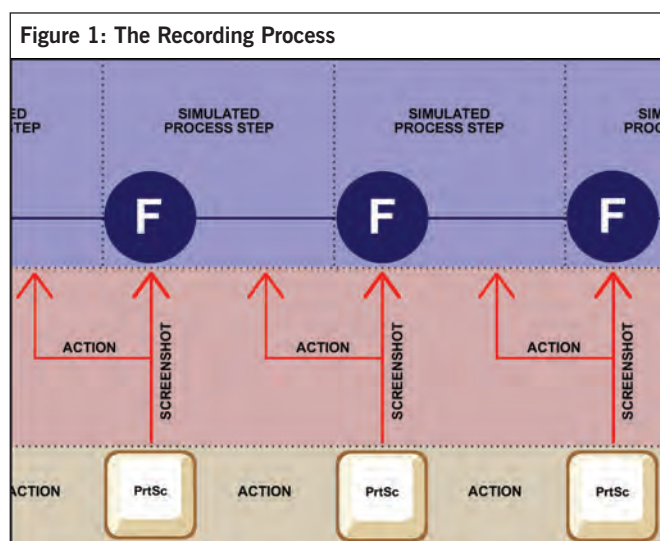
The first step in the recording process is to capture the start screen using the 'PrintScreen' key on the keyboard. This is a static starting point for the recording and is a single screenshot. Once the Start Screen has been captured, the content developer performs the first action in the process.

This will be either a mouse action or an input from the keyboard, either a keyboard shortcut or a string input. The result of the action is displayed on the screen and the content developer then presses the 'PrintScreen' button again. UPK has now captured the first screenshot with the first press of the 'PrintScreen' Key, and the first action and the second screenshot with the second press. The next action is performed, the result is displayed, the 'PrintScreen' Key is pressed and the second action and third screenshot is captured, and so the recording process continues.

## The Simulations

UPK uses the screenshots and actions to create the four simulation playback modes as well as the numerous document outputs. The way in which the actions are replayed differs between the playback modes. For example in 'See It Mode', the automated simulation, initially the Start Screen is displayed with the action area (a red square), indicating which object on the screen is used by the first action. UPK then animates the first action over the top of the Start Screen. So, for example, if the first action was to click on a button in the top left hand corner of the screen, UPK would take the position of the mouse pointer when the Start Screen was captured and the position of the cursor when the button was clicked and create an animation of a moving mouse cursor between the two points, ending with a mouse click on the button. The end of the animation would then display the second screenshot taken by the second 'PrintScreen', with an action area relating to the second action captured by the third 'PrintScreen'. String Inputs are animated by UPK, a letter at a time.

The frames by which the content is displayed in the Topic Editor take a similar approach by matching the screenshot to the appropriate action. So, the first frame after the start frame displays the first screenshot taken from the first press of 'PrintScreen' and the first action taken from the second press, the second frame displays the second screenshot from the second press of 'PrintScreen' and the second action taken from the third press. This is illustrated in Figure 1.



“If your content doesn’t have a consistent look and feel, it will confuse the end user.”

Remembering that when you press ‘PrintScreen’, you are capturing the action that was performed on the previous screenshot and the screenshot for the next action (with the exception of the Start Screen) will assist greatly with understanding when (and when not) to capture using the recorder. Armed with this knowledge, you will be able to produce seamless results, even when capturing a continually evolving and challenging development environment.

## Development Standards

If you take onboard one piece of information from this article, it should be that setting standards for your content is crucial. If your content doesn’t have a consistent look and feel, it will confuse the end user. Make sure you agree standard settings for every possible configuration in the UPK developer, as well as the target application and its host operating system. This task should be completed prior to any content development and it is essential that the necessary parties are consulted during this process (for example the marketing team regarding the branding), as the standards cannot be changed retrospectively without costly rework. These standards should be documented and should become your bible when developing any piece of content. Make sure that, when working as

part of a development team, each member adheres strictly to the standards.

The following hints and tips should give you some food for thought for the documentation of your standards, as well as improving your content development skills.

## Preparation

Your initial goal is, of course, to capture a good, clean, professional raw record as a basis for your content. Having configured your screen to display at the most appropriate screen resolution, you should ensure that you capture screens that maximise the view of the application to the end user. The following points should be considered:

- The Windows taskbar should be set to auto-hide, in the Taskbar and Start Menu Properties window. This also hides any other applications that are open during the recording. See Figure 2.
- If the target application is browser based; with most browsers you can maximise the viewable area by not displaying the menus, toolbars and other ornaments at the top of the browser. For example, in Internet Explorer, the F11 key toggles these elements on and off.

- Email and messaging applications should be closed along with any other applications that run in the taskbar and display pop up notifications, as these may be accidentally captured in the recording.

## Recording

The discreet recording process described above brings with it many advantages. Wobbly mouse movements and the correction of typos are not captured, any unexpected popups or errors can be excluded from the recording and any corrections, additions or deletions can be completed without recapturing the whole transaction. Although the recording process is straightforward, the following points should be noted:

- Printscreen Key

By default the PrintScreen Button on the keyboard is used to capture screenshots and actions (or frames). This default can easily be changed to numerous other buttons or combinations of buttons in the options of the developer. There are two very good reasons why you may want to change this default, the first being that PrintScreen actually has a role to play in the process itself and, secondly, activation of the

Figure 2: Taskbar properties

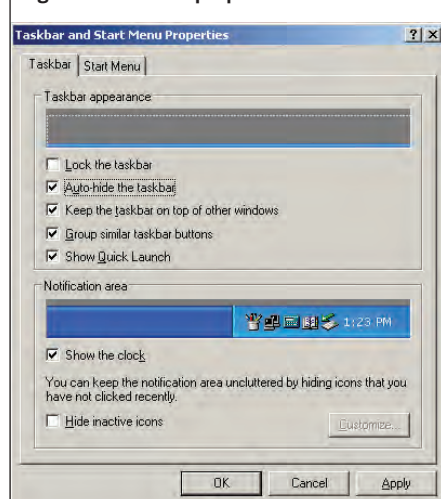
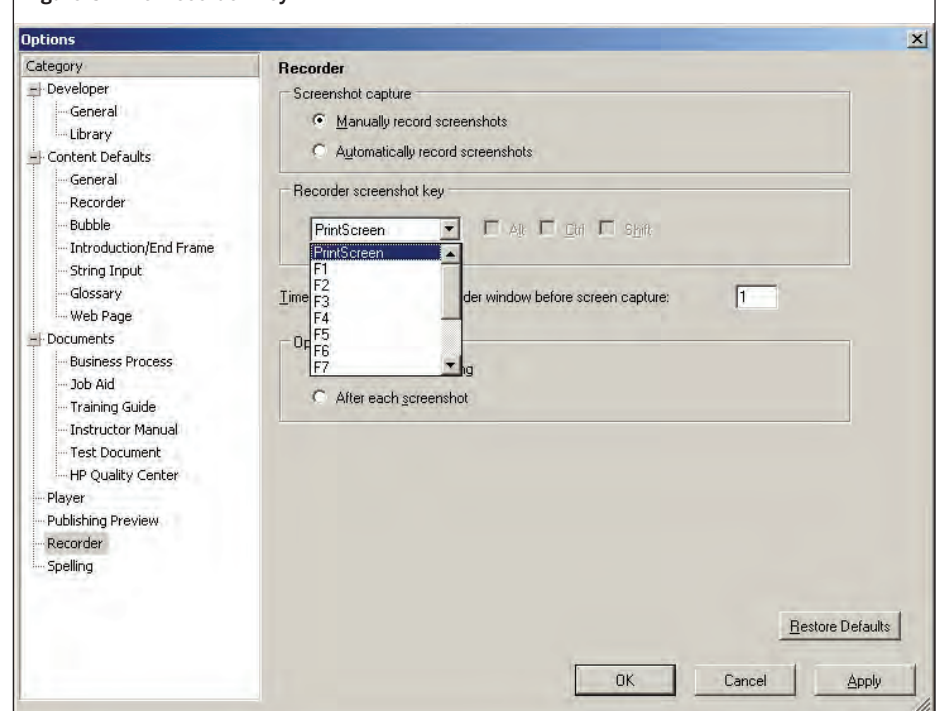


Figure 3: The Recorder Key



“Until you check in that topic at least once, the development server is blissfully unaware of its presence and ... you could end up losing all of your hard work.”

PrintScreen button on some keyboards requires a combination of two or more keys which can be a bit cumbersome when capturing a lengthy process, see Figure 3.

- Speed

The adage ‘More haste less speed’ certainly applies to developing content in UPK. You will benefit from taking things at a slower pace. After each PrintScreen, wait for the recorder screen to re-appear before continuing. Another important tip, especially when capturing a web based application, is to ensure that the screen has completely refreshed before hitting PrintScreen. If you capture a half refreshed screen this will appear in the simulation and the documentation.

- Mouse Pointers

When capturing a process, it helps to pay attention to where you leave the mouse pointer as you record each frame.

If you have left the mouse pointer hovering over an object in the application, when you press PrintScreen to capture the frame, chances are a Tooltip will be displayed for the object you are pointing at and this will be captured in the recording. Take care to leave the mouse pointer somewhere neutral.

It is also important to try not to activate any element of the application that would be displayed as activated or highlighted in some way by default. Examples of this might be hovering over the next button in the process or, when recording the first click of a dropdown menu, having opened the menu highlighting one of the options by hovering over it. This attention to detail will ensure a more realistic simulation for your end users.

## Editing

On completion of the recording, the captured content is displayed in the Topic Editor. This function of the developer allows the recording to be edited and enhanced in order to achieve a greater level of user engagement.

- Save, save, save, save, SAVE!! (and Check In)

Once you have completed the raw recording, before you do anything else, exit the topic editor, save your work, and then check the topic into the Library with a meaningful version comment. Until you check in that topic at least once, the development server is blissfully unaware of its presence and in the unfortunate situation of a problem with your PC, you could end up losing all of your hard work. You can edit a topic as many times as you like, so get into the habit of regularly saving your work and checking it in. This also gives you a full audit trail of your work. The same approach should be taken with Outlines, Web Pages, Packages and Glossaries.

- Step through the frames in Try It Mode

Having secured your raw record in the Library, a good first review is to step through the transaction in Try It Mode and try to see it from the perspective of someone unfamiliar with both the target application and UPK. Remember that you can preview a topic in any of the modes without publishing and a second pair of eyes is always useful when reviewing.

- Action Properties

You may want to enhance the action area and template text automatically generated by UPK. This is achieved by using the Action Properties section in the Topic Editor. The action area can be adjusted using the resize handles or can be redrawn completely by holding down the CTRL key and dragging the mouse pointer over the desired area. The Action Type and Object Type dropdown menus in the Action Properties window affect the template text that appears in the bubble. It is worth spending some time familiarising yourself with how these options affect the template text. See Figure 4.

- Alternative Actions

When developing content using UPK, it is always a balancing act between giving the end user the best possible experience and the time constraints of the project.

In an ideal world, you would capture every possible way to perform every transaction, using both the keyboard and the mouse. However the reality, normally, is that this is just not feasible in the time frames.

You should decide as part of your development standards whether you will capture using mouse actions or keyboard actions, or both, and this should be adhered to consistently across all of your content.

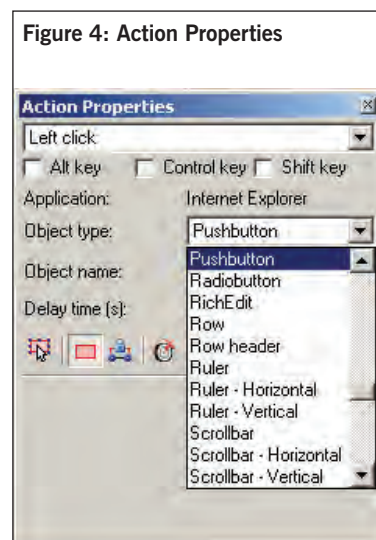
- Reposition the Bubble

Although the bubble plays an essential part in each playback mode it can sometimes obstruct some vital information on the screen. If this is the case, then reposition the button in the topic editor. If you want to avoid the pointer anchoring itself to the side of the action area, hold down the CTRL key whilst dragging the bubble.

- Explanation frame colours

A good way to distinguish between explanation frames and action frames is to change the background colour of the bubble and the font attributes of the explanation text. Remember to agree a standard for this at the outset and stick to it for all development projects.

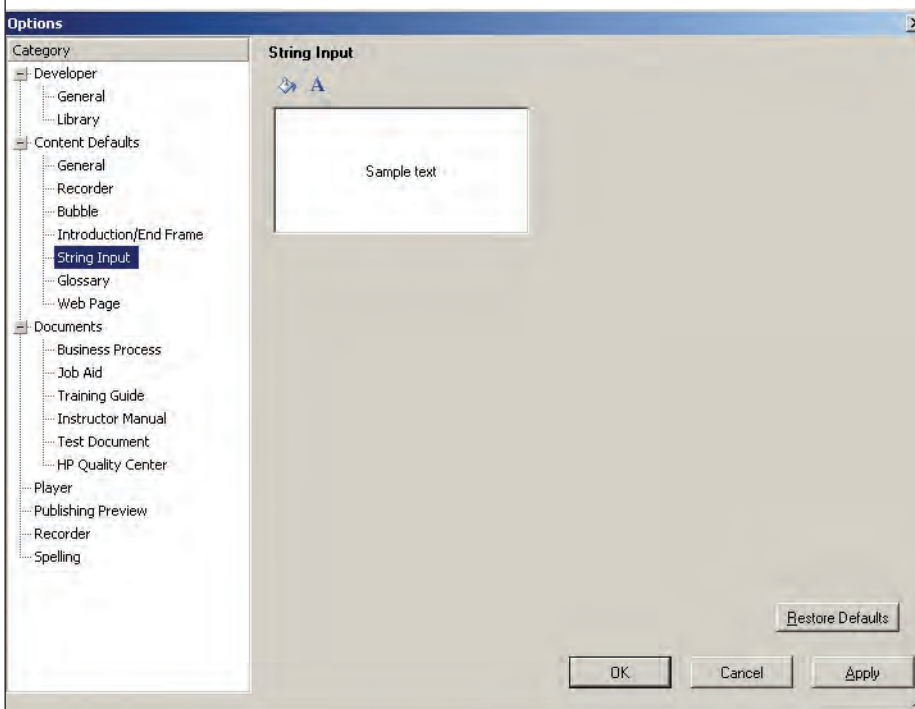
Figure 4: Action Properties





“...you will become a more efficient UPK developer if you understand how the product captures the application and then generates the simulated outputs and documents.”

Figure 5: String Input Fonts



- Set the font to match the target application

String Inputs, either when they are animated by UPK in See It and Do It Mode or entered by the end user in Try It and Know It, will be displayed in the default font set in the UPK Developer. This is unlikely to match that of the target application. Make sure you configure the font to match the application. The background colour for the fields can also be changed, see Figure 5.

- Display relevant text in each playback mode

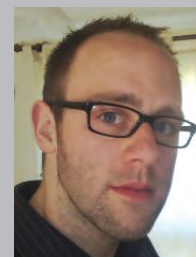
The custom user text entered into the bubbles in the topic editor can be displayed in all playback modes, however, as a developer you can also decide to show only specific text in certain playback modes (or documents) and this is a very powerful feature. A good use for this is to supply the end user with some guidance for Know It mode, rather than just having a blank bubble.

- Review All modes

Although Try It is a good first review, it is essential to review each mode separately, especially when using different text. Check that each mode flows correctly and ensure that the bubble is not obstructing any vital information.

To summarise part one of this best practice article; you will become a more efficient UPK developer if you understand how the product captures the application and then generates the simulated outputs and documents. Standards are crucial to achieving consistent and engaging content, and ensure you familiarise yourself with all features in the Topic Editor. In part two, we will look at enhancing content using Packages, Webpages, Glossaries, Concept Panes and Introductions as well as Publishing and Deployment best practice.

## About the Author



**Tim Poynter** is Technical Director of Larmer Brown Consulting Ltd, a Certified Oracle Partner who has worked with the technology behind the User

Productivity Kit since 1994.

He heads up the team responsible for planning, installing and configuring UPK and other learning tools. He is a certified UPK developer, a certified DBA and has a BA (Hons) in Business Decision Analysis.





## How to quickly identify a missing join

If you have a large query with multiple tables, but there appear to be multiple rows when you expect only one it can be an onerous task to discover the missing join condition. Here's a quick method I came up with to find the table that has a missing join condition that can give you a clue to what the missing predicate should be, see Example 1.

Taking this little sample query, add a predicate to narrow the query down to a single order, line or item. Then replace the SELECT part of the statement and get the ROWID of each of the tables in the query, see Example 2.

Running this gives the following, see Example 3.

Looking at the ROWIDs, you can easily see that the header (OOH) is repeated, i.e. for a single header. The line (OOL) is repeated in 2 parts suggesting 2 lines, and the item (MSI) is different for every row – this suggests that this is the table that has not been joined to properly.

In fact the missing join is Example 4.

Giving the following in our test query, see Example 5.

This works best when you're looking at huge queries that would ordinarily take a long time to rebuild until you find the missing join. I've also used this to discover why a DISTINCT is being used in a query that is poorly performing, and found missing joins that allowed me to remove the DISTINCT which is resource hungry causing multiple sorts, and fixing the query at the same time.

### Example 1

```
SELECT
  ooh.order_number
,ool.line_number
,msi.segment1 item_number
FROM
  oe_order_headers ooh
,oe_order_lines ool
,mtl_system_items msi
WHERE 1=1
AND ool.header_id = ooh.header_id
AND msi.inventory_item_id = ool.inventory_item_id
```

### Example 2

```
SELECT
  ooh.ROWID ooh
,ool.ROWID ool
,msi.ROWID msi
FROM
  oe_order_headers_all ooh
,oe_order_lines_all ool
,mtl_system_items_b msi
WHERE 1=1
AND ooh.order_number = 20000722
AND ool.header_id = ooh.header_id
AND msi.inventory_item_id = ool.inventory_item_id
```

### Example 3

OOH.....	OOL.....	MSI
AAAVeuAAYAAAXB8AAA	AAAVI9AAYAAAXCzAAR	AAATTdAAWAAAacTNAAI
AAAVeuAAYAAAXB8AAA	AAAVI9AAYAAAXCzAAR	AAATTdAAYAAAJWBAAP
AAAVeuAAYAAAXB8AAA	AAAVI9AAYAAAXCzAAR	AAATTdAAWAAAaf5DAAP
AAAVeuAAYAAAXB8AAA	AAAVI9AAYAAAXCzAAR	AAATTdAAXAAAFkHAAL
AAAVeuAAYAAAXB8AAA	AAAVI9AAYAAAXCzAAR	AAATTdAAWAAAQMRAAJ
AAAVeuAAYAAAXB8AAA	AAAVI9AAYAAAXCzAAR	AAATTdAAYAAAGY3YAAT
AAAVeuAAYAAAXB8AAA	AAAVI9AAYAAA/SbAAW	AAATTdAAWAAAacTVAAF
AAAVeuAAYAAAXB8AAA	AAAVI9AAYAAA/SbAAW	AAATTdAAYAAAJWAAAR
AAAVeuAAYAAAXB8AAA	AAAVI9AAYAAA/SbAAW	AAATTdAAWAAAaf5CAAR

### Example 4

```
AND msi.organization_id = ool.ship_from_org_id
```

### Example 5

OOH.....	OOL.....	MSI
AAAVeuAAYAAAXB8AAA	AAAVI9AAYAAAXCzAAR	AAATTdAAWAAAQMRAAJ
AAAVeuAAYAAAXB8AAA	AAAVI9AAYAAA/SbAAW	AAATTdAAWAAAQMQAAL

**Andy Noble** is a leading European Oracle Applications technical consultant with over twelve years experience with Oracle Applications, nineteen years experience as a technical consultant and has enjoyed eleven major Apps project 'go-live's across Europe.

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# Siebel 8.0 and 8.1 Upgrades: Building the Business Case

by Duncan Scattergood, Customer Systems plc

Many organisations are implementing or upgrading Oracle's E-Business Suite (EBS) to bring about a reduction in the cost of operations, effective and efficient business processes and enhanced quality of information. There are a number of challenges associated with implementations or upgrades, though one area frequently proves difficult to get right... controls.

## Building the Business Case

It is rare to justify a Siebel upgrade with just one feature or benefit of the target version. Instead, the business case is normally built by adding together a number of smaller gains to identify the total benefit.

Individual benefits are to be found not only by using new business functionality but also by seizing the opportunity to do things differently with new technology, or by reducing risk by ensuring all elements of the system are subject to vendor support.

A strong business case will identify all these benefits, and balance them against the potential costs – both financial and otherwise – of carrying out the upgrade project. Proposals to minimise these costs are key to the success of the business case.

Figure 1 is a guide to some of the key issues which should form the basis of any business case for an upgrade to Siebel 8.1.

### 1. New functionality

There is a host of new functionality in Siebel 8.0 and 8.1. Key improvements to the core technology are outlined in Figure 2, and some examples of new business functionality are given in Figure 3.

For new functionality to genuinely add weight to your business case, it is necessary to thoroughly analyse each new feature, both core and industry-specific, in the context of your organisation. From this analysis, a list of the true benefits offered by each of the relevant features can be developed. You can also identify opportunities where custom functionality in your existing system can be replaced with easier to maintain vanilla functionality in the new version.

### 2. Opportunity to Rework the System

As well as listing new functionality, it is wise to conduct a careful review of whether the existing system meets the current business requirements. The rationale here is that there could be a benefit to be gained

from resolving existing problems, and that the incremental cost of upgrading at the same time may be small.

In our experience, one particular area for attention is the complexity for users of completing key tasks. On the one hand it may be perceived that, if the users can successfully complete the task, their needs have been met. However, if key tasks are so cumbersome that users are actually finding other, potentially non-Siebel, ways of completing them, then it must be argued that the application is failing to meet business requirements.

Application performance as a whole should also be considered at this stage, since significant performance gains can be made by upgrading, whether just by harnessing improved efficiency in the new version, by using more optimal vanilla functionality in place of custom functionality, or by improving configuration quality.

### 3. Moving to Supported Systems

Another key area to consider when preparing the business case is the future of your existing software, particularly in terms of support.

Applications Unlimited is a very welcome commitment from Oracle but it does not apply to customers who are still on versions before Siebel 7.8. Even customers on version 7.8 cannot be completely assured that their entire infrastructure will remain supported; for example, components such as the database or operating system may become unsupported.

Your organisation's attitude to risk will determine how significant these factors are in your business case. Of course, if an application is generally stable then the risk posed by a lack of support is small. However, in an unsupported situation, it is difficult to fix a problem quickly if one does arise. At best, this could result in a loss of productivity. At worst, the application could be rendered unusable for months while an emergency upgrade is completed.

## 4. Ongoing Cost Reductions

Another factor to consider is the potential for reducing recurring costs. For example, an upgrade can lead to a reduction in training costs as well as first and second line support costs. In addition, if the upgrade is used as an opportunity to replace large amounts of custom functionality with new vanilla functionality, then ongoing support and maintenance costs can be significantly reduced, and the impact of adding further functionality in the future lessened.

Financial gains from this can be offset against projected costs of the upgrade.

## 5. Simpler Development

Because the improvements in Siebel 8.0 and Siebel 8.1 are primarily aimed at business users, your business case is likely to be dominated by business factors. However with any new Siebel version, there are technical incentives to upgrade, and Siebel 8.1 is no exception. Enhancements to Siebel Tools make it quicker to create and maintain the functionality you need than it would have been in previous versions and this is a useful technical benefit.

## Reducing the costs

Once the potential benefits from an upgrade have been identified, the other part of a business case analyses the costs that will be incurred in realising the benefits. This section of our article reviews some key ways of minimising those costs.

### 1. Upgrade or Rebuild?

In a traditional upgrade, automated upgrade routines are used to upgrade both the data and the configuration. How much additional work needs to be done after the automatic routines have run depends on the source version of the application and how much custom functionality must be tested and potentially reconfigured.

The alternative is a rebuild, where the system is built from scratch from the vanilla application, and data is migrated using EIM – or other tools depending on the volume of data concerned. This offers an easier way to take advantage of any new vanilla functionality which can replace your custom functionality, and also avoids the possibility of migrating existing configuration problems to the new application.



**Figure 1****Benefits of upgrading:**

New functionality  
 Opportunity to rework the system  
 Moving to supported systems  
 Ongoing cost reductions  
 Simpler development

**Reducing the cost of the upgrade:**

Choose the correct approach (upgrade vs. rebuild)  
 Get expert advice at key stages  
 Plan the deployment carefully

**Figure 2****What's new in Siebel 8.0 / 8.1: generic functionality****Self Service Applications**

The self service applications (eg. eCommerce) have been redeveloped in Oracle ADF and are now standalone applications that call Siebel through web services.

- Developers have much greater control of UI than previously
- Easier to combine Siebel with other applications in presentation layer

**BI Publisher**

From 8.1.1, BI Publisher replaces Actuate for pixel perfect reporting.

- Report layout creation is no longer a technical development task
- Report deployment is decoupled from the Siebel release cycle

**Task Based User Interface**

This major new piece of functionality redefines the way users complete tasks.

- Views are arranged in a flow through which users must navigate
- Consistency of process and completeness of data entry are enforced

**Microsoft Integration**

Plug-ins and features greatly improve integration with key applications.

- Siebel toolbars added to Word and Excel
- Enhanced Exchange integration
- Improved communication between Siebel and Microsoft SharePoint

**Figure 3****What's new in Siebel 8.0 / 8.1: business functionality**

Both Siebel 8.0 and 8.1 contain significant amounts of new business functionality. Some of this is applicable to many industries, whilst some of it is highly specific, deep vertical functionality. Selected highlights include:

- the ability to easily define and reassign sales territories
- major enhancements to Siebel Marketing
- additional order management functionality in addition to the major upgrade that happened as part of Siebel 7.8
- substantial improvements to case management for Public Sector customers and support for cross agency processing
- deepened sample management for the pharmaceutical industry
- more control over trade promotions budgets in the CPG industry
- specific account origination functionality in Siebel eFinance

It is usually assumed that rebuilding will be more expensive than an automated upgrade but in fact this is often not true. In applications with an extensive amount of custom functionality, a rebuild is very often the cheapest option. The source version can also determine the cheapest option, since upgrading from a very old version is usually cheaper to do by rebuilding.

**2. Use of Experts at Key Stages**

The nature of Siebel as a product means that there is a minimum threshold of skill beneath which nothing really useful will be achieved. For some products, it is perhaps possible that resources who know half of what an expert knows will contribute to a project at half the rate of the expert. In the

world of Siebel, if they are below the minimum threshold of skill, they will contribute effectively nothing.

In an upgrade project, there are key points – in particular, identifying opportunities to reduce the quantity and improve the quality of configuration – where the use of the right expert will determine whether or not the project is a success.

**3. Plan the Deployment**

Often costs associated with the deployment will be greater than the costs of the technical upgrade. Furthermore, a bodged deployment can destroy many of the planned benefits by reducing eventual user adoption.

We strongly recommend thinking about user training, including any changed business processes, and post go-live support as soon as possible. One technique that is worth thinking about, and which we have found saves a lot of cost and angst at go-live, is to use the development to test migration as a full dress rehearsal of final deployment.

**In Conclusion**

Siebel 8.1 brings many exciting new features to improve the experience of both users and customers, but upgrading can bring a far wider range of benefits. This is an opportunity to meet your organisation's changing needs with a sleeker, faster, more intuitive application.

**Customer Snapshots**

The following two customer snapshots demonstrate the cost and effort savings that can be achieved when resources with very high levels of Siebel expertise are deployed.

**Customer Snapshot 1**

*Task:* Upgrade

*Customer:* CPG company

An upgrade project often requires a smaller expenditure of both time and effort than you might expect.

Our customer had had a number of estimates for their upgrade project. Our estimate was one third of that of our nearest rival, and we completed successfully completed the project within our estimate.

**Customer Snapshot 2**

*Task:* Improving performance

*Industry:* Food and drink manufacturer

Often the key to enhancing perceived performance can lie in the redesign of frequently completed tasks, especially if these tasks are particularly cumbersome. This type of redesign should form a key part of many upgrade projects.

For this customer, we were able to reduce the number of views required to complete a key task from four to one, cutting the time it took users to complete the task by 50%.

**About the Author****Duncan Scattergood**

is Operations Director and co-founder of Customer Systems plc, where he is responsible for all sales, marketing, project delivery and

recruitment functions. Customer Systems is wholly focused on Siebel, Siebel Reports and OBIEE/Siebel Analytics, and has completed hundreds of successful implementations. Based in the UK and with an office in the US, they have delivered services in 29 countries across four continents. 19% of the customers listed in Siebel's last annual report have used Customer Systems.

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# Auto Accounting rules for Projects R12

by Amit Kumar Bothra, iTrain

Accounting Practices have been severely scrutinized and progressively modified over the last decade. Ever since the world saw the debacle of Enron and WorldCom and then, more recently, the sub-prime crisis, Sarbanes Oxley and Basel II were no longer alien words and companies started becoming more watchful of their accounting practices.

Company management had to ensure that they complied with the International Accounting Standard (IAS), Financial Accounting Standard Board (FASB) and Generally Accepted Accounting Principles (GAAP).

Finally, demands from auditors request that companies financial and management activities are in strict adherence with such accounting guidelines and are making the project managers job even more complex.

For organizations running projects, Oracle Projects offers a great tool to handle their day to day business both on the project management side as well as the accounting for project management activities.

## Introduction

Oracle Projects offers an integrated project management solution to handle the complexities of projects and to manage the accounting practices for the various activities undertaken during each phase of the project. Governments and international regulatory authorities continue to impose complex and ever-changing regulations on organisations.

Auditors have become very cautious and weary of the way accounting is done and they have started demanding strict compliance with the accounting standards. It has become the joint responsibilities of the project managers, financials controllers and accounting managers to ensure that the software solutions being used for the project management activities are capable of adhering with these regulations.

By using Oracle Projects, organisations can now be 100% compliant with the requirements of accounting standards while ensuring efficient handling of project activities.

## The Basic Accounting Practices for Project Management

Accounting entries must be generated for all financial activities of a project, from inception to project completion. From an IAS point of view, costs on revenue generating projects should not be capitalised unless the project has been completed to a significant level and it has been accepted by the customer. In Oracle Projects, the AutoAccounting feature allows the creation of accounting entries for the various project activities using pre-defined accounting rules.

AutoAccounting is a feature in Oracle Projects that determines how each project-related transaction is recorded in a form of accounting entry in Oracle General Ledger. AutoAccounting is unique to Oracle Projects. During each Project process (Cost Distribution, Transfer, Revenue Distribution, or Invoice Generation), the AutoAccounting function is called and run against each transaction automatically by the system.

Based on rules defined to meet customer specific business practices, AutoAccounting determines the appropriate value for each of the individual segments of the company's Accounting FlexField. The transaction is completely processed only if AutoAccounting has successfully populated all of the segments of the accounting FlexField and the combination of the segments passes Oracle General Ledger's validation.

AutoAccounting creates Accounting FlexField segment combinations, also referred to as Code Combinations. Because some of these combinations may not exist, Oracle Projects requires activation of the Dynamic Insertion option in the Accounting Key FlexField. Dynamic Insertion allows new combinations to be created, as long as no customer defined cross validation rules are violated. Without Dynamic Insertion turned on, AutoAccounting would never be able to create new combinations, and hence AutoAccounting would fail with errors.

AutoAccounting is organised into groups of related accounting transactions. These groups are called AutoAccounting Functions. In Release 12 there are a total of 36 AutoAccounting Functions. For each AutoAccounting Function, there are a number of AutoAccounting Function Transactions.

Function Transactions allow AutoAccounting to generate different results under different circumstances. With the use of different function transaction, code combinations generated would be different for labor costs on revenue generating and non-revenue generating projects, between expense costs on indirect project and direct projects. The number of Function Transactions associated with functions may vary from a function to another function.

During the implementation of Oracle Projects, AutoAccounting rules are defined to meet client specific business practices. These rules determine how AutoAccounting populates the individual Accounting FlexField segments.

“Oracle Projects offers an integrated project management solution to handle the complexities of projects and manage the best accounting practices compliant with IAS.”



## There are three types of AutoAccounting Rules: Constant-based; Parameter-based; and SQL Select based

**Constant-based:** AutoAccounting Rules are used to directly populate the Accounting FlexField segment with a given value. Each time a given Constant-based AutoAccounting Rule is used, it will return the same value. Constant-based AutoAccounting Rules are commonly used to populate the Accounting FlexField segments with values that remain the same no matter the circumstances.

**Parameter-based:** AutoAccounting Rules use parameters predefined by Oracle Projects as their input. The parameters can be used to directly populate the Accounting FlexField segment or they can be used to match against values in an AutoAccounting Lookup Set. The matching value is then used to populate the Accounting FlexField segment.

**SQL Select-based:** AutoAccounting Rules use the Oracle Database Structural Query Language (SQL) to determine which value to populate the Accounting FlexField with. SQL Select-based rules are intended for situations where client-specific business practices dictate that more than one parameter is necessary to determine the appropriate value to use. An example would be the situation where both the Project Type and Expenditure Type, taken together, determine the appropriate value to use.

## Accounting Entries

Following are some of the key accounting entries that were suggested during the lifecycle of a project which were compliant to the IAS and GAAP.

Please note that this is not an exhaustive list of accounting entries and Oracle may automatically generate additional accounting entries depending on customer specific project transactions.

## Conclusion

Oracle Projects provides an integrated project management solution which allows organisations to handle a variety of different types of projects. It also facilitates compliance with the prevailing IAS and GAAP accounting best practices, thus providing peace of mind and value for money for company senior management and executives.

### Labor Cost Accounting Entry

COST WIP ACCOUNT	DR
LABOR CLEARING ACCOUNT	CR

### Expenses Report Cost Accounting Entry

COST WIP ACCOUNT	DR
EXPENSE CLEARING ACCOUNT	CR

### Inventory Cost Accounting Entry

COST WIP ACCOUNT	DR
INVENTORY CLEARING ACCOUNT	CR

### Misc Transactions Cost Accounting Entry

COST WIP ACCOUNT	DR
MISC TRANS CLEARING ACCOUNT	CR

### Labor Revenue Accounting Entry

UNBILLED RECEIVABLES/UNEARNED REVENUE	DR
LABOR REVENUE ACCOUNT	CR

### Expense Report Revenue Accounting Entry

UNBILLED RECEIVABLES/UNEARNED REVENUE	DR
EXPENSE REPORT REVENUE ACCOUNT	CR

### Inventory Revenue Accounting Entry

UNBILLED RECEIVABLES/UNEARNED REVENUE	DR
INVENTORY REVENUE ACCOUNT	CR

### Misc Transactions Revenue Accounting Entry

UNBILLED RECEIVABLES/UNEARNED REVENUE	DR
MISC TRANS REVENUE ACCOUNT	CR

### Event Revenue Accounting Entry

UNBILLED RECEIVABLES/UNEARNED REVENUE	DR
EVENT REVENUE ACCOUNT	CR

### Invoice Accounting Entry

RECEIVABLES ACCOUNT	DR
UNBILLED RECEIVABLES/UNEARNED REVENUE	CR

### Cash Accounting Entry

CASH/BANK ACCOUNT	DR
RECEIVABLES ACCOUNT	CR

## Manual/Scheduled Journal Entries in Oracle General Ledger once the project has been accepted and revenue can be recognised

### Labor Cost Capitalisation Accounting Entry

LABOR COST ACCOUNT	DR
COST WIP ACCOUNT	CR

### Expenses Report Cost Capitalisation Accounting Entry

EXPENSE REPORT COST ACCOUNT	DR
COST WIP ACCOUNT	CR

### Inventory Cost Capitalisation Accounting Entry

INVENTORY COST ACCOUNT	DR
COST WIP ACCOUNT	CR

### Misc Transactions Cost Capitalisation Accounting Entry

MISC TRANS COST ACCOUNT	DR
COST WIP ACCOUNT	CR

## About the Author



### Amit Kumar Bothra

is a Senior Oracle functional consultant with extensive experience in the Implementation of Oracle financials, supply chain

applications & Oracle Projects suites. With over 7 years in the IT Consultancy, Amit is an extremely experienced, clear, logical thinker with strong leadership and presentation skills. Amit comes from a Solutions Architecture background with proven analytical and problem solving skills. He has broad functional experience across many financial modules such as GL, AR, AP, I-Expenses, Advanced Collections, Project Costing & Billing, and Oracle Time & Labor.

iTrain is a specialist independent ERP change and transition management integration service provider. Throughout the UK market, iTrain delivers a variety of consulting and training ranging from Oracle Release 12 to 11i eBusiness suite, SAP, Java, Peoplesoft, to technical services across the complete ERP functional scope (Finance, HR & Payroll, Supply Chain, CRM). iTrain's highly skilled consultants and trainers also have the flexibility to assist you with any large or small projects your company wants to implement from an email integration to a full systems update.

To learn more about iTrain's services please contact [info@itrainconsulting.co.uk](mailto:info@itrainconsulting.co.uk)

# Point in Time and Effective Date Reporting Using Discoverer

by Nigel Karlaske, iTrain

As a consultant/trainer one of the biggest issues and hardest concepts to get across to those studying Oracle Discoverer is the way in which data is returned from a database that contains “date tracked” information.

The biggest and most visual way date tracked information shows itself on a report is when, for example, an employee shows on a report with 2, 3 or more lines of information, or as it is called “multiple rows”. Obviously this makes the information being reported on somewhat useless, as we usually look for one entry per person. When we start to do further analysis of the returned data, i.e. trying to sum “hours worked columns” or creating average calculations, we are not seeing the results inflated by multiple entries on the report. There are ways to overcome this using simple functionality in Discoverer and we will explore these later, but first we need to understand where the “problem” came from in the first place. To do this we will focus on three tables where information is held on the database, Person, Assignment and Position.

In this example the Employees Position table only contains one entry as this has not changed during their employment.

We have a clear start date and a clear end date for the record. (See Figure 1.)

Next we have the Assignment table.

As you can see from the table, the database has created a new line in the assignment table to cater for the date tracked data item in this case FTE, and we now have three rows which could be returned for this employee. (See Figure 2.)

Now we have to consider a third table, the Person Table.

Assuming that today’s date is 01-Oct -2008 we can see we have a future “date tracked” change of address already inputted in this employee’s person record which is driving out the top line of the table. (See Figure 3.)

If we were to run a report now for this person without any conditions we would be seeing many rows for this employee in our report reflecting the historic and future date tracked changes being stored.

**Figure 1: Employees Position Table**

Staff Number	Position Start	Position End
00112233	01-Apr-2001	31-Dec-4712

**Figure 2: Assignment Table**

Staff Number	Assignment Start	Assignment End	FTE
00112233	24-Nov-2006	31-Dec-4712	1
00112233	16-Mar-2003	23-Nov-2006	0.75
00112233	01-Apr-2001	15-Mar-2003	0.5

**Figure 3: Person Table**

Staff Number	Person Start	Person End	Contact Address
00112233	24-Jan-2009	31-Dec-4712	Aberdeen, George St.
00112233	16-May-2005	23-Jan-2009	Croydon, Mill St.
00112233	01-Apr-2001	15-May-2005	Swindon, High St.

To reduce the effect of multiple rows for this employee, it should be a simple case of building a condition in Discoverer to restrict the data being returned to “31-DEC-4712”, see Figure 4.

**Figure 4**

Position End date= 31-DEC-4712  
AND  
Assignment End Date= 31-DEC-4712  
AND  
Person End Date= 31-DEC-4712

Whilst this would have the effect of reducing the information returned for the employee to one row, what would happen if we now wanted to send a letter to our employee using the data in the report?

The address information being returned “equal to 31-dec-4712” is incorrect (remember we are saying 01-Oct-2008 is “today”) and the record for this date will not become true until 24-Jan-2009, the employee is currently living in Croydon and not Aberdeen.

There are two ways around this:

1. Use a condition to restrict to a single point in time using the function “SYSDATE”.
2. Build an “Effective Date” parameter allowing the end user to select any point in time to view that information for.



## Option 1: A Simple Condition.

We can write a very simple condition using the database function “SYSDATE” (System Date = today’s date) to look for records that match the criteria, see Figure 5.

“...we cannot build a condition on something that does not exist in the database.”

**Figure 5**

```
=SYSDATE BETWEEN Position Start Date AND Position End date
AND
=SYSDATE BETWEEN Assignment start date AND Assignment End Date
AND
=SYSDATE BETWEEN Person Start date AND Person End Date
```

This will have the desired result; it will return one row per employee for a single point in time “SYSDATE”. The drawback to this is that it will only ever return data as of “SYSDATE” and may not give the end user the flexibility they require to return historic or future dated information. Hence Option 2.

## Option 2: Creating a “Report Effective Date” Parameter.

Normally to create a parameter in Discoverer we would build the parameter around an existing data item. Report Effective Date does not exist in the database as a data item so we are going to build a “None Data Item” based parameter.

This is a three stage process:

1. Create the parameter
2. Create a calculation
3. Create a condition

## Creating the Parameter

The first stage is to create a parameter not using a specific data item but selecting the “None” option when prompted to select a data item.

When you do this the “Create a condition field” will grey out, this is because we cannot build a condition on something that does not exist in the database.

After populating the user prompts, we will give our parameter a default value of “Today”. (See Figure 6.)

We have created three problems here, firstly there is no condition at the moment, and the system has greyed the field out, so we will have to create one, also we have given our parameter which is based on nothing a default value of “Today” and in the user prompt field instructed them they can enter any date into the system. We get over this with a calculation.

## Creating the Calculation

When creating any calculation in Discoverer, the output will always be in the form of a data point, usually then used as a column in a report to give the result of the calculation. We are going to use our calculation to create a “Report Effective Date” data point that we can then call into a condition as in Stage 3.

We are also going to use the calculation to convert a user inputted (text) date into a true date and to convert the parameter default of “Today” into SYSDATE, as shown below in Figure 7.

Let’s break this down:  
DECODE creates an “If” statement (use CASE for If, Then, Else)

:Report Effective Date (note the “:”) is our parameter.

TRUNC is truncate, so  
TRUNC(SYSDATE) returns  
01-OCT-2008 from 01-OCT-2008 13:45.

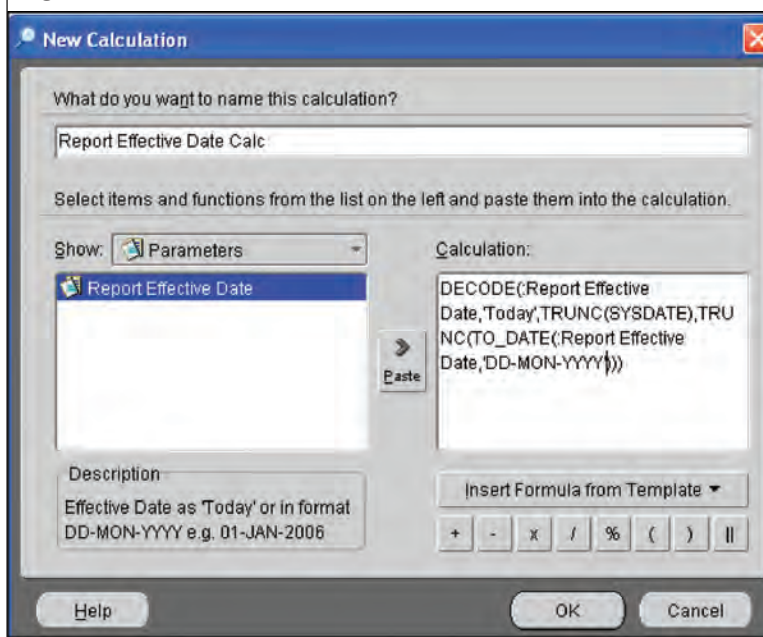
TO\_DATE converts a character input to a date format as specified “DD-MON-YYYY”. So the calculation reads “If the input from the parameter is “Today” output SYSDATE, otherwise convert to a date the text inputted into the parameter and output that as a date.

As the output for the calculation is a new data point, we would now have a new column in our report called “Report Effective Date” showing the result of the calculation, either SYSDATE or the date specified by the end user.

Although we now have a parameter that functions, we still have our original multiple row problem for our employee.

**Figure 6**

Figure 7



“...one of the biggest issues and hardest concepts to get across to those studying Oracle Discoverer is the way in which data is returned from a database that contains “date tracked” information...”

Figure 8

Report Effective Date BETWEEN Person Start AND Person End  
AND  
Report Effective Date BETWEEN Position Start AND Position End  
AND  
Report Effective Date BETWEEN Assignment Start AND Assignment End

## Creating the Condition

The final part of the process is to create a condition that uses the data item derived from the calculation (Report Effective Date) and uses this to check for matching rows on the tables being reported on.

The condition would read as above, see Figure 8.

Now when you run the “Report Effective Date” parameter it will feed your input into the calculation, the output of which will feed into the condition, which will check that against the data items stated in the condition and restrict the data accordingly.

This should then give you a single row per employee in the report.

If you add any more date tracked items to the report you now only have to amend the condition by including another AND statement to take the new data item into consideration.

Although Point in Time effective date reporting using Discoverer can at times seem tricky, it is a concept that you can come to understand clearly through the steps I have described in this article. As mentioned at the beginning of the article, one of the biggest issues and hardest concepts to get across to those studying Oracle Discoverer is the way in which data is returned from a database that contains “date tracked” information, but if you follow the steps outlined above, your Discoverer reporting details should become somewhat simpler saving you both time and money.

## About the Author



**Nigel Karslake** is an iTrain consultant and trainer with skills across Oracle, SAP, and Business Objects applications. Nigel's Oracle expertise covers System administration, Payroll and Business Intelligence tools. Nigel's knowledge of Payroll and HR systems, processes, rules and regulations was gained while working as national implementer on two major projects. Having worked within both the private and public sector, Nigel has project experience and understanding of clients such as the NHS, MHRA, and Fujitsu.

iTrain is a specialist independent ERP change and transition management integration service provider. Throughout the UK market, iTrain delivers a variety of consulting and training ranging from Oracle Release 12 to 11i eBusiness suite, SAP, Java, Peoplesoft, to technical services across the complete ERP functional scope (Finance, HR & Payroll, Supply Chain, CRM). iTrain's highly skilled consultants and trainers also have the flexibility to assist you with any large or small projects your company wants to implement from an email integration to a full systems update.

To learn more about iTrain's services please contact [info@itrainconsulting.co.uk](mailto:info@itrainconsulting.co.uk)



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## It's Not What You Know – It's Who You Know

It's not what you know it's who you know? In most cases its true and even more so in the current state of the market.

Our whole ethos is to promote the contractor to the wider Oracle community. We provide the blogs and white papers as a way to achieve this. But the reality is that even without these, there is, no doubt, if someone has been a contractor for a while, they will have already built up an enviable network of contacts.

That's where the "its not what you know its who you know" becomes relevant. If a contractor is available and looking for work, they should get back in touch with those old work colleagues on the social networking sites or attend the SIG's, and promote themselves via the white paper or blog campaigns we are doing, there are so many ways to do this, they need to pick one and if that doesn't work they should try another one!!



Making and fostering old or new relationships is a great way to get out there and find new opportunities, its all about being at the front of their mind in some way or another.

If a contractor knows certain project managers on a personal level or even just as part of their team in a previous contract, then it makes sense to touch base with them and see how they are, see what sort of project they may be on, fish around!! They already know what the contractor can do, how he or she works and what they can bring to the table so it makes sense to give it a go! They would not lose anything for trying although they may be losing out on a contract if they don't.

Whenever I was project managing an implementation or upgrade and I had to build a team to implement, the first people I would look to would be the tried and tested contractors that I had worked with before. With contractors you have worked with previously, you know their strengths and weaknesses. Also, should the people you have worked with before not be available then a personal recommendation is second to none. 'Better the devil you know' is a saying which holds true in this context.

The only time when "It's Not What You Know It's Who You Know" becomes less applicable is that once you have a contract then it is what you know as opposed to who you know that becomes relevant.



**Rory Dwyer** has over seventeen years of Oracle E-Business implementation experience spanning financial, distribution, manufacturing and human capital management predominantly within the telecom industries, including the O2 implementation of HRMS project here in the UK. Rory has global experience working across Europe, Middle East and Africa (EMEA), North America and Asia Pacific.

# Surviving Armageddon – recession proofing your career in 2009

by Satnam Brar, Maximus

Does anyone remember good news? There was a time, not very much more than a year ago when everything seemed to be going rather well both in ERP and in the wider IT world. Business was booming across the board, profits were up, pay rises were generous and seemingly never ending and the only worry seemed to be where we were going to find all the people to satisfy the demands for services. Which just goes to show just how long a year can be.

Thanks to the still largely incomprehensible decisions of many at very senior levels in the banking sector, 2008 saw us move into an altogether different economic situation than the very comfortable one we had all grown used to in recent years. Now we hesitate to pick up a newspaper, switch on the TV or listen to the radio in case we hear the latest piece of news on the impending end of civilisation as we know it. But just how bad are things for IT and more specifically ERP? And are we perhaps in danger of being talked into a more severe downturn than really exists?

There is no denying that there has certainly been a slowdown in the ERP market and a consequent knock-on effect on jobs and career development prospects for individual

specialists at all levels. However this does not by any means mean that recruitment has come to a complete stop. Rather than being an old-fashioned, general downturn as we experienced in the early 1990s, this particular one seems to be developing a very specific nature, which hits certain areas extremely hard whilst leaving others relatively or even completely unscathed.

The public sector in the UK, for example, is still pushing ahead with major ERP projects to the extent that local authorities and government bodies now account for as much as a fifth of all domestic contract and permanent opportunities. And whilst some generalists are finding it more difficult to find regular contract work, specialists in areas such as niche supply chain or

Hyperion work are in as much, if not more, demand than ever. Organisations of all sizes seem to have finally learned the lesson of the early 1990s troubles that every downturn will come to an end and if you don't have access to the right people to take advantage of this, you can end up in serious trouble.

Organisations are now therefore taking a much more strategic approach to staffing, targeting cuts at weaker members of the team rather than at whole classes, focusing on those who may have been hired in haste during boom years and redeploying good people if at all possible. Therefore the key to not just surviving, but thriving over the coming year (and perhaps even beyond it) lies in focusing on the 'survivor' sectors, locations and skill-sets, whilst also honing those all important 'soft skills' that can further enhance your marketability.

The first and perhaps most important step in dealing with a downturn is to accept it and accept that you will need to be more flexible in your working life. Of course we'd all like things to be going well, but sometimes they just don't. Once you have got over this particular hurdle you can get on with doing what you need to do to get through it.

Being flexible means being ready to negotiate on rates or salary. Whilst the general level of recruitment has held up the balance of power has started to shift from individual to employer, which means that pay has, on the whole, either flattened out or moved downwards. With the economic downturn hitting a wide range of sectors, salaries for Oracle professionals in the UK have dropped steadily since early 2008 with permanent consultants now expecting to earn 10% – 20% less than last spring. This is especially true of private companies and end users which are now becoming more reluctant to take people on board on high salary packages. In comparison, consultancies are still experiencing relatively strong demand for their services and can consequently afford to be more generous in terms of both salaries and benefits. On the contract side there have been varying declines in rates, with some roles, for example a mid-level HRMS consultant, dropping by as little as £25 a day and others by a lot more – a DBA, for example, is now commanding up to £135 a day less than in early 2008.



“Anything that can provide you with a way of differentiating yourself could provide you with that all important competitive advantage and help you to stand out from the crowd.”

However flexibility means more than just negotiating on pay. It can also mean chasing work no matter how far away it is from your home base. Despite the fact that large parts of Western Europe are now either in or are approaching a recession and that the boom in the Middle East is slowing, both regions still offer lucrative opportunities to UK ERP specialists. For example, Martin Higgs, a hybrid technical and functional specialist from Twickenham thought his days of working extensively overseas were behind him when he left Oracle more than a decade ago. But now he finds himself commuting to Lyon in central France on the Monday morning ‘red-eye’ for his latest contract. “It certainly wasn’t an ideal choice,” he says, “after all I’m married with a daughter and the only contact I’m getting with my family during the week is by phone and email. However this was the contract that came up, so rather than sit around twiddling my thumbs I decided to take it. And it does have its advantages. Lyon is an attractive place, I’m getting to improve my rusty French, the quality of experience I’m getting is excellent and the pay isn’t bad either.”

As supply starts to outstrip demand, we may see an armistice in McKinsey’s famous war for talent and ERP specialists will consequently need to learn how to sell themselves more effectively to potential employers. When the phone stops ringing as regularly as you would like and your email inbox stop filling up with offers of work, there will be no alternative but to develop good networking skills to find your next contract or career move. Networking may not be the most natural skill of a successful ERP specialist but it can be developed quickly with a little time, effort and commitment. Make sure that you take any and every opportunity to tell colleagues, friends, acquaintances, etc what you can do and what you are looking for. This doesn’t mean boring everyone stupid

with a lengthy, detailed monologue, but it does mean having a quick 20-30 second summary ready to deliver whenever the opportunity presents itself. Remember that the emphasis should always be on simplicity, clarity and what you can do to help – after all that’s the bit that people tend to recall. If you are in contact with recruitment consultants (and if not, why not?) ensure that you keep them informed about what you are doing, what you are looking for, where you are prepared to work and at what rate of pay. In a slower market a recruitment consultant’s time has to be focused on client management and development, not I keeping in such close contact with you, so anything to make their professional lives more effective will pay dividends to you in the long run.

2009 will also be the time to think about how you can broaden your skill-set outside of the classic technical range. Do you have a rusty language from school or university, for example, which, with a little brushing up, could open up opportunities overseas? Is managerial or leadership training available within your current organisation or, if not, would it be worth investing some time and money in one of the short programmes in these areas offered by the major business schools? Could you even write a helpful, insightful article for Oracle Scene? Anything that can provide you with a way of differentiating yourself could provide you with that all important competitive advantage and help you to stand out from the crowd.

This year, perhaps even the next couple of years in the ERP market will certainly be quieter than the preceding ones – the boom is over, at least for now. What organisations and individuals need to do now is to accept that the downturn is here and overcome it. That means acknowledging that pay will not keep rising all the time, that desirable jobs and contracts will be more difficult to get and that life in the sector will be a lot more hard, competitive and unforgiving than it has been for some time. Once this happens the panic will stop and ERP specialists at all levels will get on with getting back to basics, focusing on clients, delivering good work and developing the new business we all want to see coming through the pipeline.

## About the Author



**Satnam Brar** is the founder and managing director of specialist Oracle recruitment consultancy and Oracle partner, Maximus –

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# Locks, the skeleton key

by Timothy Steward, Compuware Corporation

**M**onday morning: 8:23 am. You arrive at work just 23 minutes late recovering from a nice weekend, but now your body is lacking what you think is the most critical thing of the day: that morning cup of caffeine.

Your routine starts, you ready your favorite Dilbert coffee mug, snap the laptop in the docking station and boot it up. Just as you grab Dilbert your mobile phone starts to ring, your boss walks up and now you realize that Monday has just began, as you hear those dreadful words “We have a production problem”. Users are trying to run some month end closing jobs and they all seem to be stuck, oh by the way “Good Morning, hope you had a nice weekend”. Let the investigation begin.

When it comes to Oracle locks they are very much like the locks used to secure your home or smelly gym locker. Things in a home are locked for protection to keep violators out and maintain the integrity of the property. The smelly gym locker, well that’s a destructive odour that we need to prevent others from encountering. Some things are better off not being shared.

Oracle uses locks to control the sharing of resources, limiting data manipulation activities. In Oracle terminology there are two types of resources referred to as objects.

- User objects – tables and the data or structures within them.
- System objects – non visible content, such as the shared data structures located in the memory and the rows within the data dictionary.

In every database, protecting the data is usually one of the most important tasks. Although a user can manually issue a lock upon an object, Oracle uses its automatic locking process to control locks without user interaction in order to guarantee the integrity and concurrency of the data. This locking process can be broken up into five modes.

- Exclusive – used when object modification is needed, allowing only a single user to lock an object exclusively for modification until released.
- Shared – allowing multiple users to lock an object for reading, at the same time preventing users to acquire an exclusive lock.

- Row Exclusive – any new transactions can lock a row or insert,update delete rows in the same table.
- Row Shared – while a single row is being locked other rows in the table can be modified by other users.
- Shared / Row Exclusive – more expensive than a shared lock, this is explicitly acquired.

The Monday morning problem may just be similar to the smelly gym locker, an exclusive lock that’s preventing users from running their closing jobs. Taking a moment to think about the lock modes, asking the necessary questions to see which users are actually affected by the problem, it appears that only those users running a particular closing job are having an issue. This tells us that the lock mode must be exclusive, as whilst exclusive mode allows other users to read data they cannot then modify it, which could be why the closing job won’t run.

To determine if there is any locking taking place, one can query v\$sqllock. The script in Figure 1 provides a useful output (Figure 2) that includes the name of the object being locked.

**Figure 1**

```
rem Title: t_lock.sql
rem Invoke: system account
rem usage: this can be very useful in OLTP applications
rem purpose: list all locks in the database listing all general
rem lock descriptions/types
set pages 20
column username form A10
column sid format 9990
column type format A4
column lmode format 990
column request format 990
column objname format A15 Heading "Object Name"
spool t_lock.lst
SELECT a.username, b.sid, b.type,
       DECODE(b.lmode, 0, 'None'
              , 1, 'Null'
              , 2, 'Row Share'
              , 3, 'Row Excl.'
              , 4, 'Share'
              , 5, 'S/Row Excl.'
              , 6, 'Exclusive'
              , lmode, ltrim(to_char(lmode,'990'))) lmode,
       DECODE(b.request, 0, 'None'
              , 1, 'Null'
              , 2, 'Row Share'
              , 3, 'Row Excl.'
              , 4, 'Share'
              , 5, 'S/Row Excl.'
              , 6, 'Exclusive'
              , request, ltrim(to_char(request,'990'))) request,
       ccc1.object_name objname, ccc2.object_name objname
FROM v$sqlsession a, v$sqllock b, dba_objects ccc1, dba_objects ccc2
WHERE a.sid = b.sid
AND b.id1 = ccc1.object_id (+)
AND b.id2 = ccc2.object_id (+)
AND lmode != 4
ORDER BY 6,7,5
/
spool ff
clear columns
```

Upon discovery of locks in the database, one must understand the type of lock it is, which will assist you in the investigation process to determine if and where the problem exists. This can however only be achieved if you know the relationship of the non-running closing job to the objects within your database, or at the very least the process id running the jobs. Figure 2 shows the output of the script above, which also provides the session ID that can be found in v\$session.

The basic information shown in Figure 2 may provide enough knowledge to solve the problem with the non-running jobs. It could pin-point the culprit holding the lock on the main table that other users are trying to access. Then, it's just a matter of killing the session holding the lock or tracking down the user and having them issue a commit or rollback. Then after that, you can swing by your boss' desk to make them aware that the production problem is now solved and then head to the kitchen to get that morning cup of caffeine that you so desperately need.

There are many scripts available for detecting locks; the key is to determine which script provides you quick information to help you solve the problem, and Oracle note id's 15476.1 or 1020011.6 may help you locate more information. Familiarity with the various lock types will aid in a quick detection of a problem.

One might not be able to remember the definition of the modes but just a simple correlation between the type and the possible DDL and DML may be a good start for an investigation. Although there are several types, Figure 3 lists the user type locks which are usually the top offenders that can block other users from processing. One of these lock types was in all likelihood the cause of the closing job becoming stuck.

Often users don't understand the power of a commit, or even what it means. On a given day you can always find a user that leaves their desk, takes a phone call or deals with some other distraction while they are in the middle of a transaction. What they don't realise is that a lock is held for the duration of that transaction, until a commit or rollback has been issued.

Locks can be complicated due to their many types. One easy way to get a better understanding of them is to research them by the three categories. Since the lock can affect several resources, and each has different levels of restrictiveness it is wise to approach them by category as shown in Figure 4.

Understanding the categories, lock modes and lock types is in effect a kind of "skeleton key" to the many lock features within an Oracle database. A skeleton key can open the door, but once inside there will still be research that needs to be carried out. Using the key as a starter guide, hopefully it may be possible to solve some production locking issues and therefore allow a DBA to have that Monday morning coffee.

## About the Author



**Tim Steward** is an Oracle DBA (17+ years) specialising in sizing/tuning of large databases. An architect at Compuware Corporation, the majority of his time is spent supporting Oracle ERP implementations. Tim is an active board member of SEMOP. He was educated at Eastern Michigan University completing his studies at Lawrence Tech Institute.

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Figure 2

USERNAME	SID	TYPE	LMODE	REQUEST	OBJECT NAME	OBJECT NAME
APPS	204	TM	Row Excl.	None	PER_ALL_PEOPLE_F	
APPS	20	TO	Row Excl.	None	PO_SESSION_GT	
APPS	127	TO	Row Excl.	None	PO_SESSION_GT	
APPS	224	TO	Row Excl.	None	PO_SESSION_GT	
APPS	130	TO	Row Excl.	None	PO_SESSION_GT	
	4	XR	Null	None	TAB\$	
APPS	65	TM	Row Excl.	None	WF_JAVA_DERERRED	
APPS	100	TX	Exclusive	None	CE_CASHPOOLS	
	5	TS	Row Excl.	None	C_OBJ#	
APPS	216	UL	Exclusive	None		
APPS	65	TX	Exclusive	None		

Figure 3

TM	DML Enqueue – row level
TX	Transaction Enqueue – table level
UL	User Supplied

Figure 4

Lock	Description
DML	Data protector
DDL	Schema protector
Internal / Latch	Internal database protector (structure,datafiles)

# The Tools of Fusion: Oracle JDeveloper and Oracle ADF

## View to a thrill: The face of Fusion

Welcome back to the third instalment looking at the tools and technologies we at Oracle are using to build Fusion applications. In the first two instalments I gave a broad overview of what Fusion means to Oracle before diving into how we build business services: the heart of your application. In this article it's all about the glitz and the wow factor – how we build the user interface, the technologies we use and how we harness those technologies so that our Fusion developers can deliver a cutting-edge web interface.

### Eye Candy and Finger Power

It is probably fair to say that our perception of computer applications has changed dramatically over the past ten years. For anyone exposed to computer systems at their place of work, "character mode green" and "data entry grey" were about as much as you could expect in making your application aesthetically appealing.

And while client/server applications offered a more productive user experience, including such features as type-ahead, popups and drag and drop, this was at the expense of distributing and managing those client based applications. Could you achieve the visually appealing "eye candy" while still retaining the "finger power" out of a browser-based application?

Well, as many of us are now finding in our day-to-day lives, the proliferation of home computing and online commercial applications, where opinions can be formed in the first few seconds of viewing, are making us a more discerning class of consumer. If you have been used to auto-suggest, drag and drop, instant validation and the like whilst shopping for the latest Britney Spears album, you start expecting that level of experience back at the office when finalising the company accounts, submitting your expenses or managing a million-pound marketing project.

Web2.0 and RIA (Rich Internet Applications) are two terms often associated with this highly interactive user experience – the eye candy and the finger power – that is driving change in consumers and business; these are key to the success of Fusion.

### What we wanted from our UIs

When we started looking at the user experience for Fusion applications there were a number of requirements above and beyond just a fancy layout and colour schemes; namely:

- Refresh data without full page refresh
- Immediate validation
- Drag and drop
- Popups
- Dynamic and advanced layouts

Essentially this meant we were looking for a desktop experience out of a "thin" browser application. The good news is that the technologies to achieve this are with us today. Sometimes heralded under the banner of Ajax, they include

Figure 1



JavaScript, XMLHttpRequest objects, XHTML, CSS, Flash and a healthy dose of server side programming.

But that's also the bad news. While it might not exactly be rocket science, it's at least into the realms of advance aeronautical engineering and requires a pretty hefty amount of time and brainpower to bring these technologies together and make them work. That's not a slight on the Fusion development team, but we wanted our developers solving business problems, not technology problems, and that's exactly why we have ADF Faces Rich Client (ADF Faces RC).

### The problems we have to solve

Before extolling the virtues of ADF Faces RC, it might be worth taking a step back for just a few seconds to recognise the problem being solved. In the beginning (cue biblical fanfare) the Web was a bunch of static content served up by a stateless protocol that would *GET* content from a server or *POST* content from the client: you pressed a button to initiate an action and a whole new page appears.

Well, static web pages are not the basis of enterprise level transactional web applications. So, the next evolution, servlets, took web applications out of the primordial mud and evolved to a slightly more dynamic level of being. This involved writing programs (servlets) that would create content through the use of `println` type statements to output HTML markup. But this was a very code intensive way of developing, what is essentially, the most visual part of your application.

With Java Server Pages (JSP), the web started to mature by defining dynamic content as tags that got "expanded" into content by servlets at runtime. An improvement, but the tags didn't really visually represent what would appear at runtime and you were still responsible for a heck of a lot of servlet programming.

And this brings us to today: Java Server Faces (JSF). A Java EE standard, JSF "componentises" widgets and functionality into shrink-wrapped UI components – such as buttons, checkboxes and lists – that can just be dropped onto pages and the behaviour controlled by setting properties of these components.





by Grant Ronald, Oracle

Figure 2

Priority	Title	Type	From	Sent
Request US2079	For Terry Green (\$5,536.42 USD) requires app...	Request Appro...	Terry Green	04-09-2009 9:00
Vacation request	for Samuel Nelson (7/21-7/26, 7 days) requires ap...	Vacation Appro...	Samuel Nelson	04-09-2009 12:00
Request US1007	For Mindy Crawford (663.00 USD) requires ap...	Request Appro...	Mindy Crawford	04-09-2009 13:59
Purchase Request 2009	For Joe Smith (91,022.10 INR) requir...	Request Appro...	Joe Smith	04-09-2009 14:06
Job Offer USA234	For James Miller requires response information	Offer Response	HR/Offers	04-09-2009 17:09
Purchase Order PO23967	requires receipt confirmation	PO confirmation	Buyer	04-09-2009 9:00
Expense EC33245	For Claudia Mendez (\$5,695.65 USD) requires inf...	Expense Appro...	Pat Thomas	04-09-2009 10:05
Job offer US2522	For Matt Williams was accepted	Job Offer	HR/Offers	04-09-2009 12:11

## ADF Faces RC and RIAs

So, JSF allows vendors, like Oracle, to build standards-based libraries of components of which ADF Faces RC is Oracle's implementation of the JSF standard. This arms the Fusion developer with a toolbox of Web2.0 components and features to put the wow factor into Fusion. As you would expect, there are the usual suspects: buttons, text field, and checkboxes, but ADF Faces RC goes way beyond that to include components such as date pickers, sliders and shuttle lists. It provides a library of components to manage layout such as grouping panels, tabbed panels and collapsible panels.

In addition, the data visualisation components include over 50 graph types with zoom and rollover behaviour, gauges, pivot tables, Gantt charts and geo-maps that can render data points on a geographic map, (Figure 1). Remember also how we talked about RIA being based on a whole load of Ajax technologies, well, ADF Faces RC has that stuff built right inside those components.

So, when you use an ADF Faces Table, (Figure 2) you get by default scrolling of rows, and column sorting is enabled by simply setting a property.

Figure 3



What you are NOT being exposed to is that behind the scenes when that table is rendered, it also generates out some JavaScript so that as you pull the scrollbar, it will construct all the right XML and HTTP messages and send them down the wire to the server, which in turn will pull back the next rows of data, return them to the client which then manipulates the client's internal representation of the browser content to ensure that only the table be updated, and not the whole page! Phew!

## 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. Grant joined Oracle in 1997, working in Oracle support, where he headed up the Forms/ Reports/Discoverer team responsible for the support of the local Oracle Support Centres throughout Europe, Middle East and Africa. Prior to Oracle, Grant worked in various development roles at EDS Defence. Grant has a BSc. in computing science and has been working in the IT Industry since 1989.



Sum total of code involved to the Fusion developer: zero! Sum total of HTTP requests, JavaScript, DOM manipulation exposed to the end developer: zero. With the combination of Oracle JDeveloper and ADF Faces RC the Fusion developer is abstracted away from the complexities of the technology by a toolbox of packaged-up components that have customisable appearance and behaviour.

## More than just components

But, ADF Faces RC is also much more than a collection of widgets. ADF Faces RC also provides a framework for other RIA behaviour such as drag and drop, popup dialogs, menus and client side validation, and again, much of this appears to the Fusion developer as abstracted components.

For example, you want to be able to drag the name of a product in a catalogue directory into your shopping cart? In which case dropping an AttributeDragSource component onto the product field and an AttributeDragTarget component onto the shopping cart is pretty much all you have to do. Both these components provide all the Web2.0 wizardry behind the scene to take care of the dragging and dropping for you. Similarly, if you want a button to launch a popup dialog, simply drop on a ShowPopupBehaviour component onto the button and set the property Popupid to the name of the popup you want displayed. Couldn't be simpler!

## The Face of Fusion

So where does all this componentised technology get us when building Fusion applications? Well, take a look at one of the Fusion prototypes in Figure 3.

Here you can see down the left of the page a number of collapsible accordion panels showing list and tree data, allowing the end user to maximise use of their screen real-estate. Top centre shows an action-list as a table with sortable and orderable columns. And centre bottom, the dynamic hierarchy viewer showing organisational structure and person detail that can be zoomed and repositioned with the mouse. At the top is a tabbed and contextual menu.

Of course, it's not all about the eye candy. The power of these applications lie in the business functions they provide, however, those complex business functions and process need to be clear, intuitive and productive to access. ADF Faces RC provides the functionality to give this RIA experience to both Fusion and your own custom application in a way that also provides a productive experience for the developers as well. That's the real power of ADF Faces RC.

In the next issue I'll show how Fusion developers can hook up pages and activities to define the flow of their applications.

# APEX 3.2: The Oracle Forms to APEX conversion

by Roel Hartman, Logica

Version 3.2 of Oracle Application Express (APEX) is the most recent version of this successful Web-based Rapid Application Development tool. A key new feature is the ability to convert Oracle Forms (and Reports) to APEX pages.

## Why convert to APEX?

Just to be clear I emphasise that, at this moment, Oracle has announced no plans to de-support Oracle Forms. Indeed this year Oracle will release the long-awaited version 11 of Forms. Therefore the threat of the end of support is no reason to say goodbye to Forms. But Forms is based on a somewhat outdated client-server technology from the middle of the eighties. In addition, Oracle Forms uses a Java applet instead of HTML and so is not consistent with the modern approach to Web applications. Furthermore, because Forms uses a Java applet, it is not suitable for deploying an application (or part of one), for example, for on-line shopping or order tracking to users outside a company's network. APEX on the other hand uses HTML and JavaScript, and so can run in a browser without the need for a large (initial) download and imposes a smaller burden on the client.

Conversion to APEX offers the modernisation of an application with innovative features such as Flash Charts and Interactive Reports. An additional advantage is that the knowledge and skills to develop APEX are already available in a Forms development shop: like Forms it has a declarative way of development and is SQL and PL/SQL-oriented.

And – as an additional advantage – APEX is free (or, as Oracle likes to call it, it is a *no-cost database feature*). And that allows you to save around \$ 5000 per year on maintenance fee for the Forms and Reports Server, and about \$ 1200 per year per developer on the licenses for the Internet Developer Suite.

## What does the Forms to APEX conversion offer you?

The Forms conversion provides a rapid launch of a modernisation project. Apart

from the PL/SQL in triggers and program units, APEX converts Forms components automatically to APEX components. The differences between the two tools such as the difference between PL/SQL and JavaScript, means it is almost always necessary to manually add or change code. Obviously business rules which are imple-

“...the result of a conversion project is similar to manually built APEX application and is just as easy to maintain.”

mented in the database means less PL/SQL in place in the Forms and that simplifies a conversion project considerably. This applies not only to a conversion to APEX, but also to a conversion to other web tools, such as ADE.

In order to assess the impact of a conversion project, you can use APEX to identify the PL/SQL code in the Forms.

And you can easily monitor the progress of the (manual) conversion to the APEX equivalent.

The conversion uses the same wizards as the manual build of an APEX application. Therefore the result of a conversion project is similar to manually built APEX application and is just as easy to maintain.

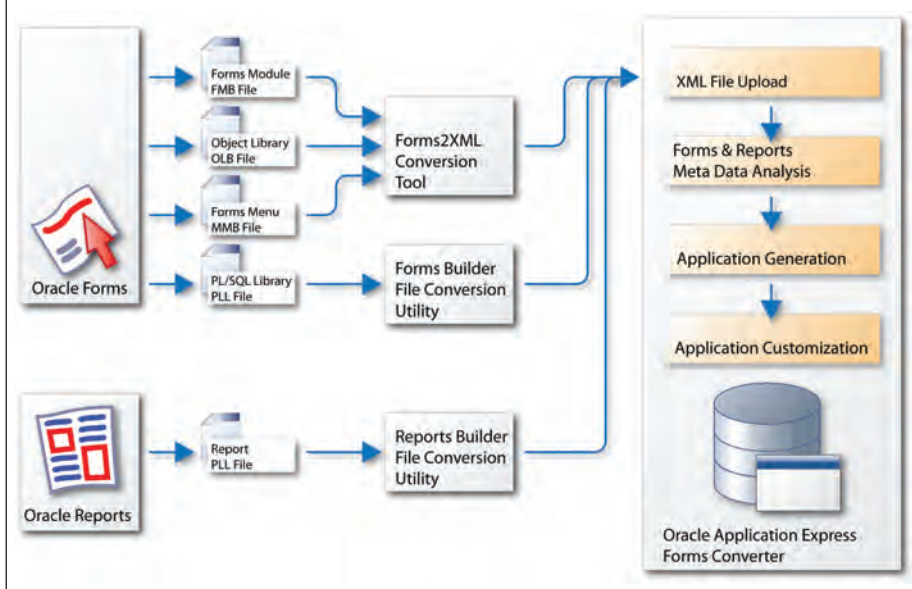
## How does the Forms to APEX conversion work?

First, you need to convert the Oracle Forms – and their menus, templates and libraries – to XML. This can be done using the Forms to XML Utility: frm2xml.bat, a DOS batch file, which is a standard part of an Oracle Developer Suite installation.

In APEX you have to create a new workspace, and link the database schema of the application to it. After logging into the new workspace in APEX, there is a link on the main page: Application Migrations. Previously, this link was only used when converting MS-Access applications, but now the conversion of Forms is added to that menu.

After clicking on that link you create a new Migration Project and the first XML file can be uploaded to the project. Subsequently, you upload all the other XML files to the

Figure 1: Flow Chart Forms to APEX conversion



<sup>1</sup> Conversion is supported from Forms version 9i upwards.

Figure 2: Conversion result

**Department**

Id: 30 Purchasing  
 Manager: 114 Raphaely  
 Location: 1700 Seattle

**Employees**

Id	First Name	Last Name	Salary	Comm Pct
114	Den	Raphaely	11000	
115	Alexander	Khoo	3100	
116	Shelli	Baida	2900	
117	Sigal	Tobias	2800	
118	Guy	Himuro	2600	

Email: DRAPHEAL  
 Phone Nr: 515.127.4561  
 Hire Date: 07-12-1994  
 Job: PUR MAN Purchasing Manager  
 Manager: 100 King

Record: 3/7

**Departments**

Cancel Delete Apply Changes < >

Id: 30 Purchasing  
 Manager: Raphaely  
 Location: Seattle  
 3 of 27

**Employees**

Delete Checked Add Row

<input type="checkbox"/>	Id	First Name	Last Name	Email	Phone Number	Hire Date	Job	Salary	Commission	Manager
<input type="checkbox"/>	114	Den	Raphaely	DRAPHEAL	515.127.4561	07-12-1994	Purchasing Manager	11000		King
<input type="checkbox"/>	115	Alexander	Khoo	AKHOO	515.127.4562	18-05-1995	Purchasing Clerk	3100		Raphaely
<input type="checkbox"/>	116	Shelli	Baida	SBIDA	515.127.4563	24-12-1997	Purchasing Clerk	2900		Raphaely
<input type="checkbox"/>	117	Sigal	Tobias	STOBIAS	515.127.4564	24-07-1997	Purchasing Clerk	2800		Raphaely
<input type="checkbox"/>	118	Guy	Himuro	GHIIMURO	515.127.4565	15-11-1998	Purchasing Clerk	2600		Raphaely
<input type="checkbox"/>	119	Karen	Colmenares	KCOLMENIA	515.127.4566	10-08-1999	Purchasing Clerk	2500		Raphaely

1 - 6

project. Unfortunately, at this moment it is not possible to upload a zip containing multiple XML files or the contents of an entire directory in a single upload.

The XML files are loaded into a number of internal APEX tables and analysed. APEX presents the result of that analysis using the standard features of the Interactive Reports. Within APEX you have insight in the definition of each Forms component, such as a block, item, trigger, record or LOV group. To support the conversion you can make an annotation for each component, containing a comment or a particular point of interest. The ability to tailor the conversion process is currently limited to: marking a component as “not applicable”, changing the query of a block and customising prompts.

Now you can generate the APEX application. The generator transforms a Forms block to one or more APEX pages. It uses several criteria such as the number of blocks in the form and the presence of relationships between the blocks, the number of records that's displayed and if insert or update is allowed, to determine whether an APEX Report, a Report and a Form or a Master Detail-page is created. This process uses the same Create Application Wizard from the previous version. At this point in the conversion process, you can add or remove pages (which you can also do after the final generation). Making some small adjustments in the layout you'll have an APEX application that shows a high degree of similarity with the original Forms application (see Figure 2 for a converted master-detail screen).

In addition to the CRUD functionality, APEX converts LOV's and creates validations for numeric, date and mandatory fields.

In the current version it is only possible to convert a whole Migration Project – a collection of Forms – to an APEX Application. This means that you need to convert all Forms of an application at once (although you can come up with a workaround involving copying pages). In terms of project management, especially when dealing with a large number of Forms, that is not the preferred method. It would be preferable to convert Forms in chunks to an APEX Application. This feature is on my wish list for APEX 4.0.

“In addition to the CRUD functionality, APEX converts LOV's and creates validations for numeric, date and mandatory fields.”



**Figure 3: Project Progress tracking**

File Name	Lines	DB Objects	Items	Triggers	Reports	Labels	Alerts	Programs	Comments	Comments	Percent Complete
f00001.frm	2	3	63	100	2	2	5	2	262	166	65.97
f00002.frm	2	3	63	95	2	2	5	6	259	160	62.92
f00003.frm	4	4	98	121	2	2	5	13	285	183	64.21
f00004.frm	2	3	116	114	2	2	5	11	286	176	59.46
f00005.frm	4	4	61	116	0	0	0	11	323	200	61.90
f00006.frm	2	3	108	109	4	4	2	5	270	166	61.48
f00007.frm	2	2	61	95	2	2	5	6	256	158	61.25

The next – and perhaps more time-consuming step, is to evaluate and rebuild the Forms functionality that has not been automatically converted. You can use the Interactive Reports to monitor the progress of your conversion project and assess what work is still required. These reports can be customised in the usual way. You can drill-down on each trigger or PL / SQL procedure and mark whether you need to convert it. The higher level shows the number of components you need to review or modify. There is a percentage that very roughly indicates the progress of the project (see Figure 3). Using the default options for adding calculations in a report you can create more accurate figures of the remaining work. It goes without saying that after a complete conversion a full regression test of the application is crucial.

### Conversion or reconstruction?

My experience is that, using the wizards in APEX, an application can be built at warp speed. The conversion process essentially just uses those same wizards for generating the pages. The conversion only permits adjusting pages at the end (whereas, the manual variant allows it during the design of the page). So why should you use this new conversion functionality?

Primarily you should use it because all the components of the Forms are visible in APEX, and so you can check the progress of each individual component. Therefore the advantage is mainly in the project management area, assuring the completeness and quality of the conversion exercise.

### The approach to a conversion project

APEX doesn't automatically convert the PL/SQL in Forms, so obviously a conversion is easier if the amount of PL/SQL involved is as minimal as possible. As part of the preparation for a conversion, I therefore recommend to move the (most critical) business rules from the Forms into the database and / or implement them as web services. This is in accordance with the Oracle Forms Oracle Modernisation Strategy. Subsequently, choose a number of representative Forms to prototype into APEX. In this phase you adapt the APEX themes, templates and stylesheets to the needs of your users. Also start building your own generic JavaScript libraries. Now is the time to choose whether external JavaScript libraries, like jQuery, you will use. Plus you should set the standards for monitoring the progress, for example, by customising the default reports. And finally, this is the ideal time to collect figures to feed into estimates for the planning of the entire project. If this is all according to plan, you can start executing the actual conversion.

### Conclusion

The ability to automatically convert Forms and Reports to APEX (albeit with some manual intervention), makes it even more attractive for organisations with a big investment in traditional Oracle tools. Using APEX opens up the possibility of saving costs on the maintenance fee of the Oracle licenses and unlike a Forms application, an APEX application is well suited to sharing information with customers, such as order entry and tracking applications. Nevertheless, having read this article you will appreciate that this kind of conversion is not a matter of simply pressing a button. You need to set up a complete project. A number of activities need manual effort. The scale of manual effort is largely dependent on the amount of business rules (PL/SQL) in the Forms and the complexity of the application. Fortunately APEX 3.2 provides a good set of functionality for managing the project and ensuring that all components are converted.

Release of version 3.2 makes the step of converting Forms to APEX is a lot smaller.

“The ability to automatically convert Forms and Reports to APEX ... makes it even more attractive for organisations with a big investment in traditional Oracle tools.”

### About the Author



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# Performance Benefits of ReUse Statement Flag in Application Engine

by David Kurtz, Go-Faster Consultancy Ltd

I have achieved some significant performance improvements in some Application Engine programs by just enabling the ReUse Statement flag on certain steps. I thought I would share a recent example of how effective this can be.

I don't think I can improve on the description of this feature in PeopleBooks<sup>1</sup>:

*"One of the key performance features of PeopleSoft Application Engine is the ability to reuse SQL statements by dedicating a persistent cursor to that statement.*

*Unless you select the ReUse property for a SQL action, %BIND fields are substituted with literal values in the SQL statement. The database has to recompile the statement every time it is executed.*

*However, selecting ReUse converts any %BIND fields into real bind variables (:1, :2, and so on), enabling PeopleSoft Application Engine to compile the statement once, dedicate a cursor, and re-execute it with new data multiple times. This reduction in compile time can result in dramatic improvements to performance.*

*In addition, some databases have SQL statement caching. Every time they receive SQL, they compare it against their cache of previously executed statements to see if they have seen it before. If so, they can reuse the old query plan. This works only if the SQL text matches exactly. This is unlikely with literals instead of bind variables."*

In fact most databases do this, and Oracle certainly does.

On Oracle, you could enable CURSOR\_SHARING. Then, Oracle effectively replaces the literals with bind variables at parse time. However, I certainly would not recommend doing this on a PeopleSoft system, it has had severe negative effects elsewhere. I have enabled Cursor Sharing at session level for specific batch programs (using a trigger), but even then it is not always beneficial.

Instead, I do recommend using the *ReUse Statement* flag wherever possible. It cannot just be turned on indiscriminately, the same section in *PeopleBooks* goes on to describe some limitations (which is probably why the default value for the flag is false).

To illustrate the kind of improvement you can obtain, here is a real-life example. This is an extract from the batch timings report at the end of the Application Engine trace file. We are interested in statements with the high compile count.

ReUse Statement is not enabled on these four steps. They account for more than 50% of the overall execution time.

Figure 1

PeopleSoft Application Engine Timings (All timings in seconds)							
	Compile	Execute	Fetch	Total			
SQL Statement	Count	Time	Count	Time	Count	Time	Time
99XxxXxx.Step02.S	<b>8453</b>	2.8	8453	<b>685.6</b>	0	0.0	688.4
99XxxXxx.Step03.S	<b>8453</b>	5.0	8453	<b>2718.8</b>	0	0.0	2723.8
99XxxXxx.Step05.S	<b>8453</b>	0.9	8453	<b>888.4</b>	0	0.0	889.3
99XxxXxx.Step06.S	<b>8453</b>	0.4	8453	<b>17.4</b>	0	0.0	17.8
-----							
Total run time	: <b>8416.4</b>						
Total time in application SQL	: 8195.0		Percent time in application SQL : 97.4%				
Total time in PeopleCode	: 192.7		Percent time in PeopleCode : 2.3%				
Total time in cache	: 8.7		Number of calls to cache				<b>: 8542</b>
-----							

Now, I have enabled ReUse Statement on these steps. I have not changed anything else.

Figure 2

	Compile	Execute	Fetch	Total			
SQL Statement	Count	Time	Count	Time	Count	Time	Time
99XxxXxx.Step02.S	<b>1</b>	0.0	8453	<b>342.3</b>	0	0.0	342.3
99XxxXxx.Step03.S	<b>1</b>	0.0	8453	<b>83.3</b>	0	0.0	83.3
99XxxXxx.Step05.S	<b>1</b>	0.0	8453	<b>8.7</b>	0	0.0	8.7
99XxxXxx.Step06.S	<b>1</b>	0.0	8453	<b>7.6</b>	0	0.0	7.6
-----							
Total run time	: <b>5534.1</b>						
Total time in application SQL	: 5341.7		Percent time in application SQL		: 96.5%		
Total time in PeopleCode	: 190.8		Percent time in PeopleCode		: 3.4%		
Total time in cache	: 1.1		Number of calls to cache		: <b>90</b>		
-----							

<sup>1</sup> [http://download.oracle.com/docs/cd/E13292\\_01/pt849pbr0/eng/psbooks/tape/chapter.htm?File=tape/htm/tape05.htm%23d0e4240](http://download.oracle.com/docs/cd/E13292_01/pt849pbr0/eng/psbooks/tape/chapter.htm?File=tape/htm/tape05.htm%23d0e4240)

Notice that:

- The number of compilations for each step has gone down to 1, though the number of executions remains the same
- The execution time for the first three statements has fallen by nearly 90%.
- The improvement in the 4th statement is quite modest because it did not contain any bind variables, but clearly some of the time reported by Application Engine as SQL execution time is associated with the preparation of a new SQL statement.

To emphasise the point, let's look at the effect on the database. The following are extracts from the TKPROF output for Oracle SQL trace files for these processes.

First the TKPROF without ReUse Statement, see Figure 3.

And now with ReUse Statement set on only those four steps, see Figure 4.

- Nearly all the saving is parse time of non-recursive statement, the rest is the reduction of recursive SQL because there is less parsing.

- There is less parsing, because there are fewer different SQL statements submitted by Application Engine. The number of user statements has fallen from 160446 to 67425. There has also been a huge reduction in recursive SQL.
- The number of misses on the library cache has fallen from 25498 to just 73.
- There has been a reduction in SQL\*Net message from client (database idle time) from 296 seconds to 253 because the Application Engine program spends less time compiling SQL statements.

**Figure 3**

OVERALL TOTALS FOR ALL NON-RECURSIVE STATEMENTS

call	count	cpu	elapsed	disk	query	current	rows
-----	-----	-----	-----	-----	-----	-----	-----
<b>Parse</b>	<b>101063</b>	<b>2600.60</b>	<b>2602.83</b>	<b>6197</b>	<b>661559</b>	<b>4</b>	<b>0</b>
Execute	101232	1817.96	3787.17	1572333	73729207	10617830	4770112
Fetch	96186	385.41	1101.47	374425	25986600	0	96285
-----	-----	-----	-----	-----	-----	-----	-----
total	298481	4803.97	7491.48	1952955	100377366	10617834	4866397

**Misses in library cache during parse: 25498**

Misses in library cache during execute: 90

Elapsed times include waiting on following events:

Event waited on	Times Waited	Max. Wait	Total Waited
-----	-----	-----	-----
db file sequential read	1199472	0.36	2601.83
<b>SQL*Net message from client</b>	<b>130345</b>	<b>1.57</b>	<b>296.50</b>
db file scattered read	8816	0.39	171.47

OVERALL TOTALS FOR ALL RECURSIVE STATEMENTS

call	count	cpu	elapsed	disk	query	current	rows
-----	-----	-----	-----	-----	-----	-----	-----
<b>Parse</b>	<b>100002</b>	13.51	13.57	17	820	94	0
<b>Execute</b>	<b>131495</b>	30.00	31.31	7025	29277	21164	74315
<b>Fetch</b>	<b>141837</b>	218.77	295.49	159969	3039304	12	519406
-----	-----	-----	-----	-----	-----	-----	-----
total	373334	262.28	340.38	167011	3069401	21270	593721

**160446 user SQL statements in session.**

70478 internal SQL statements in session.

230924 SQL statements in session.



## Conclusion

Enabling ReUse Statement can have a very significant effect on the performance of Application Engine batches. It is most effective when SQL statements with %BIND() variables are executed within loops. Otherwise, for each execution of the loop, Application Engine must recompile the SQL statement with different bind variable values, which the database will then treat as a new statement that must be hard parsed.

SQL parsing is CPU intensive. Reducing excessive parse also reduces CPU consumption on the database server. It can also reduce physical I/O to the database

catalogue. On PeopleSoft 8.x applications that use Unicode, the overhead of parsing is magnified by the use of length checking constraints on all character columns. This is no longer an issue in PeopleSoft version 9 applications which use character semantics.

If you use Oracle's Automatic Memory Management, excessive parsing can cause the database to allocate more memory to the Shared Pool at the expense of the Block Buffer Cache. This in turn can increase physical I/O and can degrade query performance.

Bind Variables are a good thing. You should use them. Therefore, ReUse Statement is also a good thing. You should use that too!

**Figure 4**

OVERALL TOTALS FOR ALL NON-RECURSIVE STATEMENTS

call	count	cpu	elapsed	disk	query	current	rows
<b>Parse</b>	<b>67238</b>	<b>10.24</b>	<b>10.75</b>	47	4415	9	0
Execute	101160	1650.25	4040.88	1766325	129765633	11160830	4781797
Fetch	96123	385.50	1024.50	372737	26097251	0	103844
total	264521	2045.99	5076.14	2139109	155867299	11160839	4885641

### Misses in library cache during parse: 73

Misses in library cache during execute: 21

Elapsed times include waiting on following events:

Event waited on	Times Waited	Max. Wait	Total Waited
db file sequential read	1506834	0.61	2839.19
<b>SQL*Net message from client</b>	<b>130312</b>	<b>1.53</b>	<b>258.81</b>
db file scattered read	8782	0.37	147.01

OVERALL TOTALS FOR ALL RECURSIVE STATEMENTS

call	count	cpu	elapsed	disk	query	current	rows
Parse	1331	0.46	0.46	0	173	16	0
Execute	4044	2.72	5.82	12923	33374	24353	113323
Fetch	5697	8.38	13.43	15550	55431	12	13449
total	11072	11.56	19.72	28473	88978	24381	126772

### 67425 user SQL statements in session.

3154 internal SQL statements in session.

70579 SQL statements in session.

## About the Author



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is a performance specialist working with Oracle RDBMS and Enterprise PeopleSoft systems. He is a regular presenter at Oracle conferences, and is the author of 'PeopleSoft for the Oracle DBA', published by Apress ([www.psftdba.com](http://www.psftdba.com)), and is also an Oracle ACE.

# Using Apex in a multi-developer environment

by Andrew Woodward, Scottish Water

This article is an account of some of the lessons I have learned using Oracle's Application Express development tool while working for Scottish Water. Scottish Water (SW) decided several years ago that Application Express (Apex) would provide a good fit for their needs, using it for a combination of quick-win 'tactical' applications, and more closely-designed and controlled 'corporate' applications.

By the time I began working there in January 2008, the development process was already well established, so this article doesn't attempt to claim credit for any of the setup there. Rather, it tries to give an account of one way of managing a suite of Apex applications in a robust and repeatable development environment.

Setting up a development framework for Application Express, or indeed any development tool, requires a good deal of initial work to create components and structures that will be used in subsequent applications. This article discusses some of this background work, and how to implement an environment where it is possible to use Apex to quickly create consistent applications.

## Workspace/Schema organization

At Scottish Water, there are three main workspace environments – Development, Test and Production – and each exists in its own separate database. A fourth environment, Pre-Production, was recently created to mirror exactly the setup on Production for testing purposes.

- The Development workspace is exactly that – developers have free access to change applications, and have full access to the underlying database schemas. Stored procedures, packages and table descriptions can be changed as required.

- The Test workspace is used to provide a stable environment for User Acceptance Testing of new applications and changes to existing ones. The contents of the Test workspace is somewhat more controlled than Development – promotions to this environment are often carried out in a formal way, as a dry-run for promotions to the Production environment, though changes to existing applications are typically promoted here without formal documentation.
- The Production workspace is the live environment. Applications cannot be changed in Production without getting sign-off from Business users, and going through a fairly rigorous change process. Developers generally don't have access to the underlying database schemas, so any changes to tables, packages etc require intervention from a DBA, and the completion of appropriate paperwork.

If a workspace contains more than one application of any size, it makes good sense to create a separate schema per application. This makes it much easier to see which tables belong to a particular application, and avoids a whole series of tables just being jumbled together in a single schema, with no obvious way of knowing which table belongs to which application, (see Diagram 1).

Apart from the application schemas, we have found it very useful to have a couple of other schemas, used to provide a framework for the applications (though these could quite happily be combined into one):

- A "security" schema, containing information about which applications are available, roles within those applications, and which users can connect to which applications.
- A "generic" schema, used for any code which may be reusable across applications. In any business area, there are certain functions which are going to crop up time and time again, and it makes sense to put these into a common area for all applications to use.

Having these two schemas in place is an essential part of the development framework – they ensure that common functions don't have to be written and re-written for every application that gets created. A standard script is run when each new schema gets created, which makes grants on these common schemas to the new schema owner.

Another common schema allows the Apex applications to interact with corporate data – an "integration" schema contains tables of information piped down from corporate applications, with data about, for example, employees or corporate assets. These tables are fed by a series of procedures created through the Informatica data integration tool. The data in the "integration" schema may get refreshed daily, or more frequently, if needed. A further layer, the "performance" schema provides effectively a datawarehouse-like view of the data in the integration schema – tables are created in this schema where the performance of queries against the integration layer would not be acceptable in the end application, (see Diagram 2).

At SW, each new table holds a series of 'audit' columns – created on/created by/last updated on/last updated by. These are populated by on-insert/on-update triggers which write audit information every time data is created or updated. A standard script creates the triggers against the new user's tables, and once the triggers are set up, the audit info gets captured with no extra work from the developer.

Diagram 1: Workspace organisation

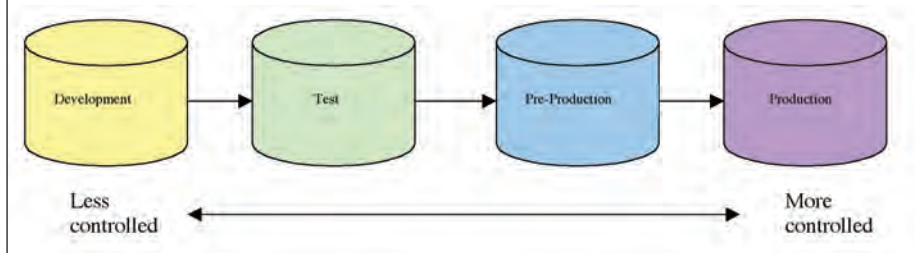
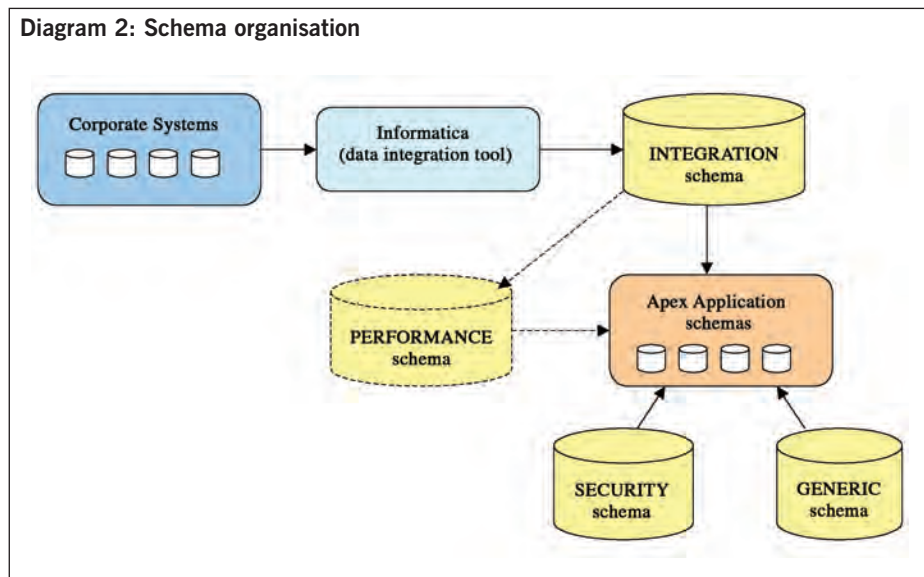


Diagram 2: Schema organisation



## Templates

Defining a good-looking template for use across a suite of applications can be quite a daunting task – fortunately this was tackled early on in the process at Scottish Water. The strategy that was adopted was to start with the pre-supplied theme closest to the desired look-and-feel. A copy of the theme and associated Cascading Style Sheet was made, and given a name to distinguish it from the Oracle themes. Then, any areas where it was necessary to make changes could be tackled without having to rewrite the whole theme.

Code to include a banner logo was included in the page template, along with

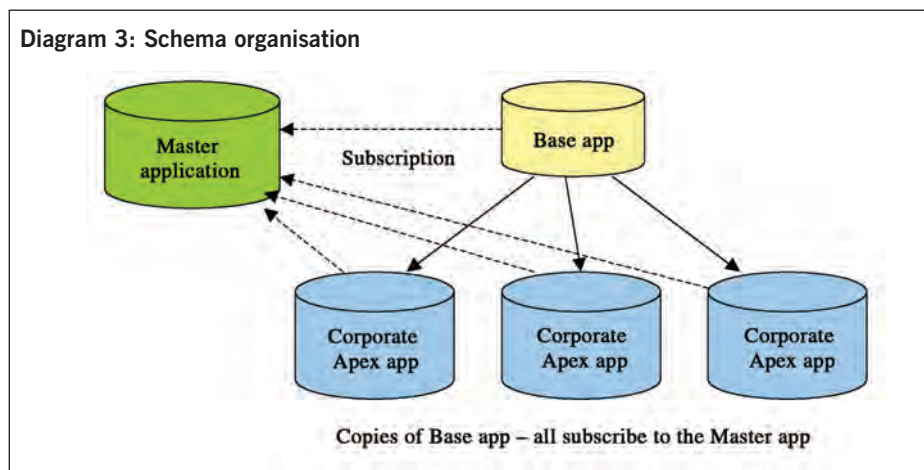
standard information about the application, such as the name and version number. Other standard fields, such as the current username and date were added to footer fields – these are read in from items held on page zero, which get populated by an ‘initialisation’ process when the application starts. Links to a number of developer-defined Javascript libraries are also included in the headers of page templates, so any custom Javascript will always be available in all applications.

The background image for the page is read from an ‘environment’ table in the ‘generic’ schema into another item on page zero, and this is picked up in the page template (using the notation

‘&PO\_BACKGROUND\_IMAGE.’, which splices the value held in the item into the HTML of the template). This means that it is possible to change the background image by changing a value in a table, without touching the page templates, so a different background appears according to whether the user is logged onto the development or test workspaces (there is no background image set in the production workspace). It’s very useful to know which workspace you’re logged on to, particularly during the system test process, when you may be moving frequently between Development and Test.

As regards distributing the template across a suite of applications, this is where the ‘subscription’ model comes in useful. It is possible to define that a template in one application should ‘subscribe’ to the template in another application – any changes to the ‘master’ template can be readily pushed out to any subscribing applications at the press of a button. At SW, this is handled by having a ‘master’ application, which contains the master copy of the application template, and also a ‘base’ application, containing a copy of the template which subscribes to that in the ‘master’ application. The base application also contains all the common processes, such as the initialisation process, and the various page zero items, which you want to appear in all your applications, (see Diagram 3).

Diagram 3: Schema organisation





“Each application you create is likely to have a different set of users, with varying levels of access for different users, so it is important not to waste time reinventing the wheel for every application.”

The subscription model means that, even if the template isn't fully set up right from the start, you can get productive with the template as it stands, and push out any changes to it as they become ready. Also, any future changes to the corporate look-and-feel can be made in one place and distributed to all subscribing applications quite easily.

## Application access

Assuming you're planning to write more than one application, it is worth taking the time to design a proper access control system from the start. Each application you create is likely to have a different set of users, with varying levels of access for different users, so it is important not to waste time reinventing the wheel for every application. This is where the 'security' schema comes in – tables in this schema can hold data about which applications exist, which roles exist in each application, which users have access to each application, and what their role is in that application.

At Scottish Water the whole thing is managed through a 'security application' – all users are granted access to the security application, one of whose functions is to provide a menu of the applications they have access to, and from where the applications are launched. The security application is accessed via a link on the corporate Intranet. There is no need to log on again, as authentication is performed using Single Sign On. Similarly, users don't need to log on as they move in and out of the different Apex applications accessed via the security application.

The other function of the security application is to provide the administration tool for access to the whole suite of Apex applications, including the security application itself. The administration functions are accessed via a tab which is only displayed to users who have been granted the 'Administrator' role in the security application.

Once a user has opened up an application, their role in the application is held in a hidden item on page zero, and can be referred to throughout the application in any situations where the behaviour of the application depends on the role granted to the user.

Limited use is made of authorisation schemes at SW – there is an 'authorised user' scheme which fires on every page view to ensure that the user does in fact have access to the current application. This is to prevent the user arbitrarily altering the URL in the browser to point to an application that they have not been granted a role in.

One useful feature of the way roles are managed concerns 'special access' roles. These are intended to allow the user to be able to assume any role in the application that they wish. This is mainly for developers, so they can connect with a particular role, and check that the functions that are available to them in the application are those that are intended for their role. This is managed by an 'onLoad' Javascript function on the homepage which checks the value of the user's role name, as held in the page zero item mentioned earlier. If this item holds one of the 'special access' role names, the user is directed away from the homepage to a page where they can select the role they want to assume. Once this has been done on starting the application, a flag is set so that the redirect doesn't occur each time they return to the homepage. A link (visible only to users with special access roles), allows the user to return to the role-setting page any time they like. This technique greatly speeds up the testing process – without it, the developer would have to revisit the security application every time they wanted to connect to their application with a different role.

## Fine-grained access

Once the user has connected to an application, we may want their privileges within the application to be different according to the role they have connected with. Typically, there may be a 'read only' role, which can view but can't change data, or there may be a 'superuser' role, for users who can change lookup data, for example. Then there may be any number of roles in between of course.

Access to pages, and functions within the pages, can be controlled by showing and hiding various components – eg a 'Setup' tab may only be visible to an admin user, and hidden from everyone else. One option would be to write a condition against the component which says 'role = 'admin'', or 'role <> 'readonly''. This works fine until that condition changes, or a new role is introduced.

A more robust approach involves taking the administration of these conditions out of the application – Scottish Water uses a feature known as the 'role matrix'. This consists of data held in a series of tables. One table holds 'tags' – these are the functions within the application that you want to make conditional, depending on the user's role, eg 'CREATE', 'DELETE', 'RESTORE', 'SHOW\_ADMIN\_TAB' etc. Then, another table holds a series of role matrix records detailing: application number, page where the record applies (or page zero for all pages), tag name, role name, and whether the function is allowed for the role or not.

A packaged function has been created which queries the role matrix tables, and returns whether the user is permitted the function (ie returning TRUE) or not (FALSE). Then, the item can be made conditional, where the condition is a call to a 'PL/SQL expression'. The condition code against the item is then a call to the function we've just created, see Figure 1.

Figure 1

```
Util_Pkg.Check_Role_Matrix(app_no => :APP_ID
,tag_name => 'SHOW_ADMIN_TAB'
,page_no => 100
,role_name => :PO_USER_ROLE
,default_allow => FALSE);
```

The last parameter 'default allow' being set to FALSE says that the 'Show Admin Tab' function should be denied to any user roles for whom there is no record in the role matrix saying that they are allowed it.

This could work the other way round too – for example, for a 'Save Changes' button, which should be visible to all roles except the 'readonly' role. The condition on the button would therefore have 'default\_allow => TRUE', meaning 'everyone can see it', but by creating a role matrix record to say that readonly can't save changes, the button is hidden from only that role. This parameter minimizes the number of records the developer needs to create in the role matrix – only where there is an exception to the norm does a record have to be created.

Administering the role matrix can be performed through the admin section of the security application, although since it affects the behaviour of the detail of an application, rather than just who can access it, it's probably better to have a separate 'admin application', just for the use of developers, and this is how it is done at Scottish Water. When the application is moved to Production, the role matrix rows for the application are just exported from the tables in Development and run as a script in Production.

## Reusable components

One of Apex's great strengths is the way that components can be reused from application to application. Features such as the 'generic' schema, the security application and the 'role matrix' were all created with the intention of avoiding having to re-invent the wheel for each new application. If possible, it is worth putting some time and effort into getting this scaffolding in place before starting to build applications, though it may be necessary to splice some of this in later on.

Some other examples of where reusable components have been created:

- The 'generic' schema is used for any packaged code that may be applicable to more than one application.
- A 'list of values' application was created for any popup LOVs accessing corporate data (in the 'integration' schema) which

might be applicable across a number of applications – for example, selecting an employee name from a list of employees.

- Javascript libraries and Cascading Style Sheets (CSS) are loaded into the workspace and are linked into the standard page templates, so that any Javascript functions created centrally will be available to all applications in the workspace.
- Images are loaded into the workspace (developers don't have access to the Web server to put the images on the filesystem, unfortunately), so standard icons/logos are available to all applications.
- Wherever possible, hard-coding is avoided in packaged and application code. Each application has a REFERENCE\_TYPE table where the various lookup types are held, and a REFERENCE\_ITEM table, to hold the available values for each lookup. A standard function in the 'generic' schema gets a lookup value, avoiding having to write the SELECT statement out in full every time.
- Standard error-handling procedures write messages off to tables in the 'generic' schema.
- A standard function logs whenever a user starts an application – this provides a useful record of how much use an application is getting.

## "Soft" delete and restore

Apex provides a ready mechanism for inserting, updating and deleting records. The problem arises when deleting that if there are child records, you either have to prevent the delete, or delete the child as well. Neither of these scenarios is particularly satisfactory, so instead SW employs a system of "soft" deleting.

This means that if a parent record is deleted, it isn't physically deleted in the database, rather, it gets marked with a "valid to" date.

This works well, for example, for lookup values, where you may no longer want a particular lookup value to be available to the user, but you want existing records which use the lookup to still be decoded correctly.

Using a "soft delete" means that you have the option to reinstate the record, by performing a "soft restore" – i.e. removing the 'valid to' date. Typically, only the most privileged user roles will be able to see records which have been deleted, or be able to restore these deleted records.

The actual mechanism for soft delete and restore involves the user clicking on a 'Delete' button as normal – this displays a Javascript alert, asking whether the user was sure they wanted to delete/restore the record. On clicking 'Ok', the 'valid to' date is filled in by the Javascript function and the page is submitted, using the standard DML processing to save the change.

When writing queries to show list of available lookup values, for example, it is important to remember to include a clause to exclude any records which have been soft deleted in this way.

## Deployment to environments

As mentioned earlier, the promotion of an application to the Production workspace requires the use of a 'runbook' detailing all the steps to be taken, scripts to be run etc. This is typically created also for the initial promotion of an application from Development to Test, and provides a good check that the promotion plan will be a sound one when it is used for the live environment.

"One of Apex's great strengths is the way that components can be reused from application to application."

“For a large development team, it might be worth only one or two developers having access to Production, rather than giving access to everyone...”

While all the schema creation and running of DDL is the province of the DBA, developers do have access to the Production workspace, including the administration screens for the workspace. Personally, I feel it is better that the person who does the installation of images, javascript, CSS and applications to the Production workspace is someone who's very familiar with Apex, rather than a DBA who isn't using it day-to-day. For a large development team though, it might be worth only one or two developers having access to Production, rather than giving access to everyone, though this hasn't caused any problems at SW so far.

## Version control

Versioning of applications is performed using PVCS software – the whole application is exported from the workspace and the resulting text file is stored as the current version of the application. Packages are versioned individually – since each script ‘creates or replaces’ the package as it was at that point in time, it's all quite straightforward.

Tables and other objects such as sequences are versioned by storing the script that originally created them, along with any subsequent scripts which may have altered them. This stores a record of how the table has changed over time, but provides no mechanism for regressing a table back to a particular version.

There is no attempt to store ‘configuration groups’ of objects, showing that, for instance, version 1.2 of table A goes with version 2.3 of package B, which all works with version 3.4 of the application. One versioning strategy could have been to take a cut of all user objects, along with the application at the time of any change, and version these scripts away together. In theory, this makes it possible to reproduce the setup of the application at any point in time, but in practice the setup of an application typically includes the availability of various data records as well, so just having the description of the user objects wouldn't tell the whole story. Having the capability to regress an application to an arbitrary point in time is not a requirement that has ever really been needed in my experience, either at SW or

anywhere else, so this fairly straightforward versioning strategy is quite adequate for the job.

## Other features

Apex provides a number of features which aren't generally used by SW, but which could ease the development process in certain situations:

- Page locks – these have been occasionally used, when it has been useful to show that work has started on a particular page. A comment can be put against the lock to explain what is being done. A potentially very useful feature to stop one developer overwriting the work of another, although the normal list of pages does show when the last update was performed and who by, so we have found that it's usually clear when a page has been recently worked on.
- Page groups – used to combine pages into logical groups. This feature would probably be most useful in applications with very large numbers of pages, to make it easier to quickly find the page that you're looking for. At SW, most applications have about 100 pages or less, so this hasn't been a problem up to now.
- User interface defaults – Oracle Designer used to have a very useful feature with which you could define at the very beginning of the design process that a particular field in a table should be displayed as a text item, or a checkbox, or a dropdown list. Apex has a similar feature, with which you can specify the display type, size, alignment, label etc for any occurrences of a particular database column in your applications. For data that is likely to appear in more than one place in your application, setting up the user interface defaults would be a great way of ensuring that you get consistency in the way a particular field gets displayed to the user. Consider especially things like how you display a yes/no flag – should it be a checkbox, a Y/N list, a Yes/No list, a radio group, or some other method? Establishing this sort of consistency early on is a good way to make your users feel more comfortable using the finished product.

## Conclusion

Generally, I think it's fair to say that Scottish Water have found the experience of adopting and using Apex for important, front-line applications a positive one. The technology is particularly accessible to developers with PL/SQL or Forms backgrounds, and there is no reason why it can't be used as a serious development tool, with teams of developers working together in a productive environment.

## About the Author



**Andrew Woodward** is a contractor specialising in Oracle's Application Express development tool. He first started getting interested in, and using Apex in 2006 while

working for Yorkshire Building Society in Bradford. Currently he is working for Scottish Water in Glasgow, where he has been since the start of 2008. Before YBS, he trained with Sema Group and CSC after having a career change away from being a chef in 1999.

Away from work Andrew enjoys cooking, drinking wine and playing golf.

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# Load Balancing and Failover in RAC

## An Introduction to Services in RAC: Part 2

by Bob Mycroft, Fortissimo Solutions

This article follows on from the previous article covering the use of Services in RAC. The load balancing and failover features of RAC are both such an important part of RAC and are so tied in with Services that it wouldn't be right to leave them out; they deserve an article in their own right – hence this second article!

### Client Side Connection Balancing Before 10.2

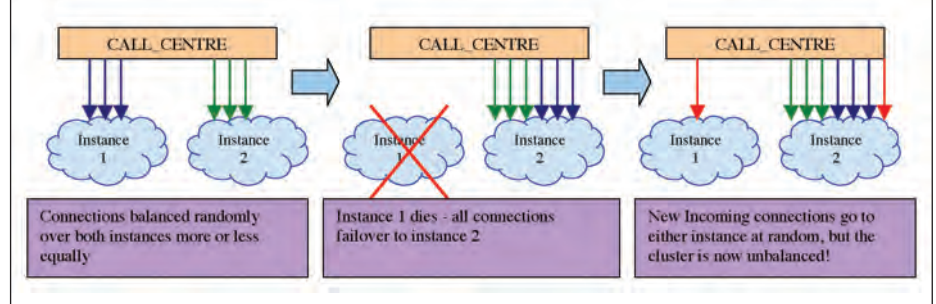
In versions earlier than 10.2, RAC performs load balancing of new connections from clients in a pretty basic manner. In essence the `tnsnames.ora` connect string contains a list of the addresses of all of the listeners managed by the cluster. There is an additional line of `LOAD_BALANCE=YES/ON` that should be set. By default this value is set to `ON` so if it is absent then you will still get load balancing, just as long as you specify more than one address in the address list. On creating a new connection the client will pick one of the addresses at random and attempt to connect to that address. If the connect fails for whatever reason – say the listener is down – then the connect will seamlessly try another connection in the list until either one succeeds or all of the addresses are attempted. When `LOAD_BALANCE` is set to `NO` or `OFF` then the addresses are attempted sequentially until one succeeds.

The following `tnsnames` entry shows an example of what this looks like, see Figure 1.

Figure 1

```
RACDB.world =
(DESCRIPTION =
  (ADDRESS_LIST =
    (LOAD_BALANCE=YES)
    (FAILOVER=ON)
    (ADDRESS = (PROTOCOL = TCP)(HOST = RACNODE_A-VIP)(PORT = 1521))
    (ADDRESS = (PROTOCOL = TCP)(HOST = RACNODE_B-VIP)(PORT = 1521))
  )
  (CONNECT_DATA =
    (SERVICE_NAME = racdb)
    (FAILOVER_MODE = (TYPE = SELECT)(METHOD = BASIC)(RETRIES=5)(DELAY=2))
  )
)
```

Figure 2



This is all pretty simple but it does have its limitations; this method of connection balancing has no concept of how busy the individual nodes are or how many sessions are already connected to a particular instance. You can easily end up with a skewed number of connections; For example, imagine a situation where one instance of a 2 node cluster is stopped and started for maintenance operations; All previously connected sessions will potentially failover over to the other instance. Any new sessions will connect randomly across both instances resulting in a skewed loading of the cluster, see Figure 2.

The random algorithm that selects the address to try is based upon wallclock-time and the period over which it is updated is relatively long; meaning that a large number of connects attempted in a very short duration may all end up directed to the same “random” address! If your application creates all of its initial database sessions on start-up you may find that all of the sessions end up on one node and not spread across the other nodes (See `PREFER_LEAST_LOADED_NODE` later).

It is probably also worth explaining why the listeners in RAC use a VIP (Virtual IP). You can see from the example `tnsnames` entry that the two addresses are on nodes called “`RACNODE_A-VIP`” and “`RACNODE_B-VIP`” respectively. In a RAC cluster each node of the cluster has its own Virtual IP address which is managed by the Oracle Clusterware. The listeners in the cluster listen on this virtual IP address and not on the ‘real’ public IP address of the server. If a node crashes or is brought down, the Virtual IP address fails over to another member of the cluster. This is not done so that new session connects can successfully continue to use the failed-over VIP; it is to get around a problem with TCP timeouts. By default these can be rather long – up to 10 minutes in some cases. Having the VIP failover to a healthy node means that new connections to a dead instance are captured by Clusterware and an error is returned immediately to the client – which in turn allows the client to seamlessly attempt to reconnect to another address from the address list.

## Server Side Load Balancing in 10.1

In RAC, connections can be better balanced on the server side. Part of a RAC configuration is that every instance in the cluster registers with every listener through the use of the `LOCAL_LISTENER` and `REMOTE_LISTENER` database parameters (which is why setting these correctly in RAC is so important). The listeners manage some internal metrics about how busy the nodes are and this information is updated regularly by the PMON process. The listeners can use this load-metric to redirect new connections to the least loaded node, and if Shared Server is being used then to the least loaded dispatcher on the least loaded node. The metric would appear to be based upon the CPU run queue length of the server and the number of connections. The update frequency is dependent largely on the instance workload. The busier the node the most often it will update the listener (range varies between once per minute and once per 10 minutes).

You will see that even if you switch off client connection load balancing in the `tnsnames.ora` (`LOAD_BALANCE=OFF`) and have only a single address-line in the `tnsnames.ora` entry pointing at only a single instance, new connections will still end up distributed across all the nodes of the cluster that support the relevant service, due to this server side load balancing!

To confirm that the instances are registered with the listeners you can `lsnrctl` on the server as below. You should see information on **all** of the nodes in the cluster, see Figure 2.

**Figure 2**

```
lsnrctl stat LISTENER_RACNODE_A
.....
"Service "call_centre" has 2 instance(s).
  Instance "racdb1", status READY, has 1 handler(s) for this service...
  Instance "racdb2", status READY, has 1 handler(s) for this service..."
```

You can see the PMON process updating the listeners with load and status information in the relevant listener logs; again you can see information coming from several instances, see Figure 3.

**Figure 3**

```
...
17-OCT-2008 14:35:19 * service_died * racdb1 * 12537
17-OCT-2008 14:39:10 * service_register * racdb1 * 0
.....
17-OCT-2008 14:53:55 * service_update * racdb1 * 0
17-OCT-2008 14:54:05 * service_update * racdb2 * 0
```

The shortest interval between updates from PMON is 1 minute – rather a long time really. This can mean that if there is a logon-storm with many new connects in a short period, then these new connects may all end up on the same single instance simply because PMON hasn't told the listeners about the new connections and workload yet! If this is a problem for you in RAC 9i or 10.1 then you may need to set the listener parameter `PREFER_LEAST_LOADED_NODE=NO` in your `listener.ora` which forces new connections to go evenly to the instances – in effect balancing by the number of sessions NOT the node load. This is parameter set to YES by default. Don't set this in 10.2 and later, use `CLB_GOAL` in the services – see later.

## The Server Load Balance Advisory in 10.2 onwards

From 10.2 onwards the server-side load balancing was improved by the addition of the Load Balancing Advisory (LBA). The LBA uses a new local metric called "lbscore" to monitor the node loads. The listeners maintain this metric in a similar way to in previous releases and it is still PMON that updates the information. What is different in 10.2 onwards is that you can give the LBA additional information about the connections to a service – whether sessions will be long or short, and whether you want the performance optimised for best response time or best throughput. This is done using the `DBMS_SERVICE.MODIFY_SERVICE` procedure against an already existing service.

The LBA attempts to balance both new incoming connections and its workload against a named relevant service using this given information plus its knowledge of the loads from the `lbscore` metric.

Lbscore is made up of two parts called goodness and delta. Goodness is a measure of how attractive an instance is with respect to processing the workload that is sent to the service. The lower the number, the more attractive is the service for taking on the new workload. Delta is the predicted increase in the goodness value with each new session that connects to the instance. You can see the values for these two components by querying the `V$SERVICEMETRIC` view and also by turning tracing on in the listener (set `TRACE_LEVEL_LISTENER = 16` in the `listener.ora` )

Ok, so let's take a look at how to configure the relevant goals using `DBMS_SERVICE`.

There are two areas that can be balanced using the LBA and the `DBMS_SERVICE` package; namely the client connection load balancing and server workload balancing and as a result there are two parameters that must be set in `DBMS_SERVICE` – `GOAL` and `CLB_GOAL`.

The `GOAL` parameter is used to define how the workload is balanced. A value of `GOAL_NONE` (a packaged constant in `DBMS_SERVICE`) disables the LBA. `GOAL_SERVICE_TIME` defines that the load balancing advice is based upon minimising the elapsed time for a call and is most appropriate when the workload of each call is going to vary. The last constant – `GOAL_THROUGHPUT` – attempts to load balance with the aim of maximising the throughput of a service and is best used when the workload is going to be at a steady and constant rate – for example a billing system producing a stream of similar reports.

The second parameter that can be set specifies how connections will be balanced within instances associated with the service. It can have values of `GLB_GOAL_LONG` or `CLB_GOAL_SHORT` depending on whether you expect the sessions in the service to be long-connections that you might get with SQL\*Plus or Oracle Forms, or a short connections that you might get where an app logs in, performs work and logs off again. Broadly the former tells Oracle to balance the connections by connections-per-instance. The latter uses the load balance advisory as long as it is enabled.

Let's do an example to demonstrate setting this up; in the following I want connections to the call\_centre service to use the LBA and to balance for best response time. To do this I will use the MODIFY\_SERVICE procedure in the DBMS\_SERVICE package as in Figure 4.

**Figure 4**

```
exec DBMS_SERVICE.MODIFY_SERVICE (-
SERVICE_NAME => 'call_centre',-
GOAL          => dbms_service.goal_service_time,-
CLB_GOAL      => dbms_service.clb_goal_short );
```

PL/SQL procedure successfully completed.

## Transparent Application Failover (TAF) and Services

Transparent Application Failover (TAF) is the part of RAC that allows applications to reconnect after their session has died. Through successive versions this feature has become more sophisticated and there are a number of ways in which it may be configured. Before we get into that we should look at what is possible and what the restrictions are.

In general, TAF allows a failed session to reconnect to another instance supported by the same service as long as there are no in-flight transactions.

The only workload that is automatically resumeable is the SELECT statement. If your session dies half way through a select statement then it is possible for the session to reconnect to another instance in the cluster, work out where the select statement had reached in returning its dataset, and then continue. If you were mid transaction (i.e. had uncommitted inserts/updates/deletes outstanding) then you will receive the following error:

"ORA-25402: transaction must roll back"

You will receive this error regardless of the operation until you perform a rollback; however the session does still failover to the other instance!

If the session is running a plsql package at the point of failover then you *may* see the "ORA-25408: can not safely replay call" error message (if the client is < 10.1). Note again that the session will still have failed over to other node. When you write your application it should be able to cope and handle these two error messages.

## Restrictions of TAF

TAF works by default for any OCI or jdbc:OCI style connection. Jdbc:thin connections are not supported. Also note that TAF is not supported by RMAN so you will still need a dedicated connect

string and a service that doesn't allow failover, just for RMAN (See note 200543.1)

Even once the session has failed over there are a few things to remember as TAF is not perfect.

Firstly, any PLSQL package state is lost – if your application stores initialization data etc in packages then that is gone and will need resetting.

Another thing to be wary of is that Global Temporary Tables declared as "on commit preserve rows;" have their data cleared out as this is part of the session state.

If your select statement can resume on another instance and the statement was a long-running query, it may take some time for the select statement to appear to resume. Basically Oracle has to rerun the query from scratch and will only start returning data again once it reaches the point at which the initial statement failed. On the plus side though the query runs as-of the same SCN as the original query so will return the same expected results.

## FAILOVER\_TYPE and FAILOVER\_METHOD

There are three failover methods and three failover types. FAILOVER\_TYPE defines what fails over and the allowed values are NONE, SESSION and SELECT. NONE says switch off TAF, SESSION means that a session will failover but not attempt to resume running select statements, and SELECT will attempt to resume select statements only (given the restrictions on in-flight transactions etc).

There are three methods that can be defined for TAF; NONE, BASIC and PRECONNECT. NONE switches off TAF. BASIC is the most common setting used; the main difference between PRECONNECT and BASIC is that with PRECONNECT a duplicate session is created on all other relevant instance of the cluster. The idea is that this duplicate session allows faster failover. On the down side though these duplicate (and hence idle) sessions are using up resources that could be used by active sessions. To use this method every node needs to have enough resources to have duplicate sessions from every other instance in the cluster! In my tests the benefits weren't big enough to make the cost worthwhile. In most systems I have seen, people tend to use SELECT and BASIC for the two parameters.

## Configuring TAF using TNSNAMES.ora

There are three-(ish) ways to configure TAF – You can specify everything at the TNSNAMES.ORA level or use srvctl and DBMS\_SERVICE. The TNSNAMES.ORA methods works for clients that are earlier than 10.1. See Figure 5.

In Figure 5 you can see where we specify the TAF parameters immediately after the SERVICE\_NAME parameter in the CONNECT\_DATA section. TYPE and METHOD we have already covered. DELAY and RETRIES specify the wait in seconds between failover attempts and the number of times TAF will attempt a connection before giving up. You can also specify a parameter called BACKUP if you are using the PRECONNECT method to specify the tnsnames.ora string identifying where the pre-connected sessions should be built (Incidentally you cannot have BACKUP and LOAD\_BALANCE=ON set simultaneously).

While the above works fine, it does mean that you have to update all of your client machines with the new settings. If your client is >= 10.1 then it may be better to control this functionality at the server end by configuring the properties of the service itself.

**Figure 5**

```
RACDB.world =
(DESCRIPTION =
  (ADDRESS_LIST =
    (LOAD_BALANCE=YES)
    (FAILOVER=ON)
    (ADDRESS = (PROTOCOL = TCP)(HOST = RACNODE_A-VIP)(PORT = 1521))
    (ADDRESS = (PROTOCOL = TCP)(HOST = RACNODE_B-VIP)(PORT = 1521))
  )
  (CONNECT_DATA =
    (SERVICE_NAME = racdb)
    (FAILOVER_MODE = (TYPE = SELECT)(METHOD = BASIC)(RETRIES=5)(DELAY=2))
  )
)
```



**Figure 6**

```
srvctl add service -d racdb -s call_centre -r racdb1 -a racdb2 -P BASIC
```

## Configuring TAF against a service with srvctl

When creating the service using srvctl you may use the -P switch and one value of BASIC, PRECONNECT or NONE. See Figure 6, above.

As you can see, there is no way to set the additional parameters when using srvctl so you have to additionally use the DBMS\_SERVICE package. You can see this by querying the DBA\_SERVICES view after initially creating the service with srvctl – all the relevant TAF related fields will be empty.

Configuring TAF at the service level rather than at the TNSNAMES.ora level only works with 10g clients so if your client is earlier then you will still need to configure the TNSNAMES.ora

Using DBMS\_SERVICE you can configure the failover parameters as follows. The FAILOVER\_METHOD parameter can have

values of FAILOVER\_METHOD\_BASIC or FAILOVER\_METHOD\_NONE, while FAILOVER\_TYPE can be any one of FAILOVER\_TYPE\_SELECT, FAILOVER\_TYPE\_SESSION or FAILOVER\_TYPE\_NONE.

You can see that there is NO facility for setting PRECONNECT in this method.

A further thing to be aware of is a bit of an oddity in that the commands in DBMS\_SERVICE appear to be case-sensitive. See the code sample for an example of this! (Figure 7.) It would appear that when using DBMS\_SERVICE.MODIFY\_SERVICE the SERVICE\_NAME supplied must be of the same **case** as that in DBA\_SERVICE for it to work. If not then the command appears to execute successfully *with no errors* but doesn't affect the service properties. If you specify a non-existent service then you would get a ORA-44304: service does not exist error so there is something a little odd going on there.

## What views can you use to see TAF and Load Balancing information?

To see the settings against a service for GOAL, CLB\_GOAL and all of the TAF parameters look at the DBA\_SERVICES view. This view also contains information for both TAF and the LBA, whereas V\$SERVICES misses the TAF information. See Figure 8.

If you want to see the workload going to a service over time then query the GV\$SERVICEMERIC view. See Figure 9.

Finally GV\$SESSION will tell you what failover options are set for a particular connected session – or at least the method and type plus whether a particular session has failed over or not. See Figure 10.

**Figure 7**

```
exec DBMS_SERVICE.MODIFY_SERVICE (-
SERVICE_NAME => 'CALL_CENTRE',-           ↓ (Note - Uppercase)
FAILOVER_METHOD => dbms_service.failover_method_basic,-
FAILOVER_TYPE   => dbms_service.failover_type_select,-
FAILOVER_RETRIES => 10,-
FAILOVER_DELAY  => 5 );
```

PL/SQL procedure successfully completed.

```
SQL> select name, failover_method, failover_type, failover_retries, failover_delay
       from dba_services
       where name = 'call_centre';
```

NAME	METHOD	TYPE	RETRIES	FAILOVER_DELAY
<b>call_centre</b>				

*Oddness!...Try with the same case...*

```
exec DBMS_SERVICE.MODIFY_SERVICE (-
SERVICE_NAME  => 'call_centre',-
FAILOVER_METHOD => dbms_service.failover_method_basic,-
FAILOVER_TYPE   => dbms_service.failover_type_select,-
FAILOVER_RETRIES => 10,-
FAILOVER_DELAY  => 5 );
```

PL/SQL procedure successfully completed.

```
SQL> select name, failover_method, failover_type, failover_retries, failover_delay
       from dba_services
       where name = 'call_centre';
```

NAME	METHOD	TYPE	RETRIES	FAILOVER_DELAY
<b>call_centre</b>	BASIC	SELECT	10	5

Figure 8

```
SQL> desc dba_services
```

Name	Null?	Type
SERVICE_ID		NUMBER
NAME		VARCHAR2(64)
NAME_HASH		NUMBER
NETWORK_NAME		VARCHAR2(512)
CREATION_DATE		DATE
CREATION_DATE_HASH		NUMBER
<b>FAILOVER_METHOD</b>		VARCHAR2(64)
<b>FAILOVER_TYPE</b>		VARCHAR2(64)
<b>FAILOVER_RETRIES</b>		NUMBER(10)
<b>FAILOVER_DELAY</b>		NUMBER(10)
<b>MIN_CARDINALITY</b>		NUMBER
<b>MAX_CARDINALITY</b>		NUMBER
<b>GOAL</b>		VARCHAR2(12)
<b>DTP</b>		VARCHAR2(1)
ENABLED		VARCHAR2(3)
<b>AQ_HA_NOTIFICATIONS</b>		VARCHAR2(3)
<b>CLB_GOAL</b>		VARCHAR2(5)

Figure 9

```
SQL> desc gv$servicemetric
```

Name	Null?	Type
INST_ID		NUMBER
BEGIN_TIME		DATE
END_TIME		DATE
INTSIZE_CSEC		NUMBER
GROUP_ID		NUMBER
SERVICE_NAME_HASH		NUMBER
SERVICE_NAME		VARCHAR2(64)
CTMHASH		NUMBER
ELAPSEDPERCALL		NUMBER
CPUPERCALL		NUMBER
DBTIMEPERCALL		NUMBER
CALLSPERSEC		NUMBER
DBTIMEPERSEC		NUMBER
<b>GOODNESS</b>		NUMBER
<b>DELTA</b>		NUMBER
FLAGS		NUMBER

Figure 10

```
SQL> select inst_id, username, failover_type, failover_method, failed_over
       from gv$session
       where service_name = 'call_centre';
```

INST_ID	USERNAME	FAILOVER_TYPE	FAILOVER_M	FAI
1	SYSTEM	NONE	NONE	NO
1	SYSTEM	SELECT	BASIC	NO
2	SYSTEM	SELECT	BASIC	NO

## References

- Note: 97926.1 – Failover Issues and Limitations [Connect-time failover and TAF]
- Note: 69010.1 – Client Load Balancing and Failover Using Description and Address\_List
- Note: 453293.1 – Configuration of TAF(Transparent Application Failover) and Load Balancing
- Note: 220970.1 – RAC FAQ
- Note: 259301.1 – CRS and 10g Real Application Clusters
- Note: 404644.1 – Configuration of Transparent Application Failover(TAF) works with server side service
- Note: 552609.1 – Load Balancing Advisory and Connection Load Balancing
- Note: 460982.1 – How To Configure Server Side Transparent Application Failover
- Note: 263599.1 – Understanding and Troubleshooting Instance Load Balancing
- Note: 262298.1 – Load Balancing Doesn't Balance the Number of Sessions Across All the Available Nodes
- Oracle® Database Reference 10g Release 2 (10.2), Part Number B14237-03
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- Note: 200543.1 – RMAN: Load Balancing and Failover not Supported in RAC Environment

## About the Author



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Oracle as both DBA and a Developer.

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# Data Guard Broker Part II

By Martin Bach, Markit

TOP TIP

In the previous issue we described the use of Data Guard Broker's command line interface to set up a configuration for managing a physical standby database. The first part of the article focussed on the graceful switchover, this part will give an overview of the moment of truth – a failover. It will also give an example for reinstantiating the former primary using flashback database.

As you can see ora10dg is the primary but it should run in standby role. Let's do the switchover. It pays off to have two more terminal sessions open to view the contents of the Alert logs flying by. Data Guard Broker will kill any running session on the primary, so advise all users beforehand.

We can double check this by querying the configuration.

As you can see the new primary database is ora10dg whereas the former primary is now the standby database. See Figure 2.

## Failover

Failover will be required when your primary database is damaged beyond repair. That's the moment of truth!

The example assumes you have flashback logging enabled on both databases, if you haven't done so you need to rebuild the standby as in the old 9i days.

## How to enable flashback logging

You need to use a flash\_recovery\_area to store the flashback log files, for example in /u01/app/oracle/flash\_recovery\_area. Enable flashback logging on primary and all standby databases, see Figure 3.

Use the same strategy to enable flashback logging on the primary system.

“Failover will be required when your primary database is damaged beyond repair. That's the moment of truth!”

Figure 1

```
DGMGRL> switchover to ora10dg
Performing switchover NOW, please wait...
Operation requires shutdown of instance "ora10gr2" on database
"ora10gr2"
Shutting down instance "ora10gr2"...

Database dismounted.
ORACLE instance shut down.
Operation requires shutdown of instance "ora10dg" on database
"ora10dg"
Shutting down instance "ora10dg"...
ORA-01109: database not open

Database dismounted.
ORACLE instance shut down.
Operation requires startup of instance "ora10gr2" on database "ora10gr2"
Starting instance "ora10gr2"...
ORACLE instance started.
Database mounted.
Operation requires startup of instance "ora10dg" on database "ora10dg"
Starting instance "ora10dg"...
ORACLE instance started.
Database mounted.
Switchover succeeded, new primary is "ora10dg"
DGMGRL>
```

Figure 2

```
DGMGRL> show configuration

Configuration
Name:          mbhctest
Enabled:       YES
Protection Mode:  MaxPerformance
Fast-Start Failover: DISABLED
Databases:
  ora10gr2 - Physical standby database
  ora10dg  - Primary database

Current status for "mbhctest":
SUCCESS
```

Figure 3

```
$ sqlplus / as sysdba
SQL> shutdown immediate
(database shuts down)
SQL> startup mount
(database mounts)
SQL> alter database set db_recovery_file_dest_size=30G;

Database altered

SQL> alter database set db_recovery_file_dest = '/u01/flash_recovery_area'

Database altered

SQL> alter database flashback on;

Database altered

SQL> select name,database_role,force_logging,flashback_on from v$database

NAME          DATABASE_ROLE  FOR  FLASHBACK_ON
-----
ORA10GR2      PHYSICAL STANDBY  YES   YES
```



**Figure 4**

```
DGMGRL> show configuration
```

Configuration

```
Name:          mbhtest
Enabled:       YES
Protection Mode:  MaxProtection
Fast-Start Failover: DISABLED
Databases:
  ora10gr2 - Physical standby database
  ora10dg - Primary database
```

**Figure 5**

```
Current status for "mbhtest":
SUCCESS
```

```
DGMGRL> failover to ora10gr2
Performing failover NOW, please wait...
Failover succeeded, new primary is "ora10gr2"
DGMGRL> show configuration
```

Configuration

```
Name:          mbhtest
Enabled:       YES
Protection Mode:  MaxPerformance
Fast-Start Failover: DISABLED
Databases:
  ora10gr2 - Primary database
  ora10dg - Physical standby database (disabled)
```

```
Current status for "mbhtest":
SUCCESS
```

**Figure 6**

```
DGMGRL> reinstate database ora10dg;
Reinstating database "ora10dg", please wait...
Operation requires shutdown of instance "ora10dg" on database "ora10dg"
Shutting down instance "ora10dg"...
ORA-01109: database not open
```

```
Database dismounted.
ORACLE instance shut down.
Operation requires startup of instance "ora10dg" on database "ora10dg"
Starting instance "ora10dg"...
ORACLE instance started.
Database mounted.
Continuing to reinstate database "ora10dg" ...
Reinstatement of database "ora10dg" succeeded
```

**Figure 7**

```
DGMGRL> show configuration
```

Configuration

```
Name:          mbhtest
Enabled:       YES
Protection Mode:  MaxPerformance
Fast-Start Failover: DISABLED
Databases:
  ora10gr2 - Primary database
  ora10dg - Physical standby database
```

```
Current status for "mbhtest":
SUCCESS
```

## Perform failover

Connect to the physical database to become the new primary. See Figure 4.

Note that we are still in the state as by the end of the previous example, i.e. ora10dh is running the in the primary role, whereas ora10dgr2 is the standby database. See Figure 5.

You now have a new primary database! Note that the physical standby is disabled, but still part of the configuration.

Users should be able to resume work on the new primary database but the former primary database is essentially ruined.

We now need to do some extra work on the old primary to transform it into a standby system and restart redo apply. Begin by starting the old primary into mount mode. Connect into DGMGRL as sys on the new primary.

Instead of a string of manual steps, reinstating the database is a one liner in dgmgrl, see Figure 6.

I really like the feature, especially if you consider what is going on in the background. Verify the success, see Figure 7.

If you had a higher protection mode then upgrade it again, refer to the first part of this article, (Issue 37), on how to do this.

**Martin Bach** has six years of experience as a DBA and is Oracle Certified Master for Database 10g Release 2. Martin's experience covers many market sectors, gained in a number of European countries. His main focus is on mission critical RAC systems, high availability and disaster recovery.

Martin can be contacted at:  
[martin.bach@markit.com](mailto:martin.bach@markit.com)



# Classic MetaLink to be retired...

by Kate Cumner, Oracle Customer Support Management

## What is being announced?

We are pleased to announce that later this year *My Oracle Support* will be upgraded and the Classic *MetaLink* pages will be retired.

*My Oracle Support*, Oracle's next generation support platform, enhances the customer experience to deliver personalised, proactive, and collaborative support. The industry-leading enhancements offer a simplified support interface to make your interactions with Oracle Support faster and more efficient.

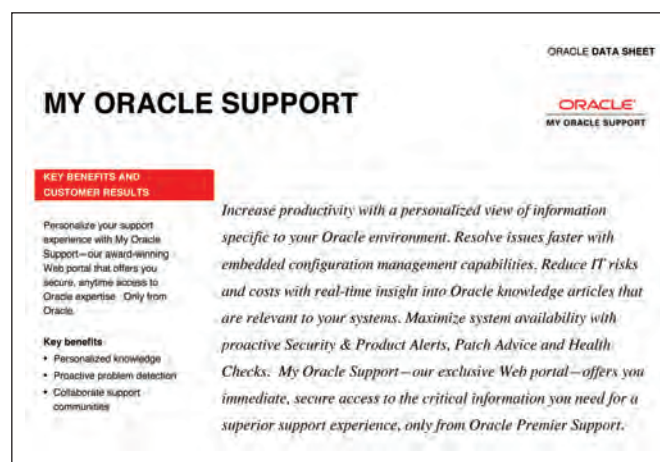
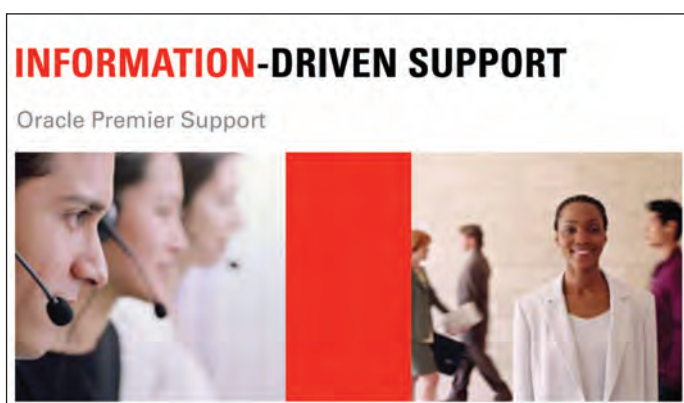
This upgrade is part of Oracle's ongoing commitment to improving your support experience and providing a unified support interface across all Oracle products. The retirement of Classic *MetaLink* will mark the completion of the upgrade of all of our support interfaces to *My Oracle Support*.

## What should you do?

We strongly encourage you to start using **My Oracle Support** today by simply selecting the *My Oracle Support* radio button when logging in.

A Flash plug-in (version 9.0.115 or higher) is required for *My Oracle Support*. Over 90% of our customers already have the required Flash plug-in. To ensure you are prepared for this upgrade, check your browser for the correct version of Flash plug-in by going to the Adobe Flash checker page and installing the latest version of Adobe Flash.

If you don't have Flash installed, download the latest version of the Flash Player from the Adobe website <http://get.adobe.com/flashplayer/>



## Where can I learn more?

Training on *My Oracle Support* is available in several convenient formats.

### Advisor Web-casts

- Free for Premier Support customers
- Live instructor led sessions including a Q&A session
- Knowledge delivered straight to your desktop using OWC technology
- Log into My Oracle Support. Go to "Getting Started" region from Dashboard and select "Training: Upcoming Schedule"
- For all other contents including My Oracle Support configuration manager, Communities, Best practices, Diagnostics Tools... go to the following link: [Support Services Internet Seminars \(Advisor Webcasts\)](#)

### Recorded Training

To view a recorded seminar you need to use Internet Explorer. You must be registered with Oracle.com to play the recordings. If you are not registered, please go to [www.oracle.com](http://www.oracle.com) and register. Registration is free. Recorded seminars are on topics such as Introduction to *My Oracle Support*; *My Oracle Support Communities*; Customising your Dashboard within *My Oracle Support* and Using the Knowledge Tab within *My Oracle Support*.

"It's more than support as you know it.  
It's Oracle Premier Support."



# Debra's diary

When writing this article I start by reading the last article, my blog postings since that date and think what I have to get included in just one page. Lots to include again this time.

The combination of our Conference Series where we are hosting seven events under one banner, and the continuing squeeze on our budgets because of the effects of the economy, means that your directors are very busy. Our bi-monthly face-to-face meetings have now been joined with monthly calls, where we scrutinise budgets and the planning to date. This increased director input, along with some very lively sharepoint debate, is important to ensure that we have the governance in place for UKOUG to succeed.

As well as the International Oracle Usergroups Community meeting in Redwood in January, Ronan has also met with user group leaders at the EMEA level in Finland in May. This is an opportunity for the sharing of best practice. In the main the user groups in North America are large mature organisations, but those in EMEA tend to be much smaller and organised along geographical, and more importantly language, borders.



Collaborate, (see photo above), the largest user group conference this year took place in Orlando. Unfortunately Ronan was unwell and unable to travel. Many meetings with user group leaders took place, and the most important meeting was with Charles Phillips, President of Oracle. Charles is a member of President Obama's Economic Advisory Board, and we asked him what advice he could give to user groups at this time. He did have ideas around expanding exhibition content and working with web2.0 technologies. UKOUG are exploring both these and other ideas in their efforts to continuously improve the benefits to our members.

I have spoken before about my pride in being an ACE Director for Applications, and I am pleased to announce that Carl Dudley has been granted ACE Director status for the Database, and David Kurtz an ACE for PeopleSoft Applications Technology.

By the time you read this entry I will have attended the ACE briefing in the US along with Mark Rittman, the Oracle Scene editor. Many ACEs from overseas are regular speakers at UKOUG and think of it as the must-attend event for them, and we are working with the programme to see how we can make the experience even better for speakers and attendees.

One of the initiatives of the ACE program has been to enable a number of participants to demo Fusion Middleware, and I was selected as one of the first wave. I specialised in the business side of applications, so needed a lot of help in learning how the components work together, and was helped by the ACE program along with product managers Nishit Rao and Duncan Mills (both speakers at UKOUG) and especially Grant Ronald, not just a speaker but regular contributor to Oracle Scene. Once I had the skills I started presenting Fusion Middleware from a business benefits perspective working alongside Nadia Bendjedou from Oracle. I did my first live SOA demo in Sweden in March, and repeated it in Dubai for OAUG Connection Point and Insync09 in Sydney Australia. In Australia Oracle got excited by my simplistic analogy for SOA and made a Youtube video about it that can be viewed at <http://www.youtube.com/watch?v=gblFJzCXhn4> Urged on by the success I then presented to both JDE and PeopleSoft audiences at Collaborate.

People ask what motivates me and others to be so active within UKOUG; well, for me it is about sharing knowledge with people and helping members to get the best out of their investments. But there is another benefit for me personally; I have made so many real friends. In February I had the chance to have a few days away after the RMOUG conference with great friends of both UKOUG and me personally. People like Mogens Nørgaard, John and Peggy King, Tanel Poder, Robyn Sands and others.

This whistle-stop tour of overseas conferences which was arranged at the back end of 2008 meant I was unable to attend the first of the UKOUG Conference Series in Ireland. I was very sad about this, as living in Belfast I see this as my local conference, but I am pleased to be able to declare it a great success. I presented at the PeopleSoft conference and continue to be proud to represent all the UKOUG communities. Having a conference series means a lot of work for the office and directors but we feel the effort will be worth it. The economy is really hitting conferences with employers wanting a real cost-benefit analysis before allowing their employees to attend, but we hope you will agree our community-tailored events will enhance the benefits.

In the next entry I will talk about our SIG Chairs day and how this annual event helps SIG leaders, the lifeblood of the user group, come together and help mould the UKOUG.

Currently the directors are looking at what the Sun acquisition will mean to Oracle and UKOUG, we value feedback from yourselves and you are welcome to contact us at anytime at [director@ukoug.org](mailto:director@ukoug.org)

**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.



# Message from your Events Team

It is hard to believe we are already half way through 2009. All communities have had Special Interest Group meetings or Forums on offer and most noticeably, we have launched UKOUG's Conference Series 2009, which started in Dublin with Conference Series Ireland, followed by Conference Series PeopleSoft in May and most recently, Conference Series Scotland, Conference Series Hyperion & BI and Conference Series Siebel.

As we move into July, the events team are working hard on the preparations to get ready to open registration and launch agendas for Conference Series JD Edwards and Conference Series Technology & E-Business Suite. You will notice a new registration website, that allows main contacts to allocate voucher codes to their colleagues, this new functionality will hopefully make it easier to allocate the flexible ticketing for Conferences that UKOUG offers to its members. If you have any queries on this new process, please do not hesitate to contact us and we will be more than happy to help you.



## Conference Series Ireland 2009 – Review

UKOUG Conference Series Ireland which kick started the Conference Series cycle in April was a great success with over 170 Oracle users from in and around Ireland benefiting from a day of networking, knowledge sharing and information gathering.

The Conference took place on the 22nd April in the Crowne Plaza, Blanchardstown, Dublin, and commenced with an Oracle keynote from both Steve Gold, Vice President, Key Accounts and Paul O'Riordan, MD Oracle Ireland who gave an excellent overview of Oracle in the Irish market and highlighted a number of easy cost reduction options available to customers. The agenda then split into three streams covering topics within Oracle Technology, BI & Performance Management and E-Business Suite which offered delegates the ability to attend sessions of most interest to them.

Read the full review at [www.oug.org/ireland\\_review09](http://www.oug.org/ireland_review09)



## Conference Series PeopleSoft 2009 – Review

We are extremely pleased to have built and improved on the success of the last year's PeopleSoft 2008 Conference & Exhibition. Having listened to your feedback, we decided to make Conference Series PeopleSoft 2009 event more independent and took it completely out of the main UKOUG Conference in December, and it appears this was the right decision.

Around 200 attendees from all over the world convened at the Sofitel Hotel, London Heathrow, for this event. Delegates had a wide-ranging agenda, with five streams to choose from over the two days and an exhibition running alongside on

both days. On the evening of Tuesday 19th May, a lively social event with refreshments, casino tables and music provided delegates with the opportunity to network in a relaxed atmosphere, supplementing the networking which had already taken place during breaks, lunch and roundtables/interactive sessions.

Read the full review at [www.oug.org/peoplesoft\\_review09](http://www.oug.org/peoplesoft_review09)



## Conference Series Scotland 2009 – Review

UKOUG Conference Series Scotland on 23rd June in Glasgow, commenced the Conference Series cycle for June, with a fascinating agenda offering a range of content for all. The event was a great success bringing Oracle users from Scotland together, to benefit from a day of networking, learning and gathering information from the speakers and the Partners who exhibited at the event.

The Conference was opened with a keynote from Steve Gold, Vice President, Key Accounts – Technology, from there the agenda then split into streams covering three key areas; Technology, Business Intelligence and Applications, allowing the flexibility for the attendees to choose sessions of interest to them. The day ended with a drinks reception that as always, was a great end to a great day.



## Conference Series Hyperion & BI 2009 – Review

UKOUG Conference Series Hyperion & BI 2009, saw the first independent annual Conference for Hyperion & BI communities in the UK since Oracle's acquisition of Hyperion.

The Conference took place on 24th – 25th June at Twickenham Stadium, bringing together both Hyperion and Oracle BI communities for an exciting two day Conference and Exhibition. As the Oracle Business Intelligence and Hyperion Performance Management product lines continue to converge towards a single fully-integrated Enterprise Performance Management platform, we ensured that this Conference covered topics from across the complete platform.

We were so pleased to have John Kopcke, Oracle's Senior Vice President of the EPM Global Business Unit, fly in from the States to open the Conference. The agenda then split into five streams allowing all attendees the flexibility to personalise their own agenda to meet their learning needs. The exhibition was a key part of the event, forming a hub of activity during breaks and the social evening, where over 15 key partners exhibited their business solutions and services and most importantly networked and shared knowledge with the community.



### Conference Series Siebel 2009 – Review

We were very pleased that by having Conference Series Siebel as an independent conference dedicated to the Siebel community, the response was very positive. This saw a dedicated gathering of Siebel users and partners come together for this one day event.

On 30th June, Anthony Lye, Oracle's Senior Vice President in charge of CRM product development, opened this key event at Ascot Racecourse, by discussing market drivers and his strategy and development of current products as well as product roadmaps. It was followed by a keynote from Stuart Lauchlan, a freelance Business and Technology Journalist, who provided an independent view of the market trends and innovations in CRM. The event then split into three streams for the rest of the day where the audience continued to learn and share knowledge during presentations. The Pavillion was a fantastic room for the Exhibition where attendees spent time networking and gaining information from the Siebel Partners. The conference closed with a drinks reception bringing an end to the first annual Conference, dedicated to the Siebel community, that will be the first of many to come as we continue to serve the Siebel community.



### Conference Series JD Edwards 2009 – Coming soon...

After a very successful UKOUG JD Edwards Conference & Exhibition 2008, we are pleased to announce its return in 2009 as UKOUG Conference Series JD Edwards. The two-day event will take place on 11th – 12th November at Twickenham Stadium.

Call for papers has now closed and agenda selection is well under way. Look out for more details coming this month, as we launch the agenda and open registration – [www.oug.org/jdedwards](http://www.oug.org/jdedwards)

UKOUG Conference Series JD Edwards is dedicated to the JD Edwards community and will have five streams presenting content for both the EnterpriseOne and World communities. In addition, we will have a fantastic exhibition, which is selling out fast, that will contain all the key JD Edwards partners, who play such a important role within the JD Edwards community.



### Conference Series Technology & E-Business Suite 2009 – Coming soon...

Save the date in your diary for the largest of our Conference Series events. Conference Series Technology & E-Business Suite 2009 will take place at the ICC, Birmingham between 30th November – 2nd December.

After another successful call for papers, we know this highly rated event will once again exceed expectations with high class content ranging from companies sharing their experiences of using products and upgrading, through to well respected guru's sharing their knowledge. The three day agenda will have up to 13 streams running each day covering the following key areas: Server Technology, Design & Development, Middleware, E-Business Suite, Fusion, Business & Strategy, Stellent and much more.

The agenda is being finalised this month and will be launched at the beginning of September, when registration will also open.

Complementary to the Conference will run the Exhibition, which is the ideal place to see Partners demonstrating the latest Oracle technology and applications. If you would like to target prospective customers, sign up for an exhibition space today and contact [Alkesh@ukoug.org](mailto:Alkesh@ukoug.org)

For the latest updates on this event please go to [www.oug.org/techebs](http://www.oug.org/techebs)

## UKOUG Partner of the Year Awards 2009 is giving Oracle Partners the recognition they deserve

In 2008 UKOUG launched the first set of awards voted for by Oracle users to recognise Partners within the Oracle community. With over 100 attendees, the event was a huge success.

This year the second UKOUG Partner of the Year Awards are underway, allowing members of the Oracle community to vote for their preferred Partners from twenty award categories. These awards are designed to recognise the achievements of UKOUG Partners in the services they provide to Oracle users.

Don't miss the chance to vote for your preferred Partner for one of the twenty categories. Each voter will be entered into a prize draw with the winner receiving two free tickets to the UKOUG Partner of the Year Awards Ceremony dinner on 1st October 2009, worth almost £500. Visit [www.oug.org/vote](http://www.oug.org/vote)

Find out more about the event at: [www.oug.org/pya09](http://www.oug.org/pya09) and view the photos from last year.

# ... and finally

As this is my first piece in Oracle Scene as a new Deputy Editor, the obvious place to start I suppose is to tell you some things about myself and what I hope to bring to the role.

So, some personal details are that I'm married with two daughters, I still can't really believe that my oldest is going to university in September. I live near Chester and I'm a Liverpool FC supporter, a keen guitarist and living so near to Snowdonia and the Lake District means for me there's not much better than either being at Anfield or out walking in the mountains.

In the course of my Oracle career since 1993 I have worked on many large bespoke and package based developments/implementations in most of the major IT roles such as development, functional, project management and for the last few years before moving into my current role I specialised as an Applications DBA.

Since 1995 I have worked for Capgemini UK and my current role is the Oracle Profession Lead for Capgemini Outsourcing in the UK where we have approximately 200 people as well as a large number in India. I spend a lot of my time working with Oracle, developing new market offerings and providing bid support. I am also responsible for the training and development of our Oracle staff all of which means that I need to keep abreast of new products and acquisitions and formulate a view/strategy on how best to ensure that we have the right capability.

That's all the stuff about me out of the way, so I'll just finish this issues piece with a brief observation.

Sitting at Anfield on the last day of the Premier League season it suddenly struck me how the last nine months had raced by again. Back in August watching our first home game of the season the last game against Tottenham seemed so far away and yet now it's been and gone and so much has happened in between. The relentless pace of change in IT is much the same with Oracle acquiring new companies and including new products in its portfolio. For all of us whether we are end users, outsourcers, systems integrators etc, trying to understand the roadmaps for all these products is becoming a full time job in itself and you could easily be attending Oracle enablement events two or three times a week. I hope therefore that the articles that we've chosen for this issue are helpful to you and if there are particular subjects that you would like to see covered in future issues or submit yourself then please get in contact.



**Geoff Swaffer**  
Deputy Editor  
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# UKOUG calendar of events 2009

## July

- 1<sup>st</sup>** DBMS SIG Meeting, London
- 1<sup>st</sup>** Irish BI SIG Meeting, Dublin
- 14<sup>th</sup>** Local Government Applications SIG Meeting, London
- 15<sup>th</sup>** UKOUG Partner Forum, London

## August

No events in August

## September

- 8<sup>th</sup>** UNIX SIG Meeting, Slough
- 9<sup>th</sup>** Irish HCM SIG Meeting, Dublin
- 10<sup>th</sup>** Oracle Financials SIG Meeting, London
- 10<sup>th</sup>** RAC & HA SIG Meeting, Midlands
- 10<sup>th</sup>** UKOUG Hyperion Enterprise Meeting, London
- 16<sup>th</sup>** Scottish DBA SIG Meeting, Edinburgh
- 17<sup>th</sup>** Business Intelligence & Reporting Tools SIG Meeting, London
- 17<sup>th</sup>** Irish Applications SIG Meeting, Dublin
- 22<sup>nd</sup>** App Server & Middleware SIG Meeting, London
- 22<sup>nd</sup>** Oracle Spatial SIG Meeting, Midlands
- 24<sup>th</sup>** Public Sector HCM Customer Forum, Midlands
- 24<sup>th</sup>** Oracle on Windows SIG, Reading
- 29<sup>th</sup>** UKOUG Hyperion HFM Meeting, London
- 29<sup>th</sup>** Document Management & Workflow Special Event, TBC

All event dates are subject to change

## October

- 1<sup>st</sup>** Management & Infrastructure SIG Meeting, London
- 1<sup>st</sup>** UKOUG Partner of the Year Awards, London
- 6<sup>th</sup>** Supply Chain & Manufacturing SIG Meeting, Midlands
- 6<sup>th</sup>** Apps DBA for OEBS SIG Meeting, London
- 8<sup>th</sup>** Public Sector Combined event, London TBC
- 13<sup>th</sup>** Education & Research SIG Meeting, Midlands
- 14<sup>th</sup>** Stellent SIG Meeting, London
- 15<sup>th</sup>** DBMS SIG Meeting, Midlands
- 21<sup>st</sup>** Scottish BI SIG Meeting, Edinburgh
- 22<sup>nd</sup>** HCM SIG Meeting, Midlands
- 27<sup>th</sup>** Development Engineering SIG Meeting, London
- 27<sup>th</sup>** Modelling Analysis & Design SIG Meeting, London

## November

- 3<sup>rd</sup>** Siebel Oracle Open World Highlights Meeting, Reading
- 11<sup>th</sup>** Scottish Developer SIG Meeting, Edinburgh
- 11<sup>th</sup>-12<sup>th</sup>** UKOUG Conference Series JD Edwards 2009, Twickenham
- 24<sup>th</sup>** PeopleSoft Combined Event, TBC
- 30<sup>th</sup>** UKOUG Conference Series Technology & E-Business Suite 2009, Birmingham

## December

- 1<sup>st</sup> – 2<sup>nd</sup>** UKOUG Conference Series Technology & E-Business Suite 2009, Birmingham
- 2<sup>nd</sup>** UKOUG Partner Forum, Birmingham

Pictures from UKOUG Conference Series PeopleSoft 2009





# Be a part of UKOUG's social network

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network

UK Oracle User Group | network share solve participate learn save

Join UKOUG's online social network to keep up to date with the latest news and events from UKOUG and Oracle, network with other Oracle users and share experiences and solutions.