OracleScene

A UK Oracle User Group publication

A quick fix...

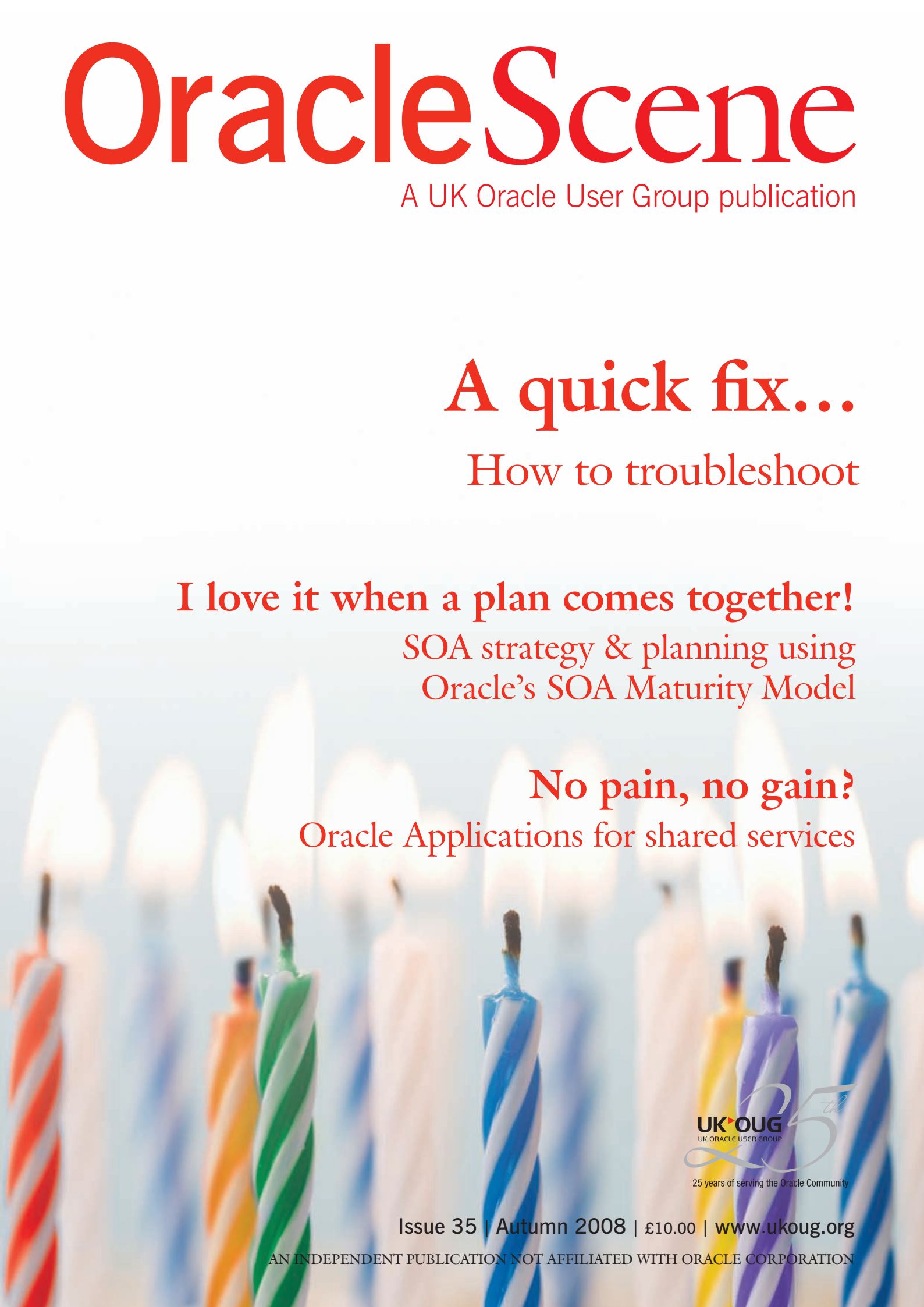
How to troubleshoot

I love it when a plan comes together!

SOA strategy & planning using Oracle's SOA Maturity Model

No pain, no gain?

Oracle Applications for shared services



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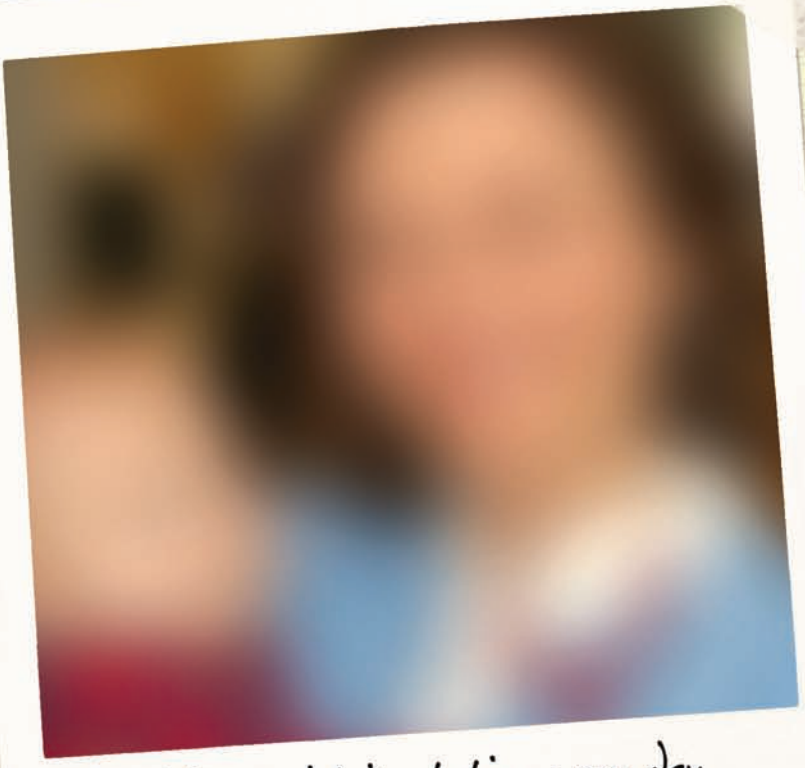

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Welcome

to Issue 35 of Oracle Scene!

Hat kindly supplied by John Taylor

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SOA

As I review the abstracts for the UKOUG conference, I am noticing a strong SOA theme throughout, which ties in pretty neatly with what is going on at Edexcel. Like many companies, we are hampered by legacy systems and every time a new project comes along, we have to make the same amendments to all the different systems, making us slow and unwieldy rather than agile and flexible (as IT departments now need to be).

So, in short, what is SOA supposed to do?

- Reduce complexity
- Improve reuse
- Simplify testing
- Lower risks

Even better, it requires the business to define "services" which are provided to them and re-used as required across the board. When the business "service" changes, we only need to amend that one service, whilst the back end remains static, removing the need for complex "interfaces". Alongside that we have "components". A good example is given by "SOA for Dummies", which I am finding invaluable! For example, in a restaurant we, as customers, require a service from that restaurant. We pass information to a waiter (menu choices) and then the food arrives at our table magically. In the meantime various components (us, the waiter, the kitchen) interact. Another "food-preparation service" is taking place within the kitchen. The components interact with services to deliver the overall customer service.

That's really as far as I want to delve at this stage – I'm sure I can leave that to numerous architects out there! The key, I believe, is that we need to have the business and IT working in concert in order to really achieve this – and that will be the great challenge of SOA. If it can be achieved, it should change the face of IT systems today – so we would welcome articles from anyone who has been successful, or hints and tips from those who have been less successful in moving towards a fully Service-Oriented Architecture.

Chez Moi – Facebook

This month my Facebook addiction has come into full force, as I increasingly use it to communicate, arrange my social life, keep up with work colleagues etc etc. As many of you are probably also experiencing, my management recently became aware of this and have banned Facebook usage except between 12 and 2 (thus causing a major hit to all servers on both sides as soon as noon rolls around). I find it interesting that I used to phone someone just to catch up and say hello, to remind them that I cared about them. Then when email came along it was wonderful – I could do just the same thing but not worry about interrupting their dinner or calling when they were busy doing something else – I could send them an email and they would respond as & when they had time. Even better, I could tell when they had read the email!! Now I don't even bother to email – I can write something on their wall or I can just send them a hug if I don't really have much to say. I don't have to clog up the email system with entertaining YouTube videos: I can just post these straight to their FunWall. We are constantly told that as a result of technology we are communicating less, but I find I am communicating with more people and have a wider network of contacts as a result of Facebook. Does anyone else find this, or am I a sad lonely techie? Answers on a postcard….

Contents

I love it when a plan comes together!

SOA strategy & planning using Oracle's SOA Maturity Model

by Hugh Griffiths, Griffiths Waite

SOA has reached a point where organisations are seeing its value and are starting to progress plans, implement pilots and roll out projects. Yet Griffiths Waite continue to receive a high level of client inquiries about how to get started on SOA and are frequently asked "Which projects come first, and which should wait? What are the activities and best practices for a successful SOA implementation?" Oracle's SOA Maturity Model puts forth a realistic business and technology view of what it takes for companies to successfully adopt SOA.

SOA is based on a broad set of concepts that will influence an organisation and its activities beyond one project. To realise the benefits of SOA, an enterprise must progress and build capabilities in multiple dimensions. A SOA maturity model helps to address common questions and provides guidance in planning and execution. Based on extensive experience and work with customers and partners implementing SOA, Oracle has developed the Oracle SOA Maturity Model – this serves as a means for you to understand the capabilities that are central to a successful SOA, and a tool to help you chart your SOA plans.

Oracle's SOA Maturity Model has five distinct levels of SOA maturity, from Level 1, Opportunistic SOA, which is about doing the first SOA projects, to the top Level 5 Industrialised SOA, which is about delivering on the vision of real-time enterprise that is integrated internally and with partners, and that can capitalise on new opportunities and allow IT to deliver the agility demanded by business. See Figure 1.

Each level is primarily designated by a vision and strategy, and has associated benefits. A company may start out on the road to SOA with a Level 3 vision; that is, strategic business automation and transformation. In this example, our advice is to consider implementing some of the best practices captured at Levels 1 and 2.

Oracle SOA Maturity Levels

5 An enterprise can be considered as an Adaptive Enterprise. The whole enterprise operates a dynamic SOA with business and IT synchronised to achieve an optimum balance of: agility, benefits, performance, risk and cost. Enterprise Architecture will have become clearly defined.

4 At Level 4, SOA is fundamental to the way the enterprise operates both its business and its information technology, and services may extend outside the enterprise to key partners. The enterprise's service portfolio is well-managed with quantitative metrics, integrated, enterprise-wide visibility and control of service operations and Quality of service. Service operational metrics are collected and reported in both business and technology contexts according to the audience providing Intelligent Agile Business Decisions.

3 SOA is adopted as a strategic enterprise-wide architectural principle. A 1st release of an enterprise service catalog has been established and an enterprise-wide service model is defined and used. A set of SOA standards has been defined by a SOA Design Authority and is applied across the enterprise, via a governance model for new projects. Enterprise Architecture will become important to the organisation.

2 Enterprises at Level 2 maturity have made a firm commitment to adopting SOA, although this is often limited to key projects or parts of the organisation. They will have completed a pilot or initial project with SOA applied consistently across the project and will have deployed a set of services that are in production use by the enterprise's business. Investment in Standards will have started, and end to end process being modeled.

1 Level 1 is the starting point for most SOA journeys. The enterprise has either taken no real steps toward SOA, or they may have conducted some limited, initial web services or service-based activities that are project-centric, experimental and often technology-focused.

Figure 1: Oracle SOA Maturity Model

SOA Maturity Assessment

Assessment plays a key role in preparing to embark upon the adoption of SOA, providing you with a firm basis upon which to develop goals, strategy and plans. However, it is equally important to continue to assess your SOA programme on an ongoing basis to track progress, verify assumptions and make decisions.

Assessing a SOA, like any kind of assessment, is aimed at helping you answer three primary questions:

- Where are you now?
- Where do you need to get to?
- What do you need to do to get there?

The establishment of an enterprise SOA is not something that happens overnight; rather the capabilities and assets that are required to support a SOA are acquired, developed and evolved over time as the enterprise's SOA matures. The SOA Maturity Assessment uses the Oracle SOA Maturity Model to assess the current maturity level of the enterprise's SOA and to show how the various SOA capabilities and assets may mature over time.

SOA Maturity assessment is used to assess the capabilities and assets that exist within the enterprise, across a core set of domains, to support the enterprise's adoption and operation of SOA. This is the driving force behind creating a SOA roadmap enabling organisations to formulate a SOA strategy and build capabilities to deliver on that strategy.

The time, cost and effort required to accommodate the needs of each SOA domain will vary, but to achieve success in the adoption of SOA it is important to ensure that the needs of every domain are taken into consideration.

There are nine primary domains: vision, change, capability, people, business, technology, data, application and governance.

SOA maturity is benchmarked against the Oracle SOA Maturity Model on a scale of one to five in the nine primary domains. See Figure 2.

Your Current Level of Maturity

For each domain, there is set of sub-domains and assertions that drive the overall maturity assessment. For an enterprise to be assessed at a particular maturity level for a given domain, most of the associated assertions must be true for the dependent sub-domains. See Figure 3.

Griffiths Waite, in association with Butler Group – Europe's leading IT Research & Analysis organisation provide an on-line self-assessment tool that offers a simple way for you to obtain an assessment of your enterprise's SOA maturity, correlating the findings to the nine domains. See Figure 5.

The SOA maturity domains outline the key areas of capabilities, activity and assets that need to be in place for an enterprise to successfully adopt and operate a SOA.

Figure 2: SOA Maturity Domains

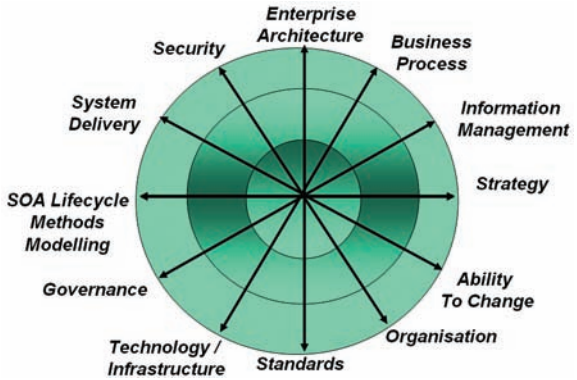

Figure 3: SOA Maturity Sub-Domains

The process for assessing the maturity of a SOA requires each assertion associated with each sub-domain to be considered and determine whether the assertion is false, partially true, or true.

Once the maturity levels have been determined for a full set of sub-domains, the maturity of the SOA domain can be established. An example of this outcome is shown below.

Current State

	Maturity Levels				
Maturity Domains	1	2	3	4	5
Vision	■	■			
Change	■	■			
Capability	■	■			
People	■				
Business View	■				
Technology View	■	■			
Data View	■				
Application View	■	■	■		
Governance	■				

Figure 4: Current Level of Maturity

The self-assessment tool can be found at www.soa247.co.uk – the result is a tailored report that includes a radar diagram where each of the domains translates to a spoke showing where a business lies on the Oracle SOA Maturity Model. This can be mapped onto the table to get an answer to the question "Where are you now?" See Figure 4.

Future State SOA Maturity

With the answer to the "Where are you now?" question firmly in hand, you can turn your attention to the next question: "Where do you need to get to?"

There is a natural desire to set out immediately upon a journey to achieve the highest possible level of maturity. But, each enterprise operates within its own unique business context—in different industries and marketplaces, with different partners, histories, strategies, value propositions, etc. The future state maturity level for each enterprise will vary and may not necessarily always be at the highest level. The value of each incremental step to higher maturity must be evaluated in the light of an enterprise's business strategy and context.

When each of the value propositions has been evaluated, the result can be plotted on a table. See Figure 6.

SOA Planning

Answering the "What do you need to do to get there?" question is the next logical step in the planning process. The difference between the enterprise's future maturity profile and the current maturity profile shows the changes in maturity level that are required.

With the domains are a well-defined set of actions that need to be performed in order to realise the value propositions associated with each maturity level transition and to make the related assertions true.

These actions combined with a survey of the current project initiatives form a basis for developing the enterprise's SOA transformation roadmap and to complete an initial answer to the question "What do you need to do to get there?"

In conclusion, if you have a real enthusiasm to take SOA forward with your business, by following the above steps using Oracle's SOA Maturity Model you will ensure that you are planning strategically and tactically, and will stand a greater chance of success with your implementation.

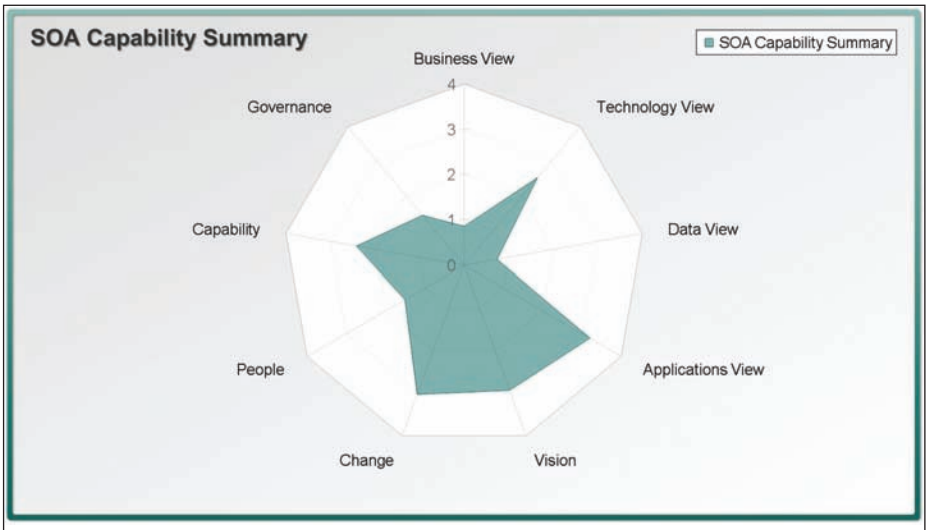

Figure 5: Assessment using www.soa247.co.uk

Current State	Future State

	Maturity Levels				
Maturity Domains	1	2	3	4	5
Vision					
Change					
Capability					
People					
Business View					
Technology View					
Data View					
Application View					
Governance					

Figure 6: Future State SOA Maturity

About the Author

Hugh Griffiths is the co-founder of Griffiths Waite, an award winning Systems Integrator who specialise in the development of SOA using Oracle Fusion Middleware. He has been working with Oracle products for twenty years and provides advice and guidance to customers implementing SOA and Enterprise Architectures. Hugh can be contacted at hughg@griffiths-waite.co.uk

Flooded with paper

by David Martin, Ether Solutions

Unfortunately, many businesses will have suffered from the floods over the last year. The events again demonstrated how many business processes rely on paper for many day-to-day business activities. The organisations that were "Flooded with paper" lost information, lost records, and lost time trying to re-align their business activities.

Of course, it is not just floods that cause business leaders to consider their handling of paper and there are proven benefits, with tangible ROI, from the implementations of electronic document processing.

The credit crunch will focus minds in many organisations to seek low risk improvements in their operations. The scanning of paper to enable electronic document processing is low risk, well established and delivers a fast ROI.

Every time a paper document is retrieved and then filed, there is a small chance of it being mis-filed or simply not returned. Surveys have generally agreed that this is typically 2% to 3% of all documents, although some put the figure as high as 7.5%. This can lead to re-work, poor decisions, disputes and even lost legal cases.

> "Every time a paper document is retrieved and then filed, there is a small chance of it being mis-filed or simply not returned."

Kofax has been a leading provider of scanning software for a number of years, and Oracle's recent acquisition of Captovation will undoubtedly underpin the continuing value of handling paper electronically. It is obvious that, whatever their reasons for the Captovation purchase, the extension of Oracle's Fusion Middleware into the Capture market is an important strategic milestone, not least to add the Capture functionality to their established UCM, Finance and HR applications. Ether Solutions specialise in both Oracle and Kofax products and can work with existing systems as well as designing and implementing new systems to best suit our client's business.

Historically, the value of capturing data from scanned documents was greatest when processing large quantities of similar documents. Mailroom processes dealing with large quantities of very different documents simply cost too much to implement and would have to run for many years to show any ROI. Systems designed with large scale Document Sorting, Preparation and Manual Indexing & Validation methods reduced the value of such systems even further. Many initially enthusiastic companies ended up implementing smaller scale, document-specific capture processes, where the cost/benefit ratio was more attractive.

Whilst the benefits of automatic capture of invoice data were obvious, Invoices were repeatedly excluded from template based capture systems. Receiving invoices from multiple suppliers meant multiple layouts and required equal amounts of template configuration and associated implementation time. As for letters and general correspondence, once the culture of templating was established within an organisation, the Ad-hoc correspondence was so far down the priority list it has simply been forgotten.

In recent years, scanning hardware and firmware has improved dramatically providing superior image quality, and the capability of recognition software has greatly improved. Combined with a new approach to capturing data, previously neglected areas of business activities can now be automated and further savings achieved.

Unstructured documents, such as invoices and even general correspondence through mailrooms, can now be electronically classified, sorted and fed into further electronic processing queues. This new technology looks for definable data formats across the whole document so that, despite the numerous layouts, it successfully extracts information regardless of location without prior manual sorting or the use of templates. The technology works best when documents have a number of common elements (e.g. VAT number, Invoice Number, Invoice Date, Supplier Name etc) but is not reliant on the location of the data within the document structure. Even the once forgotten Ad-hoc correspondence can now be automatically classified and indexed with the minimum of interaction.

Issue	Once scanned
Focus on income	Focus on value, cash-flow and profits
Documents can be hard to find instantly	Can be electronically indexed and found
Content of documents cannot be re-purposed	Cut & Paste is available
Documents cannot be updated but need to be re-created	Can create a new version using the original as the start point for editing
Documents are hard to share and photocopies are required	Electronic documents can be shared keeping just a single copy
Documents take time to be physically sent between offices	Electronic information can be emailed often saving photocopying and mailing costs
Archiving material to "Iron Mountain" creates a significant delay in getting access to information again	Electronic archives can be large and with the continued drop in disk prices can remain instantly available

Figure 1

About the Author

David Martin is the founder of Ether Solutions, a consultancy specialising in Content Management, Document Management and Information Capture. He has been working with Stellent software for over six years through the implementation of solutions across government, construction, education, financial, manufacturing, pharmaceutical and retail industries. He has worked in varied locations including Bristol, Edinburgh, London, Norwich, Southampton and Wolverhampton.

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With these technological improvements, and the reduction in reliance on templates, the value proposition of a number of business processes has now become attractive:

- Purchase to Pay
- Digital Mailroom
- Case Management
- Fax and Email handling
- Expense processing
- Hire until Retire

The associated benefits arising from document scanning for business continuity and remote working are often secondary, but, as in the case of the floods, they become paramount in many scenarios. Photocopying large quantities of paper and storing it at multiple locations is not a normal business practice, but the electronic duplication to remote servers is low cost and easy to implement.

Of course, backing up scanned images at the same location as the paper material does not offer the same protection, although some business owners have now attested to the resilience of CDs to flood water; although backup to CDs should not be considered a long term strategy.

Experience shows that the scanned images of approximately 5 filing cabinet drawers use about 750mb* of disk space costing about 15 pence**. When considering the cost of floor space, you have to ask "why aren't we doing this already" and "how soon can we start scanning!".
It is the recent changes in the technology recognition capabilities that has reduced the cost of implementation and ownership, to deliver a better ROI in many scenarios.

When considering these huge cost savings in conjunction with the security and longevity values of scanning it is no wonder that the demand for implementing, or expanding existing systems, is currently so high.

In addition to these these savings, there are numerous reasons why organisations believe there are qualitative benefits from scanning, and electronic routing & management of paper content. Such benefits are listed in the table above (Figure 1).

Although much work has been undertaken to use electronic systems within organisations, it is the interactions between organisations and individuals that are generally driven by paper (e.g. Contracts, Delivery Notes, Shipping Documents, Purchase Orders, Invoices, Statements, Job Applications, Job Offers, and Payslips). In this environment, every organisation needs to handle paper, and with the advances in technology to help capture, process and maintain this information, every company can now benefit from the electronic storage of all their paper documents.

As implementation and ownership costs come down, these solutions are now available to SME businesses as well as FTSE companies. It is the quantifiable benefits and the low implementation risk that is driving this spread of activity, with more and more companies enjoying ROI in less then 12 months. Given this situation, it is clear that Oracle has acquired Captovation to substantiate its position in this growing market.

* Based on an average of 2,000 scanned sheets per drawer at an average of 75kb per image file = 150Mb, over 5 drawers = 750Mb.

** Based on an approximation cost of £100 for a 500GB HDD

Database Defence Preparing for your IT Audit

by Graeme J. Nash, Quest Software

"Clean up the procedure documentation, extinguish the worst of the fires and prepare the alibis and excuses". Amusing as they are, these activities might, in fact, be the most common sequence of events in preparation for an IT audit today. It would seem that auditors have acquired a special place in the hearts of operational IT staff and perhaps developed a certain reputation as being onerous, tedious and rather inflexible when it comes to the more critical points of operational controls. Until recently, DBAs have been largely spared the 'pleasure' of an IT audit, as auditing as a profession grappled with the transition from process to application auditing, and perimeter defence to infrastructure. However, today it would be true to say that data and databases are very much in the line-of-sight of auditor's attentions. This is not surprising when one considers the spate of data theft/leakage smeared across the media in recent times.

The truth of the matter is that the audit experience doesn't need to be this painful. In fact, it should be an opportunity for DB operational staff to demonstrate an ability to understand and work with the corporate-driven requirements. Consequently, it is an opportunity to shed the 'back room boys' mentality and indicate the DBAs' value to the business.

How do you do this ?…. by building 'Database Defence'. To be clear at the outset, this is not a tool or software product; it is an approach combining the three core fundamentals of any successful IT initiative – Tools, People & Process. Let's take a closer look at the components of Database Defence and how these pieces come together, to form an effective and repeatable solution to the ever changing demands of audit.

Context

The business governance world has transformed out of all recognition in the last seven years and the impact on IT is unravelling now. Provision for security was typically a one-off event, usually built into applications and database security models, or operational procedures, which were quickly superseded by the realities of daily operations. However, Audit, Security and Compliance (ASC) has now evolved into an entire discipline in itself, requiring strategic planning of money, resources, organisation and tools. Accelerating business change is another truism of today that impacts security provision and subsequent audit requirements. Consequently, ASC needs to be approached in a holistic way, involving people, process and tools.

Understanding the DB audit types

Database audit analyses are generally broken down into two types, static and dynamic, otherwise known as vulnerability assessment and activity monitoring respectively. There are a number of reasons why DB audit is broken down in this way. Firstly, vulnerability assessment is easier to understand for non-IT staff and, consequently, has been the auditors' first target. Also, vulnerability remediation, aka 'problem fixing', has a much more technical nature to it than database activity remediation and is therefore easier for technical staff to implement and own.

1 – 'Static' – database vulnerabilities and configurations

Static audit targets are commonly known as vulnerability assessments (VA). They cover a range of database areas such as:

- Access control
- Password policies
- Patching levels
- Known vulnerabilities
- Best practice configurations

Now, configuration assessment is essentially a comparative exercise against either industry best practice or internal policy requirements. For example, a 30 day password renewal policy might be deemed best practice for a specific industry requirement, but in reality 90 days is more commonly practiced internally and presents a negligible delta risk. Vulnerability Assessments, on the other hand, generally compare against external repositories of known vulnerabilities. These are usually published on a regular basis by the platform vendor i.e. Oracle, or by 3rd party organisations such as Mitre or Cert. Beyond this, different vulnerabilities have a range of potential impacts on the supported systems. An industry standard worth investigating and putting into practice as part of a database defence implementation is CVSS.

Common Vulnerability Scoring System (CVSS) is a vulnerability scoring system designed to provide an open and standardised method for rating IT vulnerabilities. CVSS helps organisations to prioritise and coordinate a joint response to security vulnerabilities, by communicating the base, temporal and environmental properties of vulnerability

2 – 'Dynamic' – Database activity monitoring

Activity-based audit targets are much harder and resource intensive to define, detect and remediate. They are based on the notion of threat and the associated risk. When considering database activity, auditors tend to consider two sub-categories:

a) Session threats
Sessions are closely related to users and how they access the database

- Privilege user activity
- DBA user activity
- Failed logins

b) Exploit threats
Exploits relate to the actual activity undertaken by the database user.

- DDL execution e.g. (grant, revoke, create)
- Excessive data queries
- Access to sensitive data
- Error handling

Lay the foundations

As with any non-trivial undertaking, preparation and planning is key to success. First and foremost is the identification of the specific data-oriented compliance imperatives that the organisation is looking to meet. These could be one or more of DPA (Data Protection Act), PCI (Payment Card Industry) or FSA (Financial Services Authority). In most cases, these requirements are well known by the corporate business planning/governance function. It is the DBA's responsibility to help translate this into 'database-speak' in your organisation's context.

> "Default user/password combinations represent an inherent risk to internal hackers looking for an easy access."

Most regulation/legislation is not terribly prescriptive especially when it comes down to the technical level. In a lot of cases, as an alternative to 'checklists', auditors will require a demonstration that risk has been mitigated to a measurable and acceptable level. This presupposes, of course, that everyone internal and external to the organisation has a common understanding and taxonomy of what the activity-based risks are and their impact on the organisation. Risk management can be a significant undertaking and organisations possess widely varying degrees of maturity with respect to it. As a rule of thumb, if your organisation has a well development risk management practice then splice into it. If not, perhaps focus on the purely technical impact as a starting point.

lines of communication with IT security, operational groups, development, internal audit and application data owners is a critical determinant of database defence success.

Target the most common audit weaknesses

No two databases are built and deployed in the same way. Whilst this is true, we do tend to see the same audit weaknesses popping up again and again. Whether this is a consequence of common generic audit approaches, or generally poor database management, is unclear. What is certain though is that, for the DBA, these typical audit weaknesses are the best areas to tackle first proactively.

> "...setting up lines of communication with IT security, operational groups, development, internal audit and application data owners is a critical determinant of database defence success."

One such starting point is data categorisation. This can be as simple as evaluating corporate applications and their deployment on specific database platforms to build data/risk categories. These can be as straightforward as high, medium and low risk. Keeping category sets small and simple will enforce a certain rigour in this exercise! The next step is to look at groups of critical data. For example, this could be customer or credit data, which could exist in several databases but will ideally be managed from a security and audit aspect in one policy.

Implementation of database defence is not limited to the initial implementation. An organisation is required to prioritise and remediate policy violations on an ongoing basis and the roles and responsibilities of this function within the organisation should be established as early as possible. Finally, and perhaps the most important aspect, is communication. Given the cross functional characteristics of ASC, setting up

Default user/password revocation

Database default users and their corresponding passwords must be revoked as part of a standard build process. Default user/password combinations represent an inherent risk to internal hackers looking for an easy access.

Critical patch updates

By not updating database patch levels, the DBA teams risk exposure to recently discovered vulnerabilities.

No audit trails

Audit trails are generally required for activity monitoring, unless a more sophisticated no-audit solution has been deployed to monitor database activity.

Privileged user activity

"What is the DBA up to", is a stock auditor requirement given that the DBA is the principal session threat. A solution to this requires an audit data collection mechanism that the DBA cannot access.

No. of licences

Whilst of little operational importance, having insufficient database licences can prove costly both financially and for the corporate image.

Role-based access control

Excessive granting of rights is a common problem. Of course, this is generally done out of expediency, but there is a risk associated with it. Furthermore, timely de-provisioning of users is often a key problem.

Inadequate backup

Building and maintaining a backup strategy as a function of risk and impact of loss can often be overlooked. Auditors will commonly assess for backup provision.

Divide and conquer

Whilst the implementation of database defence can seem a daunting prospect, it does lend itself to implementation into parcelled components. The components may be groups of databases partitioned by geography, business unit, application type or category of database. Either way, this approach allows the inherent risk of the implementation to be significantly reduced, whilst getting early wins in the implementation and demonstrating value to the project stakeholders.

The auditor buy-in

By demonstration and communication of database defence implementation to auditors, the organisation becomes open to secondary benefits, namely audit effectiveness and reduced audit costs. The focus turns to the management of the compliance lifecycle and policies evolution rather than individual events. Buy-in can be assisted by liberally sprinkling your dialogue with terms such as 'tamper proof audit evidence', 'internal controls' and 'auditable remediation'!

"...with database defence, DBAs are now enabled to seize the initiative back from the auditors and drive the ASC agenda..."

The compliance lifecycle

As eluded to earlier, database defence is a management capability. It can be summarised as a 'compliance lifecycle' that requires continual review to assure low levels of operational risk. The frequency of review depends on a number of factors, not least the rate of change in the security and compliance context the business is faced with. The cycle is broken down into three simple stages:

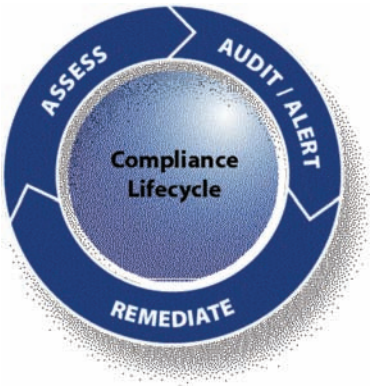

Figure 1: The Compliance Lifecycle

Assess

This phase refers to the vulnerability and configuration assessments and the visibility of operational policies.

Audit/Alert

The Audit/Alert phase signals violations of policies, whether these be changes to configurations or user activity.

Remediate

Remediation closes the lifecycle loop. Indeed, the generation of policy violations is worthless without a process to remediate them. It can take a number of forms: more appropriate access management, education or indeed modification to the policy itself, as long as this is approved by management and signalled to auditors. See Figure 1.

As with all corporate projects, there is a business case to be made to justify the implementation of database defence.

The first thing to consider is the cost of non-compliance. The UK government introduced a new civil law in May 2008 to impose 'substantial' fines on those organisations losing personal data. Add to this the cost of business remediation and loss of brand/image; overall costs could be substantial. Recent research in the US has put this at $90 per record lost. The challenge, however, is that these elements, important as they are, are intangible from a ROI perspective.

Examining current operational procedures, however, can often identify significant potential areas of efficiency with a direct cost saving impact. For example, the skilled manpower required to execute controls and their associated reports, over a whole database estate, can be considerable.

Balanced against the cost savings are the costs associated with implementation and on-going management. The key is dividing and simplifying the implementation and management as covered earlier. This will include the ability to deploy a minimum number of policies. For example, having one DBA user policy to cover administrators of all Oracle databases, and indeed other database platforms, will significantly reduce the total cost of ownership.

Finally, it is critical that whatever policies are put in place for database defence, there is a direct correlation to the business risk that it is mitigating. In this way, the number of managed policies can be minimised and also the business can perceive the value in the overall solution.

Summary

Implementing Database Defence is not a trivial exercise but, by the same token, does not necessarily need a large scale mobilisation of IT resource. Laying organisational and structural foundation is key to enabling the value of a database defence solution. Implementation can be prioritised and staggered to reduce risk and capture early wins. Understanding the different types of database audit will help put some structure into remediating audit weaknesses. Above all, with database defence, DBAs are now enabled to seize the initiative back from the auditors and drive the ASC agenda, thus getting a chance to demonstrate their worth to the organisation as a whole.

Resources

CVSS/CVE resources
http://www.cert.org/vuls/
http://www.first.org/cvss/cvss-guide.html
http://nvd.nist.gov/cvss.cfm
http://cve.mitre.org/

Media resources

http://www.silicon.com/publicsector/0,3800010403,39216158,00.htm

About the Author

Graeme J. Nash is a Principal Audit, Security and Compliance Consultant at Quest Software. He has worked with Oracle, SQL Server and Oracle's E-Business Suite for 15 years. An Oracle veteran, he was instrumental in building Oracle's solution footprints in the Industrials verticals to specific vertical business and corporate governance requirements. Furthermore, he has worked with a number of European blue chip companies in the development and extension of their IT infrastructure for inter-enterprise business process exchange.

Graeme consults a select portfolio of clients in the implementation of IT audit solutions meeting economic and compliance needs across a wide range of industries including banking, retail, financial services, telecom, utilities, government, automotive, high-tech and aerospace.

No pain, no gain?

Oracle Applications for shared services

by Tracey Bleakley, Edenbrook

Although the concept has been around for years, the focus of shared services is expanding from traditional models, as merely a source of cost efficiency, to a driver of corporate strategy and competitive advantage. Why? Simply put, the shared services model creates a finance function that adds more value to the business at a lower cost.

According to the Hackett Group, forty percent of European companies report savings of 21% or more, and these savings are not limited to large multinationals. Many companies with as few as twenty staff in a shared services centre report high percentage cost savings.

Further research shows that companies with integrated, standardised and consolidated IT platforms are over 40% more efficient than companies in a non-standardised environment. More compelling is that in the Hackett database, of those companies rated as world-class, 100% operate on a single ERP system, and on average have less than two secondary systems that do not run on the standard ERP platform/technology stack.

Oracle Applications and Oracle Fusion Middleware cover the entire footprint and are designed specifically to deliver enhanced support for shared services, including streamlining reconciliation and close, and simplifying the process of complying with diverse reporting requirements. But how do we implement Oracle Applications for shared services – and what are the benefits?

What is shared services?

First of all, the shared services concept is simply designed to provide services (usually covering internal and administrative functions) in large volumes from a single location to be used by several groups of people based in multiple locations.

A Shared Service Centre generally has the following characteristics:

- Provision of process or knowledge based services across multiple company divisions
- Consolidated, dedicated resources
- Operates as a distinct business within a corporate structure
- Has a high customer service focus (on its internal customers)
- Has service level agreements with the divisions/corporate entities it supports

So how is this different from a traditional centralised finance function? The key is that a service provider has to act like a professional services organisation. This is a mind-set and culture change, characterised by the table in Figure 1.

Shared services are demand oriented, whilst shared services teams define the orientation and outputs that will be supplied to support the company.
The key to success in shared services is standardisation. There should only be a single best practice process to follow in each area, but this should be flexible enough to cater for a range of variations to support the whole business.

The key is to treat what was once an internal department as a whole new business. This is achieved where possible by duplicating the environment of an independent service business, including customers, competition and responsibility for costs.

And how does shared services differ from outsourcing?

- Shared services involves establishing a separate internal service unit (which is often later outsourced once successful)
- Outsourcing involves the complete transfer of the business unit to an external service operator

Back-Office Function	Shared Service Centre
Focus on income	Focus on value, cash-flow and profits
High levels of transaction processing	Automation of transaction processing
Significant time spent on report production	Significant time spent on planning and modelling
Based on a single business function	Cross-functional
High levels of technical expertise	High levels of communication skills
High control and rule enforcement	Negotiator
Auditor	Consultant
Information silos	Focus on creating and sharing information
Results driven	Results and process driven

Figure 1: The differences between a back-office and shared services structure.

In summary, the core elements of a shared services concept comprise:

- **Strong customer focus:** the development of customer relationships internally and externally into a value add business partnership
- **Cost focus:** optimisation of efficiencies and costs through maintaining a balance between the level of service provided and costs incurred
- **Quality focus:** maintaining a total quality focus through delivery of the highest quality possible. A shared service organisation views services as its core business and designs processes in collaboration with its customers
- **Future focus:** Constant improvement and development of a sound and flexible platform for growth and change

Is shared services the right answer for my company?

If there is a strong driver for reducing costs or driving the best value from the finance function, then it should certainly be considered.

Results from implementing a shared service centre in terms of savings are very positive and in the majority of cases, they support the validity of the initial business case. According to Hackett Group research, in most cases realised savings are almost identical to planned savings. Forty percent of European companies report savings of 21% or more, and another forty percent show savings of between 11 and 20% – meaning that 80% of European companies realise savings of 11% or more with the implementation of a shared service centre. 70% of European companies show a payback in 3 years or less (44% in 2 years or less).

So why would a finance director decide not to implement a shared services concept?

- There is no 'burning platform' or reason for significant change
- The shared services concept does not fit the strategy of the company
- There is a lack of critical mass/volumes (i.e. less than 10 people in the finance department)

How do I Implement shared services?

Firstly, what is a shared services implementation project?

The first thing to bear in mind is that a shared services implementation is never simply a project – it is a programme of work, comprising of the following elements:

- Company strategy (usually incorporating a re-focus on core activities)
- Organisational restructuring
- Best-practice business process reengineering
- Technology optimisation (with organisational and process alignment, automation and cost minimisation)
- Change management (to overcome resistance to change and embed the new processes through communications and training)
- Programme management (to integrate all of the above!)

Although only one strand of the programme, technology is **the** enabler for shared services. A shared services project without appropriate systems and infrastructure is unthinkable – the best ideas, concepts and processes designed around shared services can only be realised if the underlying technology will allow it. Shared services would not be possible without the opportunity provided by today's systems, platforms and tools.

Implementing the technology and systems to support best practice processes in the most efficient way for the business, can make the difference between realising the performance improvements and cost reductions, and not (and potentially not generating a return on a very expensive project).

The shared services Technology Footprint is wide and diverse, and generally covers the following areas:

- ERP System
- Workflow
- Data Warehouse
- Data Analysis and Reporting Tools
- Intranet
- Imaging and Scanning
- Automatic Matching and Payment Allocation Tools
- e-procurement
- Self-Service Capabilities
- EDI
- CRM
- Activity based Costing Tools
- Call Centre Tools
- XML

Oracle Applications and Oracle Fusion Middleware cover the entire footprint and are designed specifically to deliver enhanced support for shared services, including streamlining financial reconciliation and period close and simplifying the process of complying with diverse reporting requirements.

Indeed, Oracle are reporting that their customer base is increasingly moving to a shared services model in order to gain productivity savings, capture economies of scale, and dedicate resources to strategic support. To this end, the technology is evolving with them. As an example, new functionality in release 12 has allowed shared services staff to process transactions and run reports without worrying about organisational boundaries (through a more flexible approach to multi-org).

In Release12, the key accounting structures have been re-architected to make transaction processing more efficient (and less manual, with less non-value add key strokes and processes), without compromising security and auditability. Sets of Books have been replaced with Ledgers in Release 12 to support parallel accounting (so as an example, the primary ledger could be used to represent the corporate chart of accounts and an alternate representation could be stored in a secondary ledger for local statutory reporting requirements). The new transaction tax engine also supports global tax compliance far better than in previous versions.

Another example is that the new bank model allows shared services staff to process payments and receipts for different entities with a single instruction to the bank (rather than running a different process for each payment group, thus licking down the bank account). Finally, new capabilities have been added to Oracle Internal Controls Manager for managing compliance processes. The latest release provides the ability not only to detect segregation of duties violations, but also to prevent disallowed combinations of tasks up front.

But these are just examples of process improvements and increased efficiencies. There are also new developments, such as Oracle Profitability Manager, which allows shared service centres to understand and report back on sources of profitability across the business. Combining this module with Oracle Balanced Scorecard allows the business units to manage performance KPI's and SLA's both with the shared service centre and across the company (without the need for many man-days of report production and analysis).

In terms of integration, Release 12 has been developed on Fusion Middleware and leverages several of its components. Fusion Middleware is built on a Service Oriented Architecture that supports lower cost integrations and adaptable and auditable business processes. For example, organisations that have multiple Oracle families (such as Oracle Financials and PeopleSoft HCM) in shared services centres could create cross-application flows using Oracle BPEL manager.

Finally, a library of web services is available for the Oracle Trading Community architecture so that customers can build processes to allow more automation in transactions with trading partners. In addition, many standard reports have been replaced with data extracts that can be easily formatted using desktop tools such as Microsoft Word, Excel, or Adobe Acrobat.

Could shared services work for my company?

Yes. Whilst shared service projects are perceived to be the domain of the large Global Conglomerate, in actual fact many companies with as few as twenty staff in a shared services centre report high percentage cost savings, especially where there is pressure to reduce overall costs and increase profits.

Indeed, the implementation of a shared services concept in a smaller organisation can be accomplished far more efficiently than in larger multi-nationals due to lower organisational complexity and a greater opportunity for compliance to single, standard processes.

It is usually the case that shared services can be implemented for far less, and generate far higher efficiencies and cost savings than would be initially perceived.

Another well kept secret is the fact that shared services can be implemented as part of a phased approach – thus achieving fast return on investment and almost immediate business benefit. The key is to focus on embedding processes through training and communication and implementing the right technology at the right time to support each phase.

The key to an efficient shared services implementation is combining best practise in processes, IT and organisation without re-inventing the wheel. Given that processes cannot be world-class without being underpinned by world-class technology, the selection of a world-class system, written specifically to support a shared services concept is essential, and Oracle R12 Applications are an excellent fit for companies looking to try out the new model.

About the Author

Tracey Bleakley is Head of Change Management at Edenbrook and a director of UKOUG. She has 12 years experience of designing, implementing and managing business transformation projects supported by Oracle solutions across a range of sectors including telco-media, financial services, retail and professional services.

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APEXposed! 2008 OVERVIEW

Application Express is now four years old and has found its niche in a variety of business environments. APEXposed is the Seriously Practical Training event that will help APEX users take their applications to a new level or simply learn the best way to use APEX. Taught by the leading APEX experts, you will be exposed to the best nuts-and-bolts training available and have an opportunity to talk one-on-one with these experts.

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Balancing act …

Using UPK to support blended learning

by Peter McClintock, Larmer Brown Consulting

For some time now, organisations have been moving towards e-Learning, driven by the lower cost of delivery and the need to reduce off-the-job time, while coming to terms with new systems and applications. Cost, however, is not the only reason to go down this route. There are also strong arguments that learning can be more effective if presented as a blended programme of classroom and e-Learning elements.

Oracle's User Productivity Kit (UPK) creates custom built e-learning that will run in 4 different modes, providing the building blocks to support a highly effective blended approach. In addition to the four Player modes, Training Manuals and Quick Reference Cards can be published directly from the same UPK content that has already been developed. This can be useful for those who like something tangible to annotate as they learn.

In this article, we will look at a number of challenges for training delivery and consider how UPK can be used to overcome these.

Challenge 1: E-Learning is often theoretical and not connected with the actual work or process to be learned.

Traditionally e-Learning content has been expensive to develop and had to be sold in volume to recover the development cost. This has meant that, in order to be applicable to the widest audience, the content must be very generic in nature. Users of this type of content often feel that it is not relevant to them and hard to relate to their situation. As a consequence, they find it hard to maintain motivation to complete the courses and do not retain the learning effectively.

Because UPK content is recorded on your environment, using your processes, data and terminology, the learner will more easily identify and connect with it. The user will be able to immediately see the relevance of the training to their daily job and therefore understand and retain the content more effectively. This approach is made cost effective by the unique power of UPK to create custom content very quickly and deploy it in various modes without additional work.

Challenge 2: People have different learning styles and the training programme must cater for these in order to be effective.

The UPK Player package generates four styles of learning output which will go a long way to catering for different learning styles.

"I like to watch someone demonstrate the subject before I roll up my sleeves and try it for myself." In this case, See-It mode is ideal. It allows the user to passively watch a simulation of the business process on their screen so that they get an end-to-end view of it before they try it out. This can be a See-It mode simulation presented in the classroom, or accessed through a learning portal.

"I like to do something for myself, otherwise I will not remember it." Try-It mode is a guided simulation of the process that will allow users to practice the steps as many times as needed to ensure familiarity and retention.

"I like to experiment with the application to see what works and I really only want help if I get lost or can't make progress with my task." In this case, Do-it mode is a great help to the learner. The User can work in the live application and have UPK in Do-it mode hovering in the lower right of the screen, ready to guide with the next steps, or provide additional reference information as required.

"I am really impatient with learning and I think that most systems are fairly intuitive. I think I know the process, but if I get it wrong I would like to be shown the right way to do it." This type of user can use UPK's Know-it mode to assess themselves against best practice. The system will highlight when they deviate from best practice and offer various levels of remediation to help get them back on track. If they feel that they need more instruction then the other three modes of See-it, Try-it and Do-it are ready to be deployed to help.

Challenge 3: E-Learning may be a culture change for the organisation.

In fact this is the case for most organisations. Even those who have delivered successful e-Learning projects, in many cases have not managed to get to the point where it has been accepted across their entire organisation. We have found that the best solution is to deliver a blended approach.

"The UPK Player package generates four styles of learning output which will go a long way to catering for different learning styles."

> "UPK Usage Tracking ... can report how the learner population is making use of the content and what scores are being achieved in Know-it mode."

A classroom session would start with an introduction to the background and concepts behind the subject area.
The Instructor would then introduce UPK and use it in a variety of modes to teach some key processes. Having familiarised the class with UPK as a learning tool, the students are encouraged to learn on their own using their preferred modes, while the Instructor is on hand to help out with any problems or questions. By the end of the class, the students should have had practice with UPK and feel comfortable to continue self-service learning to complete the topics relevant to their job role.

It is important that there is a structured programme in place to ensure that the learners continue with the e-learning. Help should be available in the form of telephone support, user clinics or proactive mentors, to ensure that the momentum is not lost and that the learning is completed in time for the system go-live.
UPK Usage Tracking is a critical tool in the context of managing progress with the learning objectives. It can report how the learner population is making use of the content and what scores are being achieved in Know-it mode.

Challenge 4: The forgetting curve.

The 'learning curve' is usually depicted as a steep hill that we have to push users up to get them confident and competent to use the application effectively. Unfortunately when we get them there, they immediately begin to slip down the 'forgetting curve'. To minimise this, we need to ensure that they have an opportunity to put their learning into practice before the knowledge begins to fade.

We therefore need to close or bridge the time gap between the learning and the practice by either delivering Just-In-Time training or providing regular opportunities to practice until the system is in use. UPK can help with both of these approaches. Because the See-it, Try-it and Do-it mode supports are always on tap, the users can refresh their knowledge immediately before using the process on the system.

There are always some processes that are only used at quarter end, year end or in special circumstances. A classroom training programme is not well positioned to provide Just-In-Time training for these situations, yet these are the very processes that the users will most need help with, due to the infrequency of their use. With UPK, the users can refresh themselves on the system steps and then follow up references to supporting information in documents, illustrations, websites or any other relevant organisational knowledge source.

Challenge 5: Ensuring that e-Learning takes place.

Training managers can plan and deliver classroom programmes in the knowledge that those attending are taken out of their working environment and given dedicated time to concentrate on learning. Of course, this certainty is impacted somewhat with the advent of mobile phones, Blackberrys and other mobile devices. Nevertheless, we can still say, with a degree of confidence, who has attended training and that they have been taken through a defined curriculum.

Achieving this certainty with e-Learning is much more difficult. If we make content available to users and leave it up to them, we can be fairly certain that the pressure of the "day job" will prevent them from completing the learning and being prepared to use the system. The training may be Just-too-late rather than Just-in-time!
We need to create a properly managed programme with defined learning objectives, tracking and various interventions to ensure that staff are encouraged and supported through the programme.

I would suggest that the following elements should be included to make up a controlled system.

- Introduce UPK in short classroom sessions.
- Set objectives, with target dates for completion of learning modules.
- Involve Line Management to encourage/enforce completion of the training.
- Use Usage Tracking to provide information to Line Managers about the progress of their staff.
- Use Know-it mode to get feedback on the achievement of learners and to encourage users to achieve a standard.
- Use mentors to ask the learners how they are getting on and check if there are any barriers impacting their progress.
- Schedule clinics and online forums to answer questions, get feedback and provide encouragement.
- Report to management, showing progress with classroom and online learning.

Experience shows that a well designed blended learning programme, based on quality UPK content, and delivered with management support and commitment will be more cost effective and successful in creating a competent user community than classroom training used in isolation.

About the Author

Peter McClintock is Director of Services for Larmer Brown Consulting, UPK Training and Project Specialists.
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Upgrade choice is no gamble:
Optimising your CRM initiative with Siebel 8

By Bernard Drost, Chief Technology Officer, Innoveer Solutions, Inc.

Siebel's Market-Leading CRM Architecture Delivers Sophisticated Tools To Increase Revenue, Operating Efficiency, and Customer Loyalty

Major Enhancements

Organisations that already rely on the powerful Siebel e-business suite are no doubt asking why they should upgrade to the latest version of the company's customer relationship management (CRM) software application. The answer is simple: compared to previous versions, Siebel 8 provides organisations with the sophisticated tools they require to conduct more intelligent customer activities, while simplifying management of pricing, promotions, sales, marketing, and service processes. For organisations still apprehensive about upgrading to Siebel 8, the latest enhancements offer a host of bottom-line benefits and many business payoffs.

Extensive Rewards

From Siebel 8's Web-based environment – aligning it with the latest in forward-looking enterprise software architectures – to its industry applications, redesigned sales processes, and enhanced integration capabilities, the rewards of upgrading are many and varied. Siebel 8 provides enhanced business value for everyone within an organisation – from executives and managers to end users and IT staff.

Executives, for instance, will appreciate the system's lowered total cost of ownership (TCO), due in no small part to Siebel's Web-based architecture, as well as Oracle's reduction in Siebel maintenance fees. Siebel 8 also incorporates dozens of enhancements to better and more easily mould to an organisation's specific goals and practices, not to mention executives' reporting requirements. Managers, in particular, will appreciate Siebel 8's new natural language rules engine, which enables design of business processes without relying on IT to make changes to code.

For IT staff, Siebel 8's new pre-built adapters simplify integration with other systems, greatly speeding this otherwise formidable task. Siebel 8 also ships with a redesigned data model, which facilitates single sign-on and streamlined management, among other capabilities. On top of these benefits, Siebel 8 simplifies customisation, maintenance, and upgrades, and offers numerous other types of functionality, such as logging of system events, which facilitates much more rapid debugging. Technically speaking, Siebel 8 also works with more software platforms than ever before, including Linux, which allows organisations to minimize their Siebel-related hardware costs.

Meanwhile, end users will appreciate Siebel 8's dramatically improved user interface, navigation, and search capabilities. For example, the task-based user interface automates common tasks to increase user efficiency and satisfaction, minimize training requirements, and maximize data consistency. Aesthetically speaking, Siebel 8 is more polished than ever before, with a simplified look and feel reminiscent of the ultra-streamlined Siebel On Demand application. Finally, Oracle overhauled the poorly rated Siebel 7.x search tool, and now offers Oracle Search, which produces Google-like search results to maximize available screen real estate, offer result teasers, and enable users to refine search results for the first time.

> "Organisations should view an upgrade to Siebel 8 as an opportunity to integrate the best practices built within Siebel into their own environments."

Invest Now For Increased Value

A successful implementation will require an investment of time and effort to assess the organisational factors – including user adoption, training, and executive buy-in – associated with such a comprehensive upgrade. In addition, rolling out the upgraded application necessitates extensive testing, to ensure secure and cost-effective operations. Even so, companies that upgrade can expect measurable returns, not just from the technology, but also from the business process, interface, and architecture enhancements. Indeed, the newest release includes some significant infrastructure changes to Siebel's Web-based architecture and service-oriented architecture (SOA) capabilities (as detailed later in this article). Innoveer Solutions believes that organisations should look at upgrading as an opportunity to revitalize and enhance their CRM initiatives. By upgrading, they not only have the chance to increase the functionality and performance of their current Siebel solutions, but they can also increase overall user adoption, for even greater returns.

Despite any horror stories about how painful and disruptive a Siebel upgrade can be, remember that with proper planning and utilization of project teams staffed by CRM experts, such scenarios are easy to avert. Especially with this release of Siebel, Oracle has designed the upgrade process to be as seamless and rapid as possible, whether it involves technology enhancements, or training users on the much more intuitive user interface. Even so, to truly deliver on CRM project goals, organisations must work with a team who can balance the project's sometimes competing technical, functional, and organisational requirements, and ensure that beyond completing a technical upgrade, organisations are able to increase their CRM business outcomes.

Best Practices

Organisations should view an upgrade to Siebel 8 as an opportunity to integrate the best practices built within Siebel into their own environments. Indeed, Siebel 8 ships with 23 industry-specific versions – with 366 enhancements since Siebel 7.8 – and an upgrade is an ideal time to take advantage of these features. Each industry application provides comprehensive, out-of-the-box functionality designed to support the business processes of each major industry, including financial services, communications, energy, life sciences, consumer goods, retail, apparel, high-technology, automotive, chemical, the public sector, travel and hospitality, and pharmaceutical.

Plan For Fusion

Enterprises considering a Siebel 8 upgrade should also weigh the importance of Oracle's many Siebel-related enhancements, and the benefit of implementing these improvements today. In particular, with Siebel 8, Oracle has begun delivering on its Fusion vision: to remake all Oracle applications as SOA components, based on Web Services and XML middleware, thus allowing organisations to select and integrate specific functionality to maximize their capabilities, and reduce costs and infrastructure requirements. Fusion middleware enables organisations using Siebel 8 to seamlessly integrate advanced integration, search, and identity management capabilities. Gaining familiarity with Fusion's capabilities today will enable organisations to rapidly adopt forthcoming enhancements, to further realize increased efficiency and business value.

More Effective Operations

Siebel designed version 8 to maximise sales, service, marketing, and operational effectiveness. Key enhancements in this area include delivery of improved customer insight by optimising sales execution and order management, and increasing collaborative selling. For service representatives, the new version helps improve service delivery and increase customer retention by relocating a significant number of call centre tasks to the Web, and providing a real-time understanding of customer contractual commitments and penalties. For salespeople, managers, and analysts, Siebel 8 also offers another potent productivity enhancement: synchronization with Microsoft Office documents, Excel spreadsheets, plus Outlook and even SharePoint, thus providing users with greater access to Siebel data than ever before.

Business Intelligence Capabilities

The reasons for upgrading, of course, go well beyond such features. For instance, Siebel 8's latest embedded BI capabilities offer pre-built, industry-specific reports based on a real-time analysis of existing practices. In particular, this allows organisations to automatically integrate data from multiple enterprise sources and translate it into key insight that executives, managers, and front-line knowledge workers require to make rapid and accurate business decisions. Beyond this benefit, Siebel 8 actually ships with an entire, pre-built data warehouse and multiple reports, allowing organisations to quickly convert sales, service, and marketing information into actionable intelligence and a competitive advantage.

"Quote To Cash"

Another notable benefit of upgrading to Siebel 8 is the ability to utilize the new Customer Order Management suite of applications, which improves the entire quote-to-cash process. The suite allows users to create relevant offers and promotions to target specific segments or even individual customers. The related support tools supply extensive capabilities, including enhanced product, pricing, and catalogue management; streamlined quoting and order lifecycle management; and the ability to track not just from "quote to order" but also from "quote to cash."

These features provide sales and service personnel with important new functionality. For example, salespeople can utilise these capabilities to dynamically display logical cross- and up-sell opportunities within the Siebel interface, during an initial sales transaction. The related tools also help sales managers design more precise and effective per-customer and per-customer-segment pricing structures, leading to further improvements in bottom-line results.

Redesigned Pricing Tools

Siebel 8 delivers new, out-of-the-box functionality that greatly enhances and simplifies pricing, eligibility, compatibility, promotions, and catalogue syndication operations. The new version of Siebel's order management application, in particular, extends an organisation's ability to easily create, validate, and manage customer quotes and orders across multiple channels and enterprise systems. Among the many new and enhanced sales process features that Siebel 8 supports are a set of dynamic product selection and pricing options. The product selection feature offers sales personnel the tools to easily browse, select, and configure complex products, such as those sold by technology manufacturers. In addition to providing more intelligent product searching, Siebel 8 simplifies catalogue-browsing, while also delivering templates for commonly purchased products. This greatly reduces the number of screens, mouse clicks, and other manual tasks when navigating the system to create orders.

The dynamic pricing option equips sales personnel with flexible methods for modeling pricing rules, based on a wide range of parameters, including customer buying histories and trends. This ensures a consistent pricing structure across multiple sales channels. The feature also supports pricing in a wide range of currencies, including the ability to enter multiple currencies within a single order, which leads to greater sales force efficiency, both when creating quotes and closing sales.

Advanced Infrastructure

Among the other key enhancements and new features that Siebel 8 offers is a composite application framework that enables enterprises to better integrate existing technology investments with Siebel 8. This framework utilizes SOA standards, delivering adaptable and reusable business objects, services, and processes.

By continuing to deliver SOA capabilities, Siebel 8 bolsters an enterprise's ability to reuse out-of-the-box Siebel Customer Order Management components within its own customized application.

In addition, Siebel 8 enables organisations to reduce service costs via a number of service application enhancements. For example, upgraded applications provide a closed-loop, multi-channel service solution for supporting many call centre tasks via an online, self-service portal, as well as new eBilling capabilities. These enhancements enable enterprises to provide choice and convenience to customers, while at the same time reducing the cost of providing these services. This means that service organisations can increase efficiency, improve service delivery, create new revenue opportunities, and improve customer satisfaction.

Benefits and Benefits

The analysis of how Siebel 8's increased capabilities provide demonstrable business returns could go on and on, but by now, the point should be clear. Feature by feature, Siebel 8 significantly advances the enterprise-class CRM suite.

The bottom line, then, is that upgrading to Siebel 8 does require careful planning, project teams staffed by CRM experts, and ultimately, an investment. Yet when companies analyze the benefits, they will discover that the payoffs significantly outweigh the expenses. As a result, enterprises that rely on Siebel CRM should consider an upgrade not only as a chance to add essential functionality, speed customer interactions, and strengthen their CRM infrastructures, but also as a strategy to upgrade and improve their entire customer management strategy and processes. This will lead to increased revenue, improved business efficiency, reduced operating costs, and enhanced customer loyalty.

About the Author

Bernard Drost is responsible for Innoveer's overall technology direction, strategy, point-of-view, and is involved with all aspects of customers' CRM – specifically Siebel – programs, including architecture development and implementation. He has over fifteen years of experience strategizing and developing innovative technology and CRM programmes. Prior to Innoveer at Cambridge Technology, Bernard focused on a full range of CRM solutions, beginning in 1997 with several large, international companies.

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What is a customisation?

By **David Kelly**

Having recently started a new position as Project Manager on a well established implementation, I decided that I needed to get up to speed with the project history, future requirements, and the solutions being delivered. After reading many lengthy process documents, it became clear that this was by no means a straightforward project and that many of the client's legacy processes needing to be replicated in Oracle had required additional development to achieve the projects success criteria.

When I requested a comprehensive list of customisations across all modules, the response I received from both the client and other consultants was, "we only have a few customisations – everything else is an add-on." My immediate thought was: what is an add-on if it's not a customisation?

When I challenged their interpretation of a customisation and listed requirements such as the ability to upload ADI journals across sets of books, ability to automatically reconcile subledger activity to GL transactions via custom tables, and the ability for specific users to post "retro" journals when a period is closed, I was told that they are not customisations because we are not changing standard code. Without having seen the technical specs for these "add-ons" it's difficult for me to argue whether a code change was required or not (although I suspect it was in some cases). However, the misconception that something is only a customisation if a code change is required needs to be rectified.

Being a functional specialist with some technical understanding, I decided to research this topic further in order to prove that a customisation is not purely defined as something that requires a change to standard code. According to many Oracle professionals specialising in customisations, they are commonly defined as follows:

Extensions: Components developed using a variety of tools such as Oracle Forms, Oracle Reports and Oracle Workflow, which provide new functionality without changing the core application structure. For example, creating a new report or modifying workflow to meet specific requirements can be achieved using these tools to create data extensions. However, because the new report or tailored workflow is not standard/ pre-packaged, this development is still classified as a customisation.

Modifications: Changes made to standard code or database objects in the E-Business Suite. This can include adding or modifying tables, columns, stored procedures and triggers which are part of the E-Business Suite application schema.

In the majority of cases, Oracle customers generally develop "extensions" rather than "modifications" as this is the safest way to provide a solution without changing the core data structure (but may involve creating new objects rather than modifying standard objects). However, extreme cases may require a modification which, in

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addition to introducing potential risks to data integrity, is something which consequently presents many challenges during an upgrade. How a customer chooses to customise/modify the applications also affects product licensing and support.

So in conclusion, I prefer to define a customisation as a function (i.e. form), subfunction, process (including interfaces), report, or workflow that:

- Is not standard functionality.
- Cannot be provided by configuration alone.
- Requires development using tools provided, or recommended, by Oracle.

If anyone disagrees, I am very interested to hear your views.

Response to "What is a customisation?"

Ivan Harding Says:

I think you've categorised the subject correctly but we're some way from having industry standard terminology that is used by everyone. Plenty of people would use the term "customisation" where you use "modification" and view both as "taboo" in the world of Oracle implementations.

The difficulty comes when you get to the fringes of "configuration". Few would consider adding your own lookup value a "customization" but would it fall into your customisation bucket because user defined lookups aren't "out of the box"? OK, so that's simple one. What about a new user defined flexfield segment? Probably still in the realms of "configuration". What if that flexfield segment sits on top of a valueset you've delivered? Depends on the valueset and how complex it is. What if that valueset then calls a bespoke PL/SQL function running off new non-Oracle tables to determine validation? Now we get into the realm of "customisation"/"extension".

You can see how quickly we get into a grey area.

Anyway, in practise, I think the term "customisation" is an emotive one that the majority of consultants will rightly frown upon; what you term, "modifications". "Custom Solutions", "Extensions", "Bespoke code" are all terms readily bandied around for solutions that persist on Oracle upgrades and which are generally a necessity on most projects. Either way, it is, as you say, important to understand what a client has in place over and above the out of the box Oracle setup.

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A quick fix...
How to troubleshoot

By Jonathan Lewis, JL Computer Consultancy

A search of the internet will find all sorts of tools and bits of advice on trouble-shooting an Oracle database, and it's very easy to be drawn into a chase that wastes a huge amount of time and effort if you don't start with a clear image of what you are trying to achieve, and why.

Focusing only on performance trouble-shooting, I've gone back to basics to produce a short-list of targets, and this article will talk you through the only real source of information that is available to help you with these performance issues.

Where's the problem?

If you're looking for a performance problem, you're probably facing one of three scenarios, which can be typified by the questions:

> Why is this screen/report always so slow?
>
> Why did the batch over-run by three hours last night?
>
> What's going on right now?

The third question can, of course, be split into two forms – why is "the system" always slow, and why is "the system" sometimes slow – but the critical feature is that there is (apparently) no specific issue, just a general malaise.

It's important to remember which of these three scenarios you are addressing, because the most fruitful approach to problem solving should be guided by the class of problem you are addressing. Regardless of the type of problem, however, Oracle has only one source of information that can help you – the dynamic performance views.

The dynamic performance views

Internally, Oracle captures a huge amount of information about what's going on from moment to moment and summarises it in a variety of different ways. Broadly speaking you could divide these summaries across three dimensions: people, resources, and statements; for example:

People:	v$sesstat, v$session_event, v$sess_time_model
Resources:	v$filestat, v$segstat, v$latch, v$event_histogram
Statements:	vsql, vsqlstats

Summaries can be very helpful, of course, but sometimes what we really need are answers to questions like "how many times did I hit child 43 of the cache buffers chains latch the third time I ran statement X using execution plan Y, and how much CPU time did I spend spinning on that latch and how much time sleeping".

That kind of detail, of course, is far too voluminous for any realistic capture process, but with 10g we do get some sampling across the three dimensions to help. Extending from v$session_wait we get v$session_wait_history (a 100% sample of the last 10 wait events), v$active_session_history (a sample once per second for the last hour or so) and dba_hist_active_sess_history (a sample (notionally 10%) of v$active_session_history that is kept, bydefault, for seven days). The v$active_session_history and dba_hist_active_sess_history, however, are only available to users with the appropriate licences.

Improving performance

So when you go trouble-shooting, what does it mean to "improve performance". In simple terms you want something to happen faster. Whether it's a screen response, report run or batch run, time is probably the single visible measure of success.

The formula: response time = wait time + service time is probably very well known to the Oracle community (largely due to the efforts of Anjo Kolk and Cary Millsap), but I'd also like to throw another equation, or pair of equations, into the pot:

Wait time = competitive wait time + resource wait time

Service time = competitive service time + resource service time

I'm not entirely happy with the wording I have used in these expressions, but the idea I want to get across is that there is a very fluid boundary between how you decide what you call 'wait' time and what you call 'service' time.

Consider, for example, a simple disk I/O that, on an idle system, takes 6 milliseconds. From Oracle's perspective, that would probably be considered virtually 100% wait time. But from the viewpoint of 'response time = wait time + service time', most of that time is waiting for the heads to settle and waiting for the disk to rotate to the right position. When two users try to access the same disc at the same time one of them will see a 12 m/s service time, of which 6 m/s is waiting (competition time) for the other user to get out of the way.

> "...there is a very fluid boundary between how you decide what you call 'wait' time and what you call 'service' time."

At the opposite extreme, consider a simple latch acquisition. It takes a few micro-seconds (service time) to run through the code to acquire a latch; but if someone else is holding a latch that I want, I start to spin on that latch, working to avoid sleeping. Is the spin time "wait time" or "service time"? I'd like to think of it as service time – I am still working, not waiting – but identify it as competitive service time rather than resource service time. (For a simple example of this type of competition resulting in a massive CPU overhead, see http://jonathanlewis.wordpress.com/2008/05/10/cpu-usage/).

> "...if you're going to update 1,000 rows do it in one statement, not in 1,000 statements..."

One guideline to consider when it comes to competition time is that higher frequency tends to lead to more competition. That's part of the thinking behind strategies which say: "if you're going to update 1,000 rows do it in one statement, not in 1,000 statements" – the more steps you take, the more often you compete, and the higher the probability of wasting time in competition.

The reason I am struggling to make a distinction between competition and usage is simple. After the "time-based tuning" revolution, too many people spent too much time focusing on the "service time + wait time" perspective and translating this into: 'you've got to use the 10046 trace to see the time". That's an important aspect of trouble-shooting, and the best strategy for some circumstances – but you still have to reduce the time, and you can spend too much effort trying to reduce your usage time when you could do better to reduce the competition time by reducing other people's usage.

Strategies

So let's put the pieces together and address the three basic questions.

Why is this screen/report always so slow?

There's an obvious winner on this one, if you can identify the task so precisely, then the 10046 trace gives you the maximum detail available for every operation – except it doesn't give you much indication of where you spent the CPU and how much of it was 'competitive'. You may therefore need to do some work, and make some intelligent guesses, about how reasonable your wait times are.

Obviously the summarized (tkprof) output from the trace will allow you to identify the statements that were responsible for most of the time – and let you guess that some of the statements may have been badly affected by competition time – but you still need to know if the statement that took 1,000 sequential reads and 10 seconds is behaving reasonably because (a) that's a reasonable number of disk reads to expect and (b) the average of 0.01 seconds per read is meaningful or did 90% of the I/Os come from cache with 10% coming from an overloaded disk system.

Figure 1

```
select stn.name, mst.value
from   v$mystat mst, v$statname stn
where          mst.value != 0
and    mst.statistic# = stn.statistic#
;

select
       /*+ leading(mys) no_merge(mys) */
       event, total_waits, total_timeouts,
       round(time_waited/100,2) time_waited,
       round(max_wait/100,2) max_wait
from
       (select sid from v$mystat where rownum = 1)     mys,
       v$session_event                                 sev
where          sev.sid = mys.sid
;

select
       /*+ leading(mys) no_merge(mys) */
       stat_name, value
from
       (select sid from v$mystat where rownum = 1)     mys,
       v$sess_time_model                               stm
where          stm.sid = mys.sid
and    stm.value != 0
;
```

Why did the batch over-run by three hours last night ?

Until the advent of 10g and the licences for the diagnostic pack and performance pack, you couldn't get any fine detail about a single session "last night". You could only get the system-wide statspack reports, which could give you some clues about resource hogs – which might be heavy users, but might also be sources of intense competition.

So the ideal has always been to do the smallest amount of extra work to get the maximum viable instrumentation into the batch jobs. In the simplest case, all it takes is two basic SQL statements each time you disconnect – with a third, possibly, for 10g. The queries simply report the work done (v$mystat) time waited (v$session_event) and, optionally, database time distribution (v$sess_time_model) for the session. See Figure 1.

With a relatively short report you get a head start on trouble-shooting because you can compare the report for a bad day with the report for the previous day and ask questions like: "did I do far more single block reads today than yesterday – or was the average read time longer", "did more workarea executions spill to disk today", "why has the number of sql*Net roundtrips gone up by a factor of 10".

This can't give you the answers because the detail isn't there, but it will direct you to the right places to look for the answers.

Of course, with 10g, you could start with this report, to find out which jobs did most work, or suffered from the worst competition, and then go into the dba_hist_active_sess_history to see if it gives you a good sample of the critical work this session was doing when it had a problem.

What's going on right now ?

Finally the generic 'system is bad' question. This may be the 'instant response' question, or may be the longer term view of a badly performing system. Either way, your best bet is taking snapshots.

For the longer term viewpoint, of course, Statspack (or AWR) gives you a default way of collecting all sorts of interesting data in snapshots, and their mechanisms tell you all you need to know about snapshots – copy the data from a dynamic performance view, wait a bit, make another copy, report the difference.

In the case of the longer term view, you're probably going to look at competition – what resources are under most pressure, can you see what SQL is (probably) causing that pressure. In many cases this means looking at the "Load Profile" and the "Top 5 Timed events" to get an idea of work done and time lost, then jumping to the most appropriate section of 'SQL ordered by …'.

When you look at the SQL – there are two things to remember: usage and competition. A statement which uses a lot of CPU is denying CPU to other statements. A statement that does a lot of physical reads is slowing down the physical reads from other statements. A statement that executes a large number of times is interrupting other statements and competing for latches. When you look at 'greedy' statements, don't forget to check how greedy they are – what impact are they having on the total resource available. Several of the 'SQL ordered by …' reports have some text to help, see Figure 2.

This report would be fairly useful as it has captured roughly half the buffer gets accounted for in the period. However, if this turns out to be 30 statements, each responsible for about 1.6% of the total, then you might move rapidly on to check the SQL ordered by CPU, or the SQL ordered by executions.

In the case of the short-term view, you need some quick, lightweight, code to take similar snapshots of several of the dynamic performance views. I have various packages to look at v$sess_io, v$sysstat, v$session_event and so on in this way, but one of the best examples I've come across of such code is on Tanel Poder's "Session Level statspack" at http://blog.tanelpoder.com/2007/06/24/session-level-statspack/

The idea is simple – if the system is busy, someone, somewhere, is doing something inefficient – in this case you want to find the culprit quickly – who's doing the work that is causing a problem. (Notice how the time scale changes the direction of search – although the snapshot principle is the same as the statspack report, we can search for the person in real-time, but only search for the SQL in Statspack).

The output from a simple snapshot of v$sess_io might look like Figure 3.

With a suitable filter to bring out only the larger numbers, you can get a short report that points you to chase just one or two sessions that might be worth following. (The 'Reads' in the above report are probably coming from a file-system cache, by the way, so not only is session 9 threatening the discs, it's always burning extra CPU).

Figure 2

```
SQL ordered by Gets              DB/Inst: xxxxxx / xxxxxx  Snaps: 8277-8278
-> Resources reported for PL/SQL code includes the resources used by all
SQL statements called by the code.
-> Total Buffer Gets:    263,043,933
-> Captured SQL account for     49.8% of Total
```

Figure 3

```
SQL> execute snap_sess_io.start_snap
PL/SQL procedure successfully completed.
-- wait 5 seconds
SQL> execute snap_sess_io.end_snap
------------------------------------------------------------
Session I/O:-   17-Jun 14:28:40
Interval:-      5 seconds
------------------------------------------------------------
```

SID	CU Gets	CR Gets	Reads	Blk Change	Con Change
9	3654	445,630	13,925	7,194	8,539
13	0	50,157	0	0	0

Conclusion

There are cases where you can identify a business operation that is believed to be inefficient – if you have this luxury, then the 10046 trace is an enormous help to pinning down exactly where you can spend your efforts in fixing the problem. But there are cases where this direct approach is not possible.

If you have to find problems in the past, or problems that are non-localised, then Oracle offers you summaries of the work and time attributed to users, statements, and resources. You can used snapshots (at various timescales) on these summaries to help you identify the best place to spend your efforts.

Remember that competition for resources can be as great a threat to performance as use of a resource. If you stop me from working too hard, you are also reducing the competition for resources being suffered by other users. So, in the absence of precise targets, identifying the most significant resource threats may be the most cost-effective use of your time.

Footnote: in this article I've avoided the question of locking. When a user says – "The system is hung", one of the first quick checks is v$lock to see if there are some blocking locks causing a problem. Because the view falls outside the normal range of performance issues due to inefficiency, I've left the topic aside to be pursued at a later date.

About the Author

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

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

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Programming real applications with Application Express

by Andrew Woodward

Oracle's Application Express (Apex) development tool has waded into competition with Microsoft Access and Excel for small desktop database applications. Simple Web-based applications can be created in minutes, with no particular knowledge of HTML or Web technologies. But what happens if you want to go beyond the wizards and create complex, programmed applications? How feasible is it with Apex? Is it a serious programmer's environment?

So many wizards...

The Application Builder part of Apex has a huge number of wizards available to build the more common components of an application. Indeed, creating any item or programmatic element on a page will trigger a wizard to help the creation of the item. Similarly, when adding a page to an application, a wizard will make it very straightforward to create the page with simple data retrieval and editing capabilities. This is akin to the Data Block Wizard in Oracle Forms – a simple report on a table, with a form behind it to allow basic Query, Insert, Update and Delete operations, can be created literally in seconds.

This makes a lot of sense – it's quite likely that a large proportion of application functionality will involve querying data from tables, editing it and writing it back to the database in some form. Because the skeleton of this type of function can be created quickly, the bulk of a developer's time can be spent doing the specialised work that the wizards don't cater for, rather than the repetitive work of creating standard query and data update functionality. Once created, the properties of an item or process can be edited on a properties page, where there are many more options available than are presented in the initial wizards.

The development environment

A look at the development environment for an individual page in Application Express shows that the page is divided into three broad regions, headed 'Page Rendering', 'Page Processing' and 'Shared Components'. See Figure 1.

'Page Rendering' controls the display of the page to the end user, so this section contains the items that are to appear on the page, along with any processes that need to be performed at the time that the page is put together. A developer is free to add whichever items or processes they like to the page – there is the full range of standard item types available, such as radio groups, checkboxes and lists.

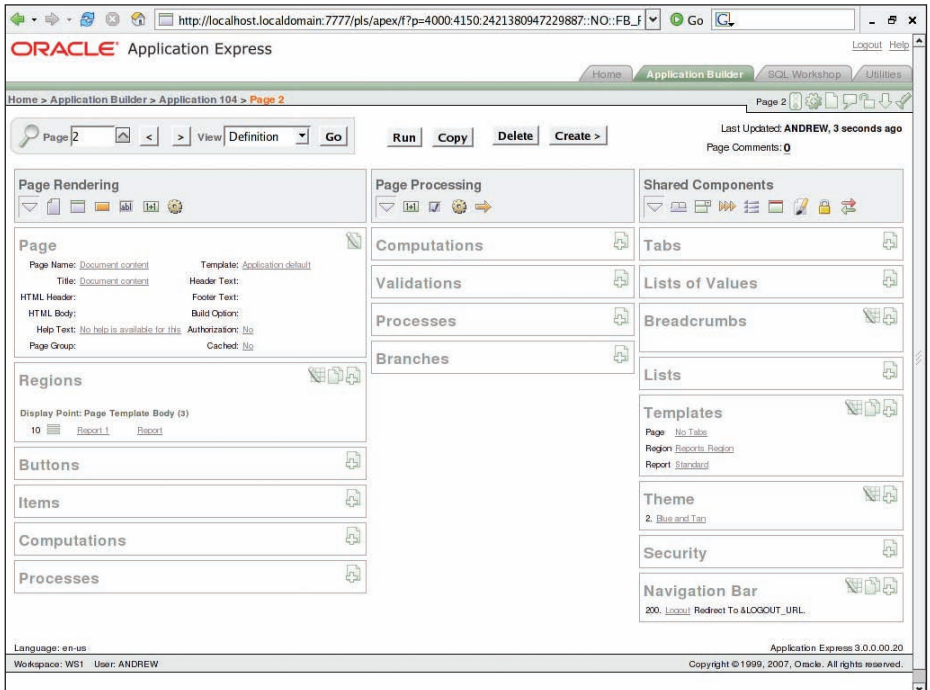


Figure 1: The development environment

Common functions such as spell checking or calendar/calculator popups can be included with no extra work, as can more complex components such as rich HTML editors. The range of components available increases with each new release of Apex. Developers can also include text in the HTML Header field for the page – this may be to include a Javascript function, for example, or to add a link to a stylesheet to control the appearance of fonts etc on the page.

'Page Processing' covers what happens when a page is submitted – this might be on pressing a button such as 'Save' or 'Exit', or in response to some other navigation action. This is when the form does its main work – it may involve performing any standard DML operations needed to reflect changes made to data in the form, while the developer can also include their own custom code for other actions which need to be performed. These include:

- **Validations** – eg checking that all required fields have been filled in by the user, or that the text in a field matches a regular expression, or some other condition defined in SQL or PL/SQL
- **Computations** – this might involve turning a text field to UPPERCASE, or setting the value of a total column, or querying some other values from the database using SQL or PL/SQL
- **Processes** – these will include the standard DML processing, and if created through a wizard, are written automatically. Developers can include their own processes here – typically these might be a call to a PL/SQL routine, but can also cover calls to Web services, or manipulation of session-specific items, such as clearing the cached values for a particular page, or setting the value of a global application item. Anything that can be done in PL/SQL can be included here, so that covers a vast range of possibilities.

(There's also a huge API that can be used to programmatically perform virtually any task that can be achieved in the workspace development environment.)

- **Branches** – these determine where the application heads to once a page's processing is complete, and at least one branch must exist so the application knows where to go to after the page is submitted. A branch can go to another page in the current (or a different) application, to another URL altogether (an external website, for example) or back to the current page.

All of these elements are assigned a point in the page processing where they will occur, and a sequence number to determine the precise order of events. This is useful in determining where a page will branch to after it is submitted. For example, from a particular page I may want to go to page 10 if A is true, page 20 if B is true, and to page 30 otherwise. To handle this in Forms, I might have some trigger code which reads like:

Figure 2

```
IF a THEN
   Call_Form('10');
ELSIF b THEN
   Call_Form('20');
ELSE
   Call_Form('30');
END IF;
```

In Apex, this effect could be achieved with three branches, to pages 10, 20 and 30. The branches to pages 10 and 20 are conditional on A or B being true, while the third branch, to page 30 would be made unconditional. I can use the sequence numbers on these branches to ensure that the two conditional branches are tried first, and if neither of these are used, I'll fall into the unconditional branch which will take me to page 30.

The 'Shared Components' area of the page covers some of the elements which can be shared across multiple pages in an application, including navigation items (such as tabs, breadcrumbs and navigation bar entries), lists, LOVs and templates for the various components used on the page. As well as the categories shown here, there are a number of other shared components available at application level, including:

- Application Items (effectively global variables)
- Application Processes and Computations
- Web service references
- Page zero – any items/regions which are to be included on every page can be added to this page

An intelligent use of shared components means that elements which occur on a number of different pages throughout an application can be defined in a single place – improving the level of code reuse – an important factor for any development environment. Shared components can be imported from another application, making it relatively easy to set up a common set of components which can be used across a number of applications.

For certain classes of components, a 'subscription' model allows the developer to hold a 'master' version of a component in one application and have other applications 'subscribe' to it. Changes to the master component can then be pushed out to any subscribing applications at the press of a button. This is particularly useful for templates – a corporate template can be defined centrally and subscribed to by a number of applications. If the corporate look-and-feel changes in the future, it's easy to change all the applications which subscribe to it.

Conditions

One of the most useful features of Apex is that every element on a page, including regions, items, buttons, processes and validations can be made conditional or unconditional.

The condition attached to an element can be very wide-ranging indeed. It can be a simple test for which button has been pressed, or that an item contains a particular value, is NULL, NOT NULL, numeric, or alphanumeric, or whether a PL/SQL function returns TRUE or FALSE. There are a large number of other possible conditions, covering, for example, the identity of the client browser or the application language. A developer can make the condition as complex as they like through PL/SQL, though it is quite possible that the simpler tests will be the most frequently used.

When a process, validation, computation or branch is made conditional, the logic behind that element is only performed when the condition evaluates to TRUE, otherwise it is ignored. When a condition is applied to an item, such as a text field or push button, it determines whether the item is displayed or not, and similar conditions can be created to determine whether an item should be rendered in a read-only state or not. Conditions are a great way for a developer to make the appearance of an application context- or user-sensitive without having to expend lots of effort.

Authorization

As well as applying logical conditions to items and processes to determine whether they should be displayed/hidden or performed/not performed, Apex allows another layer of conditionality to be introduced – the authorization scheme. These are more concerned with allowing different users to have different levels of access within an application, and once created, are remarkably easy to use.

For example, an application may permit navigation with a series of tabs, each linking to a particular page in the application. One of the tabs may allow for administrative functions to be performed, such as creating users and assigning privileges, and a developer may want to restrict access to this function to only those users who have been created as administrators. Making someone an administrator may be as simple as putting a tick in a checkbox on a form.

In the Oracle Forms world, menu visibility could be controlled by 'Menu Roles', where each item on a menu would be explicitly defined as only being visible to users who had been granted one of a particular set of roles. In Apex, this type of functionality can be achieved through authorization schemes. A developer could create an authorization scheme called 'Is_An_Administrator' to test whether the application user has a tick in the 'administrator' box or not. If they were to set the authorization scheme type to that of 'PL/SQL function returning boolean', they would just need to write a simple piece of code to return TRUE if the user is an administrator, and FALSE if they're not.

"Conditions are a great way for a developer to make the appearance of an application context-sensitive or user-sensitive without having to expend lots of effort."

Figure 3

```
FUNCTION Get_Hash(p_username IN VARCHAR2, p_password IN VARCHAR2)
RETURN VARCHAR2 IS
BEGIN
   RETURN dbms_obfuscation_toolkit.md5(input_string => UPPER(p_username||p_password));
END Get_Hash;
```

Figure 4

```
FUNCTION Valid_User(p_username IN VARCHAR2, p_password IN VARCHAR2)
RETURN BOOLEAN IS
dummy NUMBER(1);
BEGIN
   SELECT 1 INTO dummy
   FROM   users
   WHERE  username = p_username
   AND    password = UTL_RAW.CAST_TO_RAW(Get_Hash(p_username, p_password))
   AND    (end_date IS NULL OR end_date > SYSDATE);

   RETURN TRUE;
EXCEPTION
   WHEN NO_DATA_FOUND THEN
      RETURN FALSE;
END Valid_User;
```

This authorization scheme can then be applied to those tabs which are only for administrators, but can also be used anywhere in the application where administrators have special access. For example, data on a report screen might be visible to everyone, but only an administrator might see the edit link to allow the data to be changed. Using authorization schemes, it's very easy for a developer to control which classes of user can see which parts of your application.

Authentication

A cousin of the authorization scheme is the 'authentication scheme'. While authorization can be used to micro-manage the appearance of an application to an individual user, so authentication can be used to control who you let through the front door in the first place. A page can be defined as either 'Public' or 'Requiring Authentication' – if the page is not public, then whichever authentication scheme is in place for the application must be satisfied for the page to be displayed to the user.

There are a number of pre-defined authentication schemes which can be implemented with very little effort on the part of the developer. For example, a user's credentials can be authenticated against the internal repository of Application Express workspace users, or against user accounts in the database. Alternatively, a username only (ie no password required) can be captured (open door authentication), or the application can be authenticated using Single Sign-On or an LDAP directory. If none of these schemes is suitable, a custom authentication scheme can be created – this requires the developer to write a function which accepts two VARCHAR2 parameters (username and password), and returns a boolean to indicate whether the user is authenticated (TRUE) and should be allowed into the application, or not (FALSE).

For a recent piece of development work, this turned out to be the best and easiest option available – we wanted users to log on to the application, but then administrative users (as determined by an authorization scheme) should also be able to create new users in the application. The solution we settled on was to have a 'USERS' table where we stored details about the user, including whether they were administrators or not, their username and a hashed password, which was a hash of the username and password concatenated together. Behind the scenes, it was necessary to create an authentication package, which contained a 'Get_Hash' function, see Figure 3. And a 'Valid_User' function to check whether the username and password entered at the login page hashes to the value held in the 'password' column on the USERS table, see Figure 4. Then, creating a new user just involves inserting a row into USERS, while changing a user's password is as easy as writing an UPDATE statement, see Figure 5.

> "...authentication can be used to control who you let through the front door in the first place."

Figure 5

```
UPDATE users
SET   password = UTL_RAW.CAST_TO_RAW(Get_Hash(p_username,
new_password))
WHERE  username = p_username;
```

HTML

Another extremely useful feature for Apex developers is the fact that you can embed snippets of HTML in report output, or have regions whose HTML is written dynamically from PL/SQL using the htp.p procedure, as well as creating HTML regions on a page whose content is static. Knowing a little HTML is very useful when it comes to making your application slick and attractive. Apex will recognise your HTML tags and render the output as formatted HTML wherever it occurs.

> "Apex will recognise your HTML tags and render the output as formatted HTML, wherever it occurs."

Figure 6

```
SELECT label,
     '<img src=#WORKSPACE_IMAGES#'||icon||' width=20 height=20 alt="'||icon||'">' picture
FROM   icons
```

This could be useful for example if you wanted to introduce images to a report. Defining the SQL for a report region as in Figure 6 would cause the SQL to return an HTML 'img' tag which would render on the screen as expected, see Figure 7.

Figure 7

The SQL for a report region can return HTML (or it may be defined in a static HTML region) which includes a call to a Javascript function, for example to set the value of an item on a page, or to call a popup window. Extensive Javascript libraries are supplied as part of the Apex infrastructure, to perform the most common tasks (these get more extensive with each new release of Apex). Alternatively, the developer can define their own Javascript functions in the header of a particular page, or they can create Javascript libraries in static files which can be loaded into the workspace or held on the Web server, and made available throughout the application by adding '<script…>' statements to the page templates.

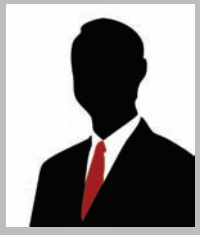
Javascript offers the interested developer great opportunities for improving the interaction of the user with their application, while its cousin, AJAX (Asynchronous Javascript And XML), allows the application to dynamically pull values from the database and change the content of a page without the hiatus of refreshing the page.

Conclusion

My experience, coming from a PL/SQL, Forms and Reports background, is that the learning curve involved in getting proficient in Apex is significantly less steep than for some other development environments such as JDeveloper. One reason for this is that the code the developer has to write is virtually all SQL and PL/SQL (with an optional sprinkling of HTML and Javascript).

This article has hopefully highlighted a few of the areas of Application Express where a developer can bring their skills to bear to create a richly functional application. There are many other areas, such as the use of cascading stylesheets, themes and templates, with which a skilled developer can lift an application away from a basic, default style. I believe that Apex is a serious programming environment, which can produce sophisticated, database-driven Web applications within an impressively productive timescale.

About the Author



Andrew Woodward is a self-employed contractor, currently working as an Apex developer for Scottish Water in Glasgow. He has worked as an Oracle developer for 8 years, including spells at Yorkshire Building Society, Benenden Healthcare and Sema Group. Away from work, his interests include golf, music and cooking.

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Partitioning in Oracle Database 11g Release 1 – Part 1

By Tony Hasler, Anvil Computer Services Ltd

Oracle Partitioning has been extensively improved in Oracle Database 11g Release 1 and now has a new manual almost entirely to itself. This first part of a two part article describes how the cost option has "come of age" in this release and introduces you to the new features. Interval partitioning, an important extension to range portioning, will be discussed next time.

Oracle Partitioning is a cost option available only with Oracle Database Enterprise Edition (or Oracle Database Personal Edition). It is difficult to imagine designing and managing a large database without it. Indeed, if money were no object, one could well imagine lots of uses for it with small databases as well! Despite its strengths, previous releases had some peculiar restrictions that have now been lifted. I think the whole feature set is now a lot easier to manage *provided* that you understand it before you start designing. Let us see if you agree.

Documentation for the feature has moved to the **"VLDB and Partitioning Guide"** which is a new manual dedicated almost entirely to partitioning and you can find much more information about this topic in this manual.

Single Level Partitioning Strategies

Range Partitioning

For most of us, range partitioning is the most important partitioning strategy. In particular, partitioning a table by date allows us to easily age out or archive historic information from our databases. However, range partitioning has many other uses, for example, you can define your ranges based on various numeric or character based types. To summarise:

- Range partitioning groups rows with related column values together.
- Multiple columns can be used as the basis for range partitioning

In 11gR1 you can **range partition by one or more virtual columns** and you can use **interval partitioning** to extend the feature set. See the box on the right for more information on virtual columns. Interval partitioning will be discussed next time.

List Partitioning

List partitioning was introduced in 9i and requires you to specify specific column values, rather than a range. The main advantage is that values which share a partition need not be consecutive. For example, if you had a column in a row that contained a USA state code of 'NV' for Nevada it could be placed in the same partition as one that had a state code of 'CA' for California, despite the fact that rows associated with other states that have codes between 'CA' and 'NV' could be in different partitions. To summarise:

- List partitioning groups rows with related column values together
- Only a single column can be used as the basis of list partitioning.

In 11gR1 you can **list partition by a virtual column**. See the box on the right for more information on virtual columns.

Hash Partitioning

Whereas range and list partitioning are intended to group rows with related column values together, hash partitioning seeks to scatter rows with related column values to the four winds. The reason is that although grouping rows together may improve read performance and help administratively, updates may run into contention issues. Hash partitioning should also distribute rows evenly. That's nice for **partition-wise joins**. Like the previous two strategies hash partitioning will place rows with identical column values in the same partition. But rows with different but similar column values should not have a high probability of being placed in the same partition. To summarise:

- Hash partitioning tries to place rows with related column values in different partitions.
- Hash partitioning can be based on multiple columns.

Virtual columns can be used with hash partitioning as well. However, there will normally be no advantage over simply using the columns on which the virtual column is based.

System Partitioning

All the above partitioning schemes have one thing in common: the partition into which a row is inserted is determined based on some function of the value or values of one or more columns. What if that is not flexible enough for you? Suppose, for example, you want all the rows inserted on one node in a RAC cluster to be placed in a different partition to those of other nodes? Of course, you could add a column to your table and then use that. An alternative is to use System Partitioning.

Consider the code in Example 1, next page.

Virtual Columns

Virtual columns are a powerful new feature of 11gR1 and have many advantages other than to enhance partitioning. The idea is that you define a column to be a function of other columns in the row. You can then build an index on this virtual column if you want. So what you may say. In earlier releases you could always have created a view that defined the extra column. You could then create a function based index using the same function as that used to define the view column. Apart from being somewhat easier to set up virtual columns also allow you to maintain column statistics.

Apart from its other uses virtual columns can be used as the basis for range, list, hash or composite partitioning. Examples 3 and 4 show how you define a virtual column and use it as the basis for partitioning.

In general, virtual columns can use deterministic PL/SQL functions as part of their definition. However, if you want to partition using virtual columns only built-in functions can be used.

Example 1: A simplified way to use System Partitioning

```
CREATE TABLE t1 (col1 INTEGER,col2 INTEGER)
PARTITION BY SYSTEM
(
PARTITION p1,
PARTITION p2,
PARTITION p3
) ;

CREATE INDEX i1 ON t1(col1) LOCAL;

BEGIN
  IF UTL_INADDR.get_host_name = 'HOST1'
  THEN
    INSERT INTO t1 PARTITION (p1)
           (col1, col2)
        VALUES (1, 2);
  ELSIF UTL_INADDR.get_host_name = 'HOST2'
  THEN
    INSERT INTO t1 PARTITION (p2)
           (col1, col2)
        VALUES (1, 2);
  ELSE
    INSERT INTO t1 PARTITION (p3)
           (col1, col2)
        VALUES (1, 2);
  END IF;
END;
/
```

This example shows that with system partitioning you provide no information on table creation with regard to how rows are distributed among the partitions. It also shows that, despite this, you can still create locally managed indexes. It is just that when you insert rows into a system partitioned table you need to explicitly specify the partition, as Oracle would otherwise have no clue where to put it. You can optionally specify the partition on a select or update statement. If you choose not to specify the partition on a select statement, Oracle will be unable to perform any partition pruning.

For most if us this partitioning scheme will not be useful. Not least because you cannot specify a variable for the partition name. The main use of system partitioning is for users creating domain indexes. For more information on this see the **Data Cartridge Developers Guide**.

Note also that you cannot combine system partitioning with any other strategy in a composite partitioned table.

Reference Partitioning

As we have just discussed, system partitioning provides a way to distribute rows based on something other than the column values in a row. Although it is the most general way to do this it is very awkward to use. There is another new partitioning strategy that also does this but is much easier to use. It is, however, tailored to one specific scenario.

Suppose you have a foreign key relationship between a child table and its parent. With seeming inevitability I will, like my elders and betters before me, choose the example of an ORDER_ITEMS table and its parent ORDERS table. Suppose the ORDERS table is partitioned by ORDER_DATE. You may wish to partition the ORDER_ITEMS table in the same way i.e. by ORDER_DATE. That way, when you age out the orders you can age out the associated order items at the same time. In previous releases of Oracle there were multiple problems with this scenario. First and foremost is the fact that if you designed your database with normalisation in mind the ORDER_DATE column would not be in the ORDER_ITEMS table. The second is that you would not be permitted to perform the partition maintenance operation on the ORDERS table with the constraint enabled.

Reference partitioning solves both of these problems. Example 2 shows how to create the ORDERS and ORDER_ITEMS tables so that they are both partitioned by ORDER_DATE. There are three partitions created for the ORDERS table and three corresponding partitions have automatically been created for the ORDER_ITEMS table. I could have specified the names and storage attributes for the ORDER_ITEMS partitions but because I didn't the same partition names and tablespaces were used as for the parent table. To show how partition maintenance operations work I have inserted one row into each table and then dropped the associated partition in the ORDERS table. What happens here is that the operation is propagated to the ORDER_ITEMS table. All partition maintenance operations work this way; you never directly perform a partition maintenance operation on a table partitioned by reference.

The parent table may be partitioned using any strategy. It may be range, hash, list, or system partitioned. It may even be another table partitioned by reference. There are some subtle complications when the parent table is a composite partitioned table and we will discuss these separately after we have reviewed the 11g enhancements to composite partitioning. The main point to note at this stage is that a table partitioned by reference is *never* a composite partitioned table even if its parent is.

There are some restrictions. The best way to understand them is to review a small portion of the error messages manual which I will not attempt to paraphrase:

ORA-14659: Partitioning method of the parent table is not supported
Cause: An attempt was made to create a reference-partitioned table with an interval partitioned parent table.
Action: Do not create a reference-partitioned table with an interval partitioned parent table.

ORA-14660: parent table of a reference-partitioned table cannot be index-organized
Cause: Attempted to create a reference-partitioned table with a index-organized parent table.
Action: Correct the statement and reenter.

ORA-14661: row movement must be enabled
Cause: Attempted to disable row movement for a reference-partitioned table, although row movement was enabled for its parent table.
Action: Disable row movement for parent table before disabling row movement for the reference-partitioned table.

ORA-14662: row movement cannot be enabled
Cause: Attempted to enable row movement for a partitioned table, although row movement was disabled for a reference-partitioned child table.
Action: Enable row movement for reference-partitioned child tables before enabling row movement for the parent table.

ORA-14663: reference partitioning parent key is not supported
Cause: Parent key of the reference-partitioned table's partitioning constraint contained virtual columns.
Action: Correct the statement to specify a partitioning constraint with supported parent key and reenter.

Composite Partitioning Enhancements

Partition	Subpartition		
Range	Range	List	Hash
	11g	9i	8i
List	Range	List	Hash
	11g	11g	11g

Table 1: Composite partitioning options by release

What happens if you want to group related records together but avoid contention? Well the usual answer is to use composite partitioning. Partitioning by range and then subpartitioning by hash has been available since 8i. It allows you to group related records together in the same partition but concurrent DML on rows with similar column values are unlikely to hit the same block because the hash is applied *within the partition*. When list partitioning came along in 9i I thought that they should have introduced composite list-hash partitioning at the same time but they did not. Instead, they introduced the ability to partition by range and to subpartition by list. Whatever the rationale for this, it is now a moot point as all sensible partitioning combinations are now available. Bearing in mind that neither system nor reference partitioning can be used in a composite partitioned table there are three remaining single level strategies available. Thus there are theoretically 9 (3x3) potential composite partitioning schemes. Let us discuss these one by one.

Partition by Range, Subpartition by Range

At first glance this may seem silly. Remember that we can partition by range using multiple columns. What is the difference, then, between partitioning by range on column A and then subpartitioning on column B versus simply using single level partitioning on columns A and B? The answer is best explained with an example. Suppose we use single level range partitions on a table containing SURNAME and FORENAME columns. We might create three partitions: one for names less than 'JONES' and 'ALAN'; a second for names less than 'SMITH' and 'JOHN'; and a third one for the rest. A row with values 'BROWN' and 'ZEBEDIAH' would still be in the first partition, despite the fact that the forename begins with a 'Z'. This is because the forename is only ever referenced when the surname is exactly 'JONES' or 'SMITH'. Contrast this with a table that is partitioned by order date and then subpartitioned by delivery date. Now we have a two dimensional arrangement: if there are 12 one month partitions for the order date and 12 subpartitions for the delivery date we have a total of 144 subpartitions in the table as a whole; the value of both columns needs to be examined every time.

Example 2: Use of Reference partitioning with a single-level-partitioned parent

```
--
-- Begin by creating the parent table in the normal way
--
CREATE TABLE orders

( id              NUMBER PRIMARY KEY
, ORDER_date          DATE NOT NULL
) PARTITION BY RANGE (order_date)

(

 PARTITION PRE_2000 VALUES LESS THAN (TO_DATE('1-1-2000','DD-MM-YYYY')) TABLESPACE TBS1
,PARTITION P2000_2007 VALUES LESS THAN (TO_DATE('1-1-2008','DD-MM-YYYY')) TABLESPACE TBS2
,PARTITION P2008 VALUES LESS THAN (TO_DATE('1-1-2009','DD-MM-YYYY')) TABLESPACE TBS3

);

--
-- Now create the child table.  Three partitions will be created
-- with the same names as above and placed in tablespaces tbs1,tbs2, and tbs3
--

CREATE TABLE order_items
( id            NUMBER PRIMARY KEY
, order_id      NUMBER NOT NULL
, CONSTRAINT order_items_fk FOREIGN KEY (order_id)
  REFERENCES orders (id)
)

PARTITION BY REFERENCE (order_items_fk);

--
-- Now insert a couple of rows
--
INSERT INTO orders (ID, order_date) VALUES (1, TO_DATE ('1-1-1999', 'DD-MM-YYYY'));
--
INSERT INTO order_items (ID, order_id) VALUES (1, 1);
--
-- Now show that we can perform partition maintenance on both tables in one command.
-- This will effectively delete both rows
--
ALTER TABLE orders DROP PARTITION pre_2000;
```

Does it matter whether column A is the partitioning key and column B is used for subpartitioning or vice versa? Well the answer is that it depends on what partition maintenance operations you want to perform. Let us consider the order date and delivery date example again. If you want to be able to age rows out of the table a certain time after the order date then you should partition by order date and subpartition by delivery date. If you want to be able to age rows out of the table a certain time after the delivery date then you should partition by delivery date and subpartition by order date. From a performance perspective it matters not.

What if you want a three dimensional arrangement based on three columns? Well now you have to use virtual columns. Once again, bear in mind what partition maintenance operations you need to perform. Example 3, (see below), shows how to set up a three dimensional partitioning strategy using two date columns and one integer column.

This example shows how to create a virtual column (order_qd) and then use it to create three dimensional partitioning (sub-sub-partitioning, if you will). The table is partitioned by quarter on delivery_date (4 quarters in 2008) subpartitioned by order_date (4 quarters in 2008) and then further divided depending on whether the order was for less than 100 items or not. This creates a total of 4x4x2=32 sub-sub-partitions in total.

Note how the concept of a subpartition template introduced in 10g has been extended to the new composite schemes, avoiding the need for repetitive typing. You can see that you will be able to perform partition maintenance operations on the delivery_date partitions as a whole.

Partition by range, subpartition by list

This arrangement creates a two dimensional distribution as above. Once again if you need more dimensions you will need to use virtual columns.

Partition by list, subpartition by range

From a performance perspective this is identical to the above strategy. Once again the difference between the two lies in the partition maintenance operations you want to perform.

Partition by list, subpartition by list

Once again the purpose of this scheme is to partition based on two columns. The comments and considerations in the preceding sections apply identically here.

Partition by hash, subpartition by anything???????

These strategies make no sense and are not provided. Standard partition maintenance operations cannot be performed on hash partitioned tables. Dropping an individual hash partition, for example, makes no sense as an effectively random set of rows will be dropped. It therefore makes no sense to partition by hash and then subpartition by range or list when doing it the other way round would be more flexible. What about partitioning by hash on columns A and B and then subpartitioning by hash on columns C and D? This offers no benefits over simply using single level hash partitioning on columns A, B, C and D.

Partition by range or list, subpartition by hash

These schemes make perfect sense as they allow you to leverage the performance and administrative benefits of single level range or list partitioning, whilst also benefiting from the contention avoidance features of hash partitioning.

Reference partitioning and Parents Using Composite Partitioning

This is a confusing matter and one that needs a bit of dedicated treatment. If the parent table of a table partitioned by reference uses a single level partitioning strategy, then the number of partitions in the child table will equal the number of partitions in the parent table. However, if the parent table uses a composite partitioning strategy, then the number of partitions in the child table will equal the number of *subpartitions* in the parent table. The thing to realise is that a table that is partitioned by reference never has any subpartitions. Because of this it is best not to leave all the naming of partitions and subpartitions to Oracle. Let us see what happens if you do in Example 4.

Example 3: Three dimensional partitioning using a virtual column

```
CREATE TABLE t1 ( order_date DATE,
delivery_date DATE,
order_quantity INTEGER,
order_qd AS ((TO_NUMBER(TO_CHAR(TRUNC(order_date,'Q'),'YYYYMM'))*10000)
+LEAST(order_quantity,100)))

PARTITION BY RANGE (delivery_date)

SUBPARTITION BY RANGE (order_qd)

SUBPARTITION TEMPLATE (
SUBPARTITION low2008q1 VALUES LESS THAN   (2008010100),     -- Less than 100 items ordered in Q1
SUBPARTITION high2008q1 VALUES LESS THAN  (2008040000),       -- 100 or more items ordered in Q1
SUBPARTITION low2008q2 VALUES LESS THAN   (2008040100),     -- Less than 100 items ordered in Q2
SUBPARTITION high2008q2 VALUES LESS THAN  (2008070000),       -- 100 or more items ordered in Q3
SUBPARTITION low2008q3 VALUES LESS THAN   (2008070100),     -- Less than 100 items ordered in Q3
SUBPARTITION high2008q3 VALUES LESS THAN  (2008100000),       -- 100 or more items ordered in Q3
SUBPARTITION low2008q4 VALUES LESS THAN   (2008100100),     -- Less than 100 items ordered in Q4
SUBPARTITION high2008q4 VALUES LESS THAN  (2009010000)       -- 100 or more items ordered in Q4
)

(
PARTITION q1_2008 VALUES LESS THAN (TO_DATE('20080401','YYYYMMDD')), -- Delivered in Q1 2008
PARTITION q2_2008 VALUES LESS THAN (TO_DATE('20080701','YYYYMMDD')), -- Delivered in Q2 2008
PARTITION q3_2008 VALUES LESS THAN (TO_DATE('20081001','YYYYMMDD')), -- Delivered in Q3 2008
PARTITION q4_2008 VALUES LESS THAN (TO_DATE('20090101','YYYYMMDD'))  -- Delivered in Q4 2008
);
```

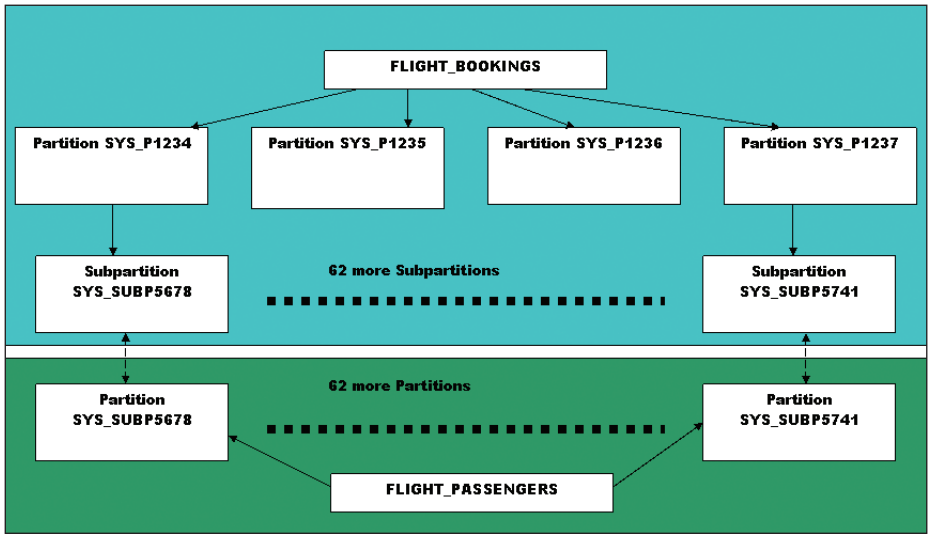
The FLIGHT_BOOKINGS table bears an uncanny resemblance to the CAR_RENTALS example in the Oracle documentation. It is list partitioned using a two character subset of the confirmation number via a virtual column. The FLIGHT_PASSENGERS table has a referential integrity constraint that is used to allow multiple passengers to be associated with the same flight booking. This referential integrity constraint is declared to be used as the basis for reference partitioning of the FLIGHT_PASSENGERS table.

There are four list partitions in the FLIGHT_BOOKINGS table, each of which has 16 hash subpartitions. This means that there are 64 segments in total. Note that this time we haven't used a subpartition template; we have just told Oracle how many subpartitions to create and left the naming and placement to Oracle itself.

We elected not to name the partitions in the FLIGHT_BOOKINGS table, although we could have. Oracle would have named them SYS_P1234 or something like that.

Example 4: Use of Reference partitioning with a composite partitioned parent

```
CREATE TABLE flight_bookings

( id              NUMBER PRIMARY KEY
, customer_id         NUMBER NOT NULL
, confirmation_number VARCHAR2(12) NOT NULL
, requested_seat_type  VARCHAR2(10) NOT NULL
, reservation_date    DATE NOT NULL
, start_date          DATE NOT NULL
, end_date            DATE
, country as (substr(confirmation_number,9,2))
) PARTITION BY LIST (country)

SUBPARTITION BY HASH (customer_id)

SUBPARTITIONS 16
( PARTITION VALUES ('US','CA','MX')
, PARTITION VALUES ('BR','AR','PE')
, PARTITION VALUES ('GB','DE','NL','BE','FR','ES','IT','CH')
, PARTITION VALUES ('NZ','AU','IN','CN')
) ENABLE ROW MOVEMENT;

CREATE TABLE flight_passengers
( id            NUMBER PRIMARY KEY
, booking_id    NUMBER NOT NULL
, SURNAME       VARCHAR2(100) NOT NULL
, FORENAME      VARCHAR2(100) NOT NULL
, CONSTRAINT flight_passengers_fk FOREIGN KEY (booking_id)
  REFERENCES flight_bookings (id)
)

PARTITION BY REFERENCE (flight_passengers_fk)
ENABLE ROW MOVEMENT;
```



Example 5: Shows how partition and subpartition naming for tables in example 4

We didn't name or place the subpartitions either. Oracle would then have named them something like SYS_SUBP5678. These won't be the exact names but you get the drift. All 64 segments would be placed in the user's default tablespace.

We elected not to name or place the partitions in the FLIGHT_PASSENGERS table either, although we could have done so. You might think that Oracle would create partitions and subpartitions named identically to those in the parent. Not so. Remember that partitions in a composite partitioned table are only used for partition maintenance operations; segments are only associated with the subpartitions. Remember also that you never perform partition maintenance operations directly on a table partitioned by reference. Accordingly, the table partitioned by reference is not considered to be composite partitioned. It simply has 64 *partitions* that correspond with the 64 *subpartitions* of the parent table. The default behaviour is for Oracle to name and locate the segments in the two tables identically. See Example 5 for a picture that demonstrates this.

The result of leaving all this naming and placing of partitions and subpartitions to Oracle is that you end up with *partitions* in the child table that are automatically named as if they were *subpartitions* which they are not. When I first saw this I thought that this was a bug but I was mistaken. If you create a table this way you can rename and/or move the subpartitions in the child table. They do not have to be named or placed identically to their corresponding parent segments. Their correspondence is determined by partition/subpartition position.

What happens, for example, if you merge two partitions in the parent table and you want to control the naming and placement of the partitions in the child table? Well Example 6 shows how you can use new syntax to do this.

Here we have named the new partition in FLIGHT_BOOKINGS but allowed Oracle to name the 16 new subpartitions. However, we have controlled the naming of the associated partitions in FLIGHT_PASSENGERS. We have specified an explicit tablespace for just one of these partitions for brevity. This example also demonstrates another new feature of Oracle 11gR1: you no longer have to reference a partition by its name. That can be awkward when you do not know what the name is! Instead, you have the option of passing a value of the partitioning column to the FOR operator to identify the partition. In this case, the first and second partitions we defined for the FLIGHT_BOOKINGS table have been selected to be merged.

Example 6: Merging partitions in multiple tables when partitioning by reference is used

```
ALTER TABLE flight_bookings MERGE PARTITIONS FOR('CA'), FOR('BR') INTO PARTITION merged_1
DEPENDENT TABLES
(
flight_passengers
(
PARTITION fp1 TABLESPACE users,
PARTITION fp2,PARTITION fp3,PARTITION fp4,PARTITION fp5,PARTITION fp6,PARTITION fp7,
PARTITION fp8,PARTITION fp9,PARTITION fp10,PARTITION fp11,PARTITION fp12,PARTITION fp13,
PARTITION fp14,PARTITION fp15,PARTITION fp16
)
);
```

Miscellaneous Improvements

With the exception of interval partitioning, which we will discuss next time, we have now covered the major enhancements to partitioning in 11gR1. There are, however, a few other enhancements that we can mention before closing. This section is essentially "cut and paste" from the new features manual.

Enhanced Statistics Collection

An improved statistics collection process for partitioned objects avoids having to regather statistics on partitions that have not been touched, by using a summary instead. Partitioned objects tend to become larger and larger, and statistics collection, particularly global statistics collection, can become increasingly time and resource intensive. This feature significantly improves the speed and accuracy of statistics collection for partitioned objects.

Improved Partitioning Pruning (bloom filtering)

Partition pruning now uses bloom filtering instead of subquery pruning. While subquery pruning was activated on a cost-based decision and consumed internal (recursive) resources, pruning based on bloom filtering is activated all the time without consuming additional resources. The performance of partition pruning has been enhanced. Furthermore, partition pruning will be automatically activated for every join with a partitioned object.

{DBA|USER|ALL}_MVIEW_DETAIL_PARTITION

New catalog views display the partition change tracking (PCT) information for a given materialized view by showing which sections of the materialized views data are fresh or stale. This is a critical piece of information for the user to be able to view the partition staleness information of the materialized view. It affects the usability and maintainability of the materialized view.

Partition Advisor

The SQL Access Advisor has been enhanced to include advice on how to partition tables, materialized views, and indexes in order to improve performance of SQL statements.

Data Pump Improvements

Until this release, the Transportable Tablespaces mechanism for Data Pump could be used to specify only the physical tablespaces to be exported. This feature adds a partition mode, which can be used to move one or more partitions or subpartitions of a table without having to move the entire table or exchange out the partition or subpartition. In addition, partitions can be imported to the target database either as part of an existing table or as a separate table for each partition.

Enhanced DML tracking of PMOPs

Change Data Capture formerly did not always capture direct path load operations or implicit data changes as the result of partition maintenance operations. The enhanced DML tracking feature relieves this restriction.

Fine grained partitioning of OLAP cubes

Scalability improvements in cube partitioning increase the number of partitions that can be efficiently maintained in a cube. Fine-grained partitioning of OLAP cubes provide support for larger cubes and more efficient cube update processing. Fine-grained partitioning allows the cube to be partitioned by more members of a dimension (as compared to Oracle Database 10g Release 2). Support for many more partitions can be used to create larger cubes (for example, retaining more time periods). Smaller partitions can be processed more quickly during a cube update.

Total number of partitions increased from 9,999 to 1,233,054

Until now, the maximum number of partitions allowed has been 9,999. This limit has been increased to 1,223,054. This increase is of significant benefit to Text users.

Summary

Oracle Database 11gR1 includes significant enhancements to its partitioning cost option. Reference and interval partitioning strategies are the most complex to understand. The former has been covered in some detail here – including the difficult issue of referencing parent tables using composite partitioning. Next time I will cover interval partitioning.

About the Author

Tony Hasler is an independent software consultant specialising in helping companies improve Oracle related services. During his thirty years of experience Tony has led operating systems development teams, represented the British Standards Institute internationally, and filed a patent relating to optimisations of distributed transactions.

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Extracting Create Scripts for Database Objects

By Rod West, Cabot Consulting

When developing a database application I always like to be able to recreate my database objects from scripts held in files outside the database. Having the script to create the tables, packages and views in separate files is always useful. These files can be put under configuration control, allowing changes to each database object to be tracked. Database objects can be recreated where necessary and it is often easier to edit the DDL and recreate the object rather than change the objects in the database.

Fortunately SQL*Plus, when combined with the useful DBMS_METADATA package, makes extracting the DDL straightforward. Two scripts are used: one to generate a file containing the create DDL for a database object and another to generate a list of database objects. These scripts are an example of this approach but can be adapted to suit almost any requirement.

The SQL command file in Figure1 can be used to extract the create DDL for most database objects, but can also be adapted to generate dependent DDL, such as object grants, and to generate DDL for objects in different schemas.

Then, for example, if I want to extract all my views into individual create view scripts I can run the script shown below in Figure 2. This creates and runs an RW_extract.sql script to extract the views from my RW schema. So if I have 30 views in my schema I will get 30 files each containing a CREATE VIEW command.

Finally, a similar script shown in Figure 3, (next page), can then be used to load the views back into the database after any changes have been made.

Figure 1

```
rem extract_object.sql <file> <name> <type>
set echo off
set head off
set feed off
set verify off
set termout off
set lines 10000
set long 2000000000
set longchunksize 16000
set trimspool on
set pages 0
column CMD format A10000
define _object_file = '' &1 ''
define _object_name = '' &2 ''
define _object_type = '' &3 ''
spool &_object_file
SELECT dbms_metadata.get_ddl('&&_object_type','&&_object_name',USER) CMD FROM DUAL;
spool off
```

Figure 2

```
rem Metadata extract
store set temp replace
column CMD format A10000
set echo off
set head off
set feed off
set verify off
set termout off
set trimspool on
set pages 0
column user new_value _user
SELECT USER FROM DUAL;
spool &_user._extact.sql
SELECT
'rem Extract views for user '||USER||'
EXECUTE dbms_metadata.set_transform_param(dbms_metadata.session_transform,
'' SQLTERMINATOR '' , true) CMD
' FROM DUAL;
SELECT '@extract_object '||object_name||'.sql'||''||object_name||''||object_type CMD
FROM user_objects WHERE object_type = 'VIEW';
spool off
@&_user._extact.sql
@temp
```

Figure 3

```
rem Metadata load
store set temp replace
column CMD format A10000
set echo off
set head off
set feed off
set verify off
set termout off
set trimspool on
set pages 0
column user new_value _user
SELECT USER FROM DUAL;
spool &_user._load.sql
SELECT 'SELECT ''Loading '||object_type||' '''||object_name||' .. ''' CMD FROM DUAL;'||'
'||'@'||object_name||'.sql' CMD
FROM user_objects
WHERE object_type = 'VIEW';
spool off
@temp
set head off
@&_USER._load.sql
@temp
```

Rod West has been using Oracle databases since 1985 and is principal consultant at Cabot Consulting. He is a database developer specialising in Discoverer and Oracle Applications. Rod can be contacted at rodwest@cabotconsulting.co.uk

More SQL generating SQL

By Tim Onions, TOdC Limited

Inspired by Rod West's excellent top tip also in this issue of Oracle Scene I offer up one of my personal favourite scripts of a similar "using SQL to generate more SQL and make life a little bit easier as a result" ilk. Quite some time back now – if memory serves – Oracle Scene printed a very detailed article on the topic of using SQL to generate SQL, authored by UK OUG director Peter Robson. *(Editor: We were unable to locate this article in our back issues library, but would welcome information from anyone who can find it!)* He also did a presentation or two on the subject I believe and, to my mind at least, is as close as you are going to get to the authority on this topic. Peter really demonstrated the potential power of this technique and his prowess with those pesky single to double quote translations is truly awesome. If you are inspired by what you read here and in Rod's tip then it would be worth your while searching the back issues.

So, on to my offering which is pretty simple and straightforward, with not too many quotes to cater for, but one that I find myself using quite often, particularly when looking at a schema I am not that familiar with. All it does is query USER_TABLES and generates SELECT COUNT(*) FROM xxx statements for the tables it finds listed there (or a sub-set of the tables if you supply it with a wild-carded search on the command line). The script it generates is embellished a little to print out the name of the table about to have a row count done on it, via a PROMPT statement, as I found it helpful to know which table was being queried when it appeared that the SQL*Plus session had "locked-up", but in reality was of course simply taking more time than smaller tables to return a result. My script, unimaginatively called TableRows.Sql, is given in Figure 1, see opposite.

The observant among you will spot the slightly odd looking lines:

Figure 2

```
COLUMN 1 NEW_VALUE 1
SELECT NULL "1"
  FROM dual
 WHERE rownum=0;
```

These are an adaptation of a neat trick I learnt from the oracle-l discussion group a few weeks ago (and many thanks go to the original poster). It allows default values for missing command line arguments to be set within a SQL*Plus script rather than having the annoyance of getting a prompt similar to the one below.

Figure 3

```
Enter value for 1:
```

So this means I can either run my scripts as:

Figure 4

```
SQL> start TableRows.Sql %
```

or as:

Figure 5

```
SQL> start TableRows.Sql
```

and get the same result but it still allows me to be more selective by using a true filter on the command line. The same technique can be used for any number of command line arguments – just specify a COLUMN definition for each (with NEW_VALUE) and add them as columns in the SELECT clause from DUAL. The only value you get to use as your default is NULL – but that is no problem as you simply use a NVL in your SQL WHERE clause to translate this into the default value you really want (the % wild-card in my case here).

Running TableRows.Sql generates a second script, tablerows.tmp, which is the actual script that will do the row counts. I could have made the script be automatically run but prefer to have control of when and whether the row counts are done and can always cut-and-paste the name of the generated file from the on-screen prompt if I decide to go straight ahead.

Figure 1

```
-- Save SQL*Plus environment settings
store set sqlplussetcommands.tmp replace

SET PAGES 0 HEAD OFF FEEDBACK off ECHO off VER off TERMOUT off

-- Use a default of NULL if no command line parameter supplied
COLUMN 1 NEW_VALUE 1
SELECT NULL "1"
  FROM dual
 WHERE rownum=0;

PROMPT Generating table row count script for user tables like "&1"

SPOOL tablerows.tmp
PROMPT store set sqlplussetcommands.tmp replace
PROMPT SET HEAD off FEEDBACK OFF
COLUMN p PRINT FOLD_AFTER
SELECT  'PROMPT .'||CHR(10)||'PROMPT Counting rows in table '||LOWER(table_name)||'...' p
      ,'SELECT '''||table_name||' row count='||COUNT(*) FROM '||LOWER(table_name)||';'
  FROM user_tables
 WHERE table_name LIKE UPPER(NVL('&1','%'))
ORDER BY 1
/
PROMPT @sqlplussetcommands.tmp
SPOOL off
SET TERMOUT on
PROMPT You now have a file called tablerows.tmp to run as you wish...

-- Restore SQL*Plus environment settings
@sqlplussetcommands.tmp
UNDEF 1
```

Note how I have included the store set SQL*Plus feature, described in a previous Top Tip, in both the generating and the generated script. That way I can be sure that my SQL*Plus environment returns to its initial state whether I choose to do the row counts immediately or some time later.

So the temporary file created for all tables in the SCOTT schema, would look something like Figure 6.

Figure 6

```
SQL> start tablerows.tmp
Wrote file sqlplussetcommands.tmp
.
Counting rows in table bonus...

BONUS row count=0
.
Counting rows in table dept...

DEPT row count=4
.
Counting rows in table emp...

EMP row count=14
.
Counting rows in table salgrade...

SALGRADE row count=5
SQL> spool off
```

Tim Onions is an independent database consultant with over 15 years' experience with Oracle databases. Tim specialises in the application and database design of high performance systems, as well as tuning and optimisation techniques and can be reached at Tim.Onions@TOdC.co.uk

Blogspot

Hacking Oracle with a coffee machine?

I was down in London recently in some meetings and also speaking at the UKOUG Management And Infrastructure SIG on the subject of Oracle Security tools.

The discussion got around to the issue I call "the access issue" – this is basically that any direct connection to the database requires the IP address, port number, service name or SID and a valid username and password. Often the IP address could be found easily using scanning tools such as nmap. My experience of most sites is that a username/password can be guessed easily. That leaves the SID/Service name. If a database has used a default such as ORCL – yes I do see that used in production databases – really – or simple things like PROD10g or DEV10g then they are guessable and tools exist to find these. This discussion has relevance because at most sites there is no internal protection of the database. That is you can connect a laptop/PDA or whatever or use an existing desktop (most sites ship standard builds often including an Oracle client to most desktops) and attempt to connect to the database. This for me is the biggest issue I see. Think for a minute...

If you can stop people attempting a connection to the database, i.e. only the appserver and a small number of staff can connect (DBA) and there is firewalling, packet filtering etc then this makes the database much better in terms of security. All the normal config issues do not go away, it just means that its become harder for anyone to attempt to take advantage of a bad configuration or weak password or similar.

This is all about recognising that the threat is likely to be internal and not external and that traditional perimeter security doesn't work for protecting access to the data held in corporate or government databases. The security for the data must be with the data. Layered security simply must prevent direct access to the data. This doesn't mean that the configuration issues have gone away, it just makes them harder to exploit. This is a good plan in securing data.

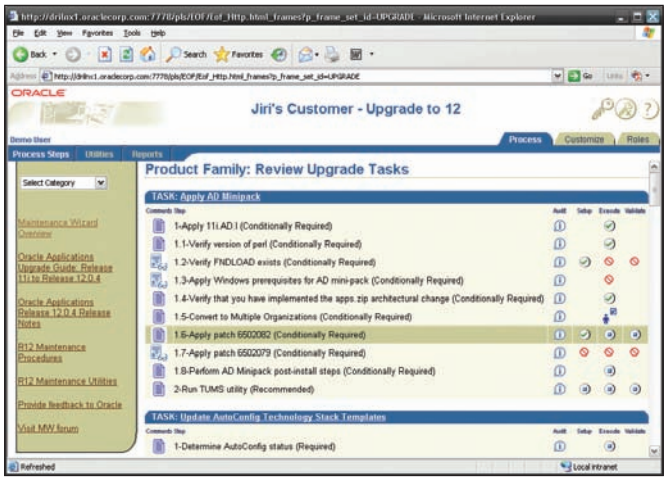
Pete Finnigan works as an independent Oracle security consultant for his own company PeteFinnigan.com Limited, that specialises in providing Oracle database security audits and Oracle database security training.

Anyway, during this discussion, I was making the point about most desktops having standard builds that may include an Oracle client and also most sites simply potentially allowing access directly to the database if someone were to plug in a laptop or use the desktop. I suggested (tongue in cheek) that a clever hacker may for instance work for the drinks vending company and he may have an Oracle client in the vending machine, which happens to be connected to the corporate network. I have looked at these machines in the past whilst idly waiting for a vend and noticed CAT-V cables emanating from the back of them – anyway it was said in fun yesterday but this morning I saw a post on BugTraq titled "Hacking Coffee Makers" – what a coincidence!

Oracle Maintenance Wizard – Faster, Easier Upgrades Every Time

By Jiri Hromadka, Oracle Global Customer Support

Oracle Corporation has recently announced the extension of the Premier Support timeframe for EBS 11i10 by a full year to November 2010. For some of our customers, this message might mean they can postpone their upgrade planning by a whole year. True, an EBS upgrade is a complex process with many challenges and pitfalls. There are so many steps that have to be executed in the correct order. It can easily turn into a nightmare for DBAs and project managers. Yes, with the right tool they wouldn't need to be afraid of an EBS upgrade or maintenance any more. The good news is that such a tool now exists. More good news – it's available to Oracle Support partners and customers at no extra costs as part of Premier Support. The tool is called Maintenance Wizard.



Although this tool has been in production since 11.5.4, many customers are still not familiar with the many capabilities it offers. Because it customizes and automates the upgrade and maintenance processes, the Maintenance Wizard can ensure that your upgrades are executed more efficiently and in less time – reducing process errors and ensuring a successful completion on budget.

> "Since DBA intervention was not needed for many of the functional tasks, it shortened the length of upgrade considerably. Overall, the tool helped significantly in execution of our upgrade. I highly recommend is use by anyone considering upgrading."
>
> David Sorgi
>
> Oracle Apps DBA,Texas Instruments

The Maintenance Wizard presents maintenance and upgrades as step-by-step processes, enables validation of each step, tracks the completion of the step, and maintains a log and status. It is a multi-user tool that enables the system administrator to give different users assignments based on any combination of category, product family, or task level.

The Maintenance Wizard provides a list of tasks and patches that will need to be accomplished in order to upgrade your EBS or EBS Database. It provides a step-by-step listing of these tasks and will automate where and when it can (i.e. run scripts, download and apply patches). The Maintenance Wizard also identifies critical patches and will automatically apply them if possible. It has full TUMS (The Upgrade Manual Script) integration; it automates the analysis of patch levels and dynamically reconfigures required steps. It also provides simple project management utilities to record the time taken for each task and completion status. There is the possibility to add custom steps necessary for your upgrade. Those custom steps can be automated as well.

The Maintenance Wizard is a mature tool. Although some may regard it as a well kept secret, in fact hundreds of customers have successfully upgraded with assistance from the tool. The current version 2.10 contains the following upgrades paths:

- Upgrade assistant from 10.7 or 11.0 to 11i
- Upgrade assistant from 11i to 12
- EBS Database upgrade assistant from 8i or 9i to 10g
- Maintenance pack assistant for 11.5.10.CU2

Maintenance Wizard version 2 retains a similar interface to the previous version 1. However, there are number of key enhancements. One of the most popular is the ability to parse the content of the Autoconfig context file to streamline the project setup. Others include troubleshooting features with direct access to problem solutions from within the tool, integration with Oracle Diagnostics and automated collection of setup and configuration data into one convenient zip file for filing eventual Support SRs.

For everything you need to know about the Maintenance Wizard, you can look at Maintenance Wizard Overview Note 215527.1 within MetaLink. There you will find downloads, instruction, FAQ and other training material. The training is available either in the form of small downloadable viewlets or for more detailed information we have a series of live webcasts on the Maintenance Wizard and other support tools available through the Advisor Webcast Program. The complete schedule of upcoming events can be found in MetaLink in Note 418301.1

Benefits

These are a few examples of the capabilities available to Oracle E-Business Suite and Oracle technology customers. With Maintenance Wizard, you can:

- **Create and maintain customized** categories, product families, tasks, and steps to accommodate specific project requirements.
- **Log in as different user types**, each with its own responsibilities and permission.
- **Maintain multiple nodes** across different platforms.
- **Maintain multiple projects simultaneously** – such as Development Maintenance, Production Upgrade, and Test Patching.
- **Run reports** that show progress, timing statistics and responsibility assignments.
- **Use troubleshooting features**, which include automatic logging of steps as they are performed and the ability for users to append comments to each step.

Debra's diary

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.

As I write this column, the sun is streaming in through my study window. As I live in N Ireland I will be able to recall the exact date – days when it doesn't rain are recorded. The point I am trying to make is that it is several weeks before you read this. I said this diary was a non technical blog but I have put aside my old age and lack of technical expertise and started a blog http://www.debrasoracle.blogspot.com/ as we all expect immediate information. But Debra's Diary is here to stay, or at least until the editor receives enough requests to close it down.

As promised, here is a bit about Collaborate. This was held in Denver in April and is the showcase event for IOUG, OAUG and QUEST. People I know in Denver told me to bring layers as the weather is unpredictable, so I did. I felt stupid carrying a big coat on the first two days when all I needed was a t-shirt, but I was the clever one on the Wednesday when we had a snow blizzard.

However, back to the content. Charles Phillips was the main keynote speaker and he summed up the Oracle message as:

- Complete (full stack)
- Open (Standards based)
- Integrated
    - Data to Apps – AIA
    - Information – OBIEE Plus
    - User Experience – Web Centre 2.0

My main interest is Fusion and there was an interesting approach. In the main sessions Oracle talked about fusion readiness, the evolutionary path to Fusion and the value of being on a Fusion ready release. There was very little presented about the application itself. However in the question and answer session of the OAUG Fusion Council, Steve Miranda (Fusion General Manager) answered quite a few questions of which I asked a lot. There will be a full suite out within the next 12 months (all Oracle is allowed to say as they are subject to Revenue Recognition rules) but it will be rolled out very slowly with invited participants initially – those who can demonstrate they are happy being early adopters and with a proven track record.

The product Development committee I chair on your behalf at the IOUC are now creating a Fusion Readiness Assessment tool for launch at Open World. It will be based on the white paper http://www.oracle.com/applications/evolutionary-path-to-fusion.pdf by Nadia Bendjedou of Oracle EMEA.

A few weeks later Ronan and I attended a presidents meeting for EMEA user groups in Munich. An interesting few days – we landed, walked through the airport into the airport hotel and never saw daylight for 2 days! There was however recognition of the importance of UKOUG as both Ronan and I had room upgrades (it was only really a coincidence but one I can live with). The first day had a number of EMEA executives from Oracle talking to us about their initiatives for the new financial year. One learning experience was an update on localisations from Karsten Roigk and how SEPA will be rolled out through the product suites.

The second day was more inwardly focused on how the EMEA users groups can work together. What the other groups need from us in UKOUG is support – some would like it in the form of speakers and others would like to send their members to our conference. There is a lot of best practice sharing and we intend to continue this having set up an EOUC group on Oracle.mix.

UKOUG can also learn; I went as a speaker to the Finnish user group in May. If you put your delegates on a boat they cannot wander off! There is a super ferry that sails daily between Helsinki and Stockholm. What happened was the Swedish user group sailed to Helsinki on the Tuesday, returning Wednesday, while on the Wednesday the Finnish user group got on the boat disembarking on Thursday. This meant that on Wednesday there was a joint agenda, while the Swedish contingent had Tuesday on their own and the Finnish User Group had Thursday on their own.

There were several UKOUG speakers at the two conferences, and as well as two agendas meeting in the middle there was also a daily time zone change which, along with a lot of partying courtesy of the Oak Table, required good discipline. Other directors presenting were Jonathon Lewis and Peter Robson.

It was mainly a technical audience and as I was speaking about Fusion I did not expect a large crowd; however a lot of them turned up. There were lots of questions asked and as Ronan has said many times, when Fusion arrives it may change the way all our applications are written. I learnt that I should be talking to technical audiences and made a whole new group of friends.

The lifeblood of UKOUG is our volunteers and each year we have two volunteers meetings. One is a quick review on the Sunday before conference but the summer event is a full day event with an overnight stay. This year it was held in Birmingham in early June and over 60 volunteers plus directors and Oracle Liaisons.

The day started with lots of 5 minute updates from UKOUG to volunteers, I was last on the agenda because the office believe I can fill any available space and I didn't disappoint – I went over by 10 minutes. We then did an exercise in working together which was a bit of fun, and then break out sessions where SIGs shared best practice and ideas amongst themselves. Each year we have to work harder to address the points raised and we are not always successful but the intention is there, we are a learning organisation.

My next update will be from ODTUG and plans for Open World. Let me know if there is anything else you want me to include.

UKOUG Director Elections – why should I vote?

By Debra Lilley

I was asked to encourage members to vote in Director Elections, but I think that is simply the mechanical part of the process. What I want to discuss is why and how you should decide who to vote for.

UKOUG is an independent, not for profit membership organisation created to support Oracle stakeholders, but it is also a proper company; its legal status is company limited by guarantee.

Most organisations leave it to the board to appoint directors, but in UKOUG as a membership organisation we all jointly elect our board. There are 12 directors and each is elected to serve a 2-year term. Normally 6 places are up for election or re-election each year.

When I first became a director I simply thought it was like being a super SIG chair, but it isn't; we as board members have legal duties to perform.

The role of a director is Accountability, Probity (honesty) and Transparency, which have to be delivered against what the Institute of Directors (IoD) calls the four dilemmas:

- Drive forward under entrepreneurial and prudent control
- Know workings of company but stand back from management
- Sensitive to short term issues informed about long term trends
- Focused on commercial needs but act responsibly to employees, partners and society

So voting in UKOUG should not simply be a popularity contest. Ask yourself…

- Does the candidate have the skills to fulfil the role required?
- Do they have the understanding of the community they wish to represent?
- If they are standing for re-election, have they served you well?

The board is responsible for the strategy of UKOUG and this is not always easy when factors such as the economy and what Oracle is doing next cannot always be predicted.

The elections are important because they determine who is elected, which members are represented, and ultimately who runs your user group. Who is elected directly affects what kinds of policies are passed and who benefits or suffers from those policies.

By voting you are…

– expressing your opinion as to the fitness of the elected leaders and their policies

– ensuring that the people in charge represent your views and fight for the issues that are important to you.

– helping to shape what we do and how we do it

– having a say in who runs your user group

It is the right to vote that permits you to hire and fire those that represent you and that allows to you to determine, to a certain degree, your future by electing those people who reflect your views and will speak up for you when it matters.

By not voting you are…

– abdicating your right to influence

– allowing the will of others, whose opinions maybe contrary to your own, to prevail

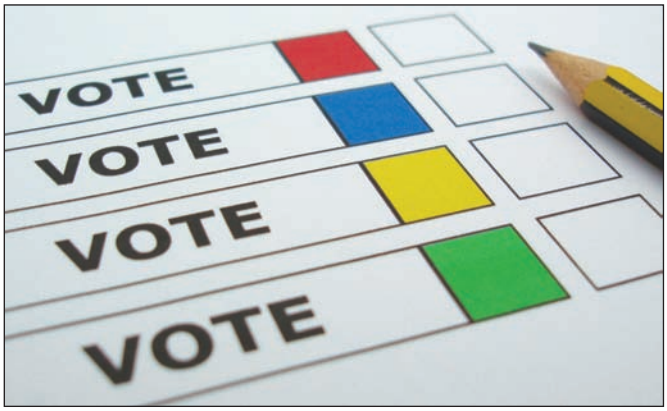
– allowing it to be the will of the minority that rules, rather than the majority

Each membership has a vote, and it is normally the main contact. If you are that contact but have a colleague who is better placed to make that judgement, perhaps an active SIG member, then ask them for their recommendation or pass them the vote.

If you are not the main contact, you can still have your say on who represents you by notifying your membership's main contact of your preference – make sure you get involved.

Please use your vote

UKOUG needs a board that speaks for the whole membership and not just a small part of it. We want to know that we have a real mandate for what we do and that requires a good voting turnout.



UK Oracle User Group Launches Executive Summit

UK Oracle User Group has announced the launch of the first 'Executive Summit', a thought-provoking event designed exclusively for senior IT Managers, Directors and Senior Managers.

A one-and-a-half day event, held between 1st – 2nd December 2008 during the annual UKOUG 2008 Conference at the Birmingham ICC, the Executive Summit will begin with a (topic) presentation, followed by the opportunity for IT Leaders to network, learn and share knowledge and resources examining how IT can support future business requirements from a senior management perspective.

Ronan Miles, chairman of UKOUG comments, "The Executive Summit provides a truly unique opportunity for UKOUG members to influence the thinking and strategy behind future Oracle products and services. By engaging with senior Oracle management face-to-face, users can directly present their feedback and help guide the future direction of the product roadmap."

Miles continues, "As we celebrate our 25th anniversary, UKOUG is more committed than ever to listening to all of its members and responding to their needs. The Executive Summit is a great example of this, as senior IT Managers previously told us they rarely have the time or the opportunity to network with peers. What really excites me is the agenda being set by the C level delegates themselves."

Speakers at the Executive Summit and Conference include, Jesper Anderson, Senior Vice President for Oracle Application Development, Jürgen Rottler, Executive Vice President Customer Services and Sergio Giacoletto, Executive Vice President Europe Middle East & Africa.

To register your interest go to:
www.oug.org/executive

"The Executive Summit provides a truly unique opportunity for UKOUG members to influence the thinking and strategy behind future Oracle products and services."

Ronan Miles,
Chairman of UKOUG

UKOUG CALENDAR OF EVENTS 2008

SEPTEMBER

09 **Oracle Financials SIG Meeting**, London
10 **PeopleSoft Combined SIG Event**, TBC
10 **Oracle Licensing Update & Pricing Event**, London
11 **UNIX SIG Meeting**, Slough
11 **Siebel SIG Meeting**, TBC
16 **Stellent SIG Meeting**, TBC
17 **Hyperion User Forum Update Meeting**, London
18 **Prospect to Order Process SIG Meeting**, Slough
18 **Oracle Projects SIG Meeting**, West Midlands
23 **Oracle Spatial SIG Meeting**, Midlands
23 **Public Sector HCM Customer Forum**, Birmingham
24 **Irish HCM SIG Meeting**, Dublin, Ireland
24 **Irish Technology SIG Meeting**, Dublin, Ireland
25 **Irish Applications SIG Meeting**, Dublin, Ireland
30 **Modelling Analysis & Design SIG Meeting**, London
30 **HCM SIG Meeting**, West Midlands

OCTOBER

01 **Application Server and Middleware SIG Meeting**, West Midlands
02 **Oracle and .NET SIG Meeting**, London
02 **Siebel Oracle OpenWorld Highlights**, Reading
02 **Local Government Applications SIG Meeting**, London
02 **RAC & HA SIG Meeting**, Warwickshire
02 **Supply Chain & Manufacturing SIG Meeting**, West Midlands
08 **Apps DBA for OEBS SIG Meeting**, London
08 **OUG Scotland Conference & Exhibition 2008**, Glasgow
08 **Business Intelligence & Reporting Tools SIG Meeting**, London
08 **Local Authority Shared Services Customer Forum**, London
09 **Local Government CRM Customer Forum**, West Midlands
09 **OGUG SIG Meeting (Formerly known as OFGUG)**, London
14 **Development Engineering SIG Meeting**, London
16 **Management & Infrastructure SIG Meeting**, London
16 **UKOUG Partner of the Year Awards Ceremony & Dinner**, London
23 **Statutory Compliance Sub Group**, West Midlands

NOVEMBER

04 **Education & Research SIG Meeting**, West Midlands
04-05 **JD Edwards Conference 2008**, Berkshire
05 **Local Government Applications SIG Meeting**, London
06 **Criminal Justice SIG Meeting**, London
06 **DBMS SIG Meeting**, Wolverhampton

DECEMBER

01-05 **UKOUG Conference & Exhibition 2008,** ICC, Birmingham
04-05 **UKOUG PeopleSoft Conference 2008,** ICC, Birmingham

All event dates are subject to change

Viva Las Vegas!

Oracle HCM Users Group 2008 Conference Report

By Tim Warner, Co-chair UKOUG HCM SIG

Birmingham in the dark, cold days of a British winter and Las Vegas in the scorching heat of the desert may not sound like they have much in common. But there is one important connection. Oracle HCM.

Oracle HCM Users Group (OHUG) held its annual conference in Las Vegas this year. As co-chair of the UKOUG HCM SIG, I was fortunate to be invited as a guest. It was a tough assignment, but someone had to do it!

Unlike the UKOUG HCM SIG, which each year holds 3 one-day E-Business Suite HCM meetings, 3 PeopleSoft meetings, 2 E-Business HCM tracks, and 2 days of PeopleSoft content within UKOUG 2008 Conference, OHUG only holds one annual conference. However, whilst the organisational structure is different, its aims, challenges and issues are very much the same as ours.

Carolyn Hayden-Garner, delivers the Presidential welcome address to the OHUG annual national conference, with Janice D'Aloia OHUG Conference Logistics Chair

This year's conference took place over 4 days in the grand surroundings of the Mirage Hotel. Once delegates had negotiated the tortuous route from the hotel reception, past an aquarium, through a tropical garden, seemingly miles through the casino and finally past the shopping mall, they eventually found the cavernous conference area.

The conference was divided into streams. There were streams for E-Business, PeopleSoft and 'Meet the Experts'. The Global Products User Group (GPUG) and the Canadian HCM SIG, who are both affiliated to OHUG, also held sessions within their own streams.

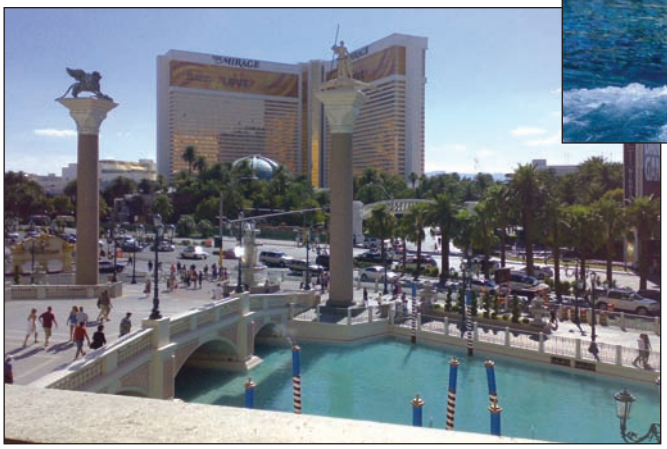
Presentations came from a wide spectrum of the HCM 'family'. Users presented sessions on their experiences with various aspects of the product and Oracle provided an insight into the product development and strategy, particularly in the OBIEE and Fusion Middleware areas.

To give an idea of the scale of the event, over 1600 delegates attended the conference. The 36 'Meet the Experts' sessions covered topics such as XML Publisher, Approvals Management, Learning Management, Fusion Middleware and iRecruitment. There were 8 hands-on 'training' sessions including XML Publisher, Tutor and UPK, and 27 sessions were held on HR Analytics, 25 payroll/time and labour/absence, 23 compensation and benefits, 27 technical/sysadmin and 26 on talent management.

The conference was not all about attending presentations. There were many opportunities to network. Lunchtimes and evenings were filled with a variety of receptions held by vendors, consultancies and groups with common interests.

The main impression I have brought away is that, whether we operate in the UK, EMEA, US or globally, we are all facing similar challenges and issues. When will Fusion hit the street? How will it affect us? What is the strategic direction of the product? I didn't get answers to all of these questions, but I did realise that the benefits we see from our SIGs can be enhanced by cooperation with other groups such as OHUG. After all, we are all in the same boat!

We look forward to welcoming an OHUG representative to our conference in December.



Left and above:

The Mirage Hotel, venue for the annual OHUG conference – it's not every day you find a dolphin in your hotel pool!

Oracle Development Tools User Group – Kaleidoscope 2008 conference

By Simon Haslam, Chair of UKOUG Application Server & Middleware SIG

This summer I was fortunate enough to be able to attend ODTUG Kaleidoscope 2008 in New Orleans and I thought it might be interesting to describe the event, comparing it to our own annual conference in Birmingham.

As its name suggests, ODTUG is focussed on Oracle's development and modelling tools with some business intelligence, but no enterprise applications. It caters for traditional database developers right through to leading-edge SOA types using technologies like BPM, BPEL and ESB.

ODTUG moves from city to city and this year they were returning to New Orleans. Hurricane Katrina may still be fresh in people's memories but actually struck in 2005 and it's good to see that the city is back on its feet again.

As a warm-up for the conference there was a volunteers' day where 75 or so delegates turned up in old clothes to go out to the suburbs to help paint classrooms at the Live Oak Elementary School. This had previously been moth-balled but has now been put back into service after the floods, thanks to its location on relatively high ground. Having split into teams of 5 or 6, each group was asked to paint all the woodwork in one classroom. Deceptively simple but the number of panes in windows and doors were a common point of conversation by the end of the day!

ODTUG's technical presentations started on Sunday with a day of three parallel symposiums: Fusion Middleware (where all the best people were, of course!), Apex and Hyperion/Essbase. They were well attended and each finished with a popular "grill the expert"-style session. The evening events kicked off with an ODTUG jam session, which had a strong Oracle UK contingent, proving that there was more to life than just work!

As the ODTUG conference doesn't cover Applications it is smaller than UKOUG. Nevertheless it still has the usual scheduling problems of how to get so much good material into a short space of time and yet keep as many people happy as possible. Monday's Oracle keynote was followed by 8 parallel streams of presentations, typically an hour long,

Pre-conference painting volunteers

though some were 1½ hours. Tuesday was of a similar arrangement (though I'm not sure I will be calling for an 8am start in Birmingham!), with Wednesday morning having three parallel sessions, rather like the UKOUG's "master-class" sessions.

As with all good conferences, much of their benefit is the people you meet outside the sessions. Whilst the UKOUG conference in Birmingham is very well attended by Oracle staff, it was good to finally meet some US-based Principal Product Managers that I had previously spoken to. There was also an excellent turnout of Oracle ACEs (people recognised as making an outstanding contribution to the Oracle community) and other bloggers. The Oracle world is quite a lively place to be at the moment and some of the gossiping and speculation would have put a Heat Magazine awards ceremony to shame!

One new ODTUG innovation I really liked were the coloured stickers you could attach to your name badge, showing your main interest areas (JDev/ADF, Apex, PL/SQL, Hyperion etc) – you meet so many people over meals and events that it's helpful to know each other's interests areas without going over the same old questions. I hope this is something we can introduce to UKOUG.

The conference hotel was right in the heart of New Orleans and only a stone's throw from Bourbon and Decatur Streets, with their music bars (let's quickly skip over Hurricane cocktails!), seafood restaurants and venues offering, shall we say, various other forms of entertainment. For the jazz aficionado however it was well worth walking a little further afield to Frenchmen Street, with its range of bars and clubs including the appropriately named "d.b.a.", the Spotted Cat, and Snug Harbor (where I saw Ellis Marsalis and sons playing). You even find large groups of musicians out on the street, drawing a crowd and playing late into the night.

Overall ODTUG Kaleidoscope 2008 was a rewarding conference with strong technical content and ample opportunity to share experiences with your peers; I look forward to the next one!

Photos courtesy of ODTUG

... and finally

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The Oracle Wait Interface is a fairly new paradigm in performance tuning. This shift is to take the focus away from the 'old' way of tuning by looking at ratios, such as buffer cache, library cache hit/miss and latch get/miss. These, whilst considered a good rule of thumb at the time, have now been proven not to really help in tuning.

The new philosophy is to focus on where the time is being spent in a process i.e. are you waiting for I/O operations to complete, locks on rows, latches or waiting on background process to complete. These events are the bottlenecks on which your process is waiting.

With this new philosophy in mind, Oracle has made available lots of information about what the database is waiting on during everyday running, through V$ views. This is the Oracle Wait Interface.

The beauty of OWI is that it can direct the DBA to the area causing the greatest problem, quickly aiding a faster turnaround in database performance problem solving. Also, to assist the DBA, it can also quickly point to bottleneck problems outside the database.

The system is slow

The first the DBA hears of a problem is when the users ring up and say 'the system is not responding' and 'the system is slow so I rebooted my P.C. and it is still slow'. This can exacerbate the situation by maintaining two instances of the user's process, both now competing for the same resources, plus whatever was causing the bottleneck in the first place.

Behind the wait interface philosophy is a simple equation:

Response Time = Service Time + Wait Time

The Service Time is the actual time the database spends doing real work for you, on the task in hand. The Wait Time is the time your task has to spend waiting for resources to be made available to do the actual work. From this, therefore, to decrease the response time you must either reduce the service time, reduce the wait time, or both. A caveat to this is that all statistics gathered regarding waiting are within the database – any time context switching, delays within the network and delays within memory management are not taken into account. Again this list is not exhaustive.

The new paradigm needs to be looked at more carefully, for a minute. Take the old view of performance tuning. You look at how heavily the buffers are being used, the physical I/Os and the ratios; you see a problem and you tune and tune to get those numbers down. The new philosophy is not to look at these numbers – yes, reducing these may reduce your service time, but this doesn't even address the waiting time, which may be your problem after all. The new philosophy is to take into account the time spent waiting for resources to be available as well as service problems.

To use the wait interface you must first understand what a wait event comprises. Using the formula, any time not spent servicing a request is time spent waiting. This can include waiting for retrieval of data in the data buffers to and from the data files, interprocess communications and memory operations. Basically, between a request for data and the response, the database will be performing one or several events, even if that event is waiting for a response from the user at the terminal.

Let's interrogate the database

OK. Now that we are convinced the OWI is the way to go, we need to see what dynamic views are useful to use. The main four we are all familiar with:

V$EVENT_NAME
V$SYSTEM_EVENT
V$SESSION_EVENT
V$SESSION_WAIT

which have been around since version 7. A brief description follows.

V$EVENT_NAME – contains the names of all the wait events against which statistics are collected. As with everything Oracle the number of events against which statistics are collected has grow exponentially.

V$SYSTEM_EVENT – Is a summary of all events encountered by each session since startup.

V$SESSION_EVENT – As expected, this contains the events encountered by each session, identified by the SID.

V$SESSION_WAIT – Can be conjoined with the V$SESSION_EVENT to show more details as to the nature of the wait.

Introduced in 10g are 5 more dynamic views:

V$SYSTEM_WAIT_CLASS
V$SESSION_WAIT_CLASS
V$SESSION_WAIT_HISTORY
V$EVENT_HISTOGRAM
V$ACTIVE_SESSION_HISTORY

V$SYSTEM_WAIT_CLASS – As the name suggests this is an aggregate instance level table. It provides instance level information relating to the classes of waiting events. i.e. Idle, system I/O, User I/O etc.

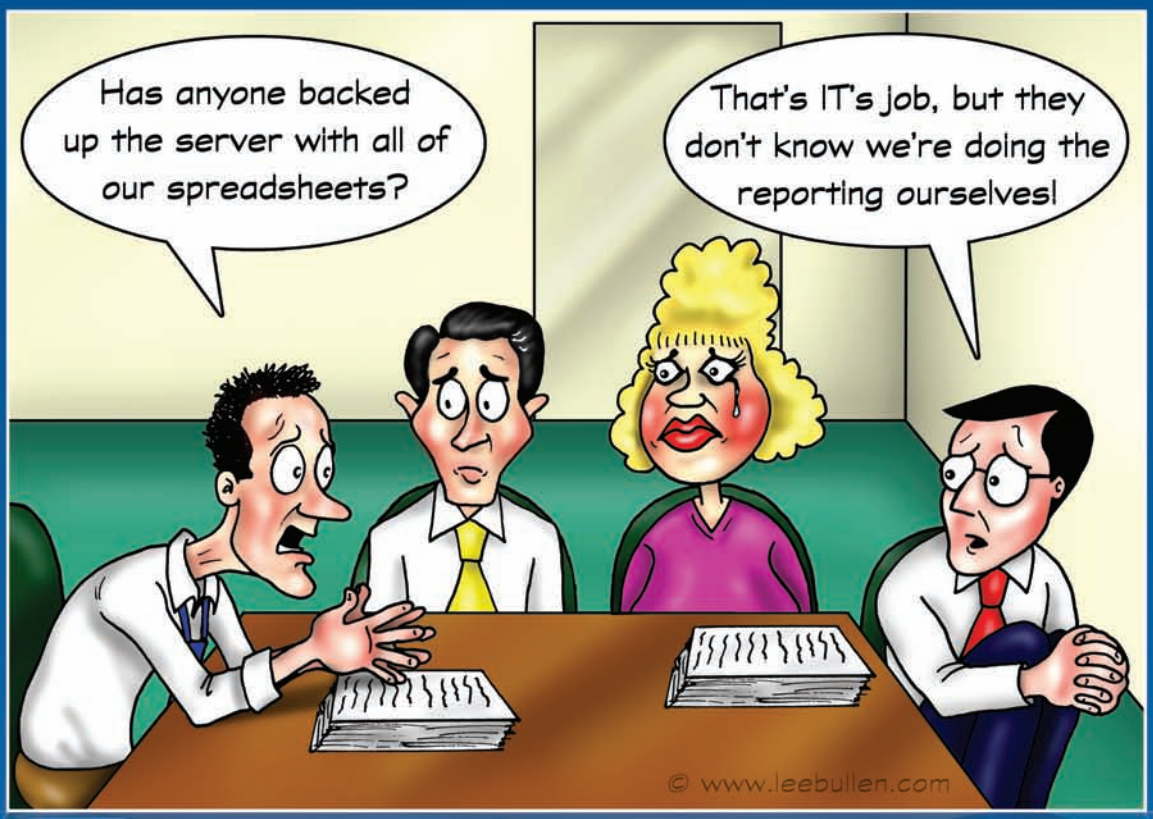
V$SESSION_WAIT_CLASS – As with V$SYSTEM_WAIT_CLASS, this view is a drill down of wait classes at the session level (SID). This view provides you with the opportunity to identify which classes are causing the largest wait time within a session.

V$EVENT_HISTOGRAM – This view classifies waiting events into buckets based on the time waited. The bucket sizes are < 1ms, < 2 ms, <4 ms, <8 ms etc. The WAIT_COUNT column shows the count of each event which has occurred since instance startup and falls into that time interval.

V$ACTIVE_SESSION_HISTORY – This view keeps about half an hour's session-level wait event history and is sampled every second.

As you can see there is a lot of helpful information now available in 10g which can help the DBA to identify where a possible problem may reside within the OWI model.

Lost your "Shadow Data" System?



Shadow Data systems are becoming more and more widespread due to the frustration of not being able to access ERP data in real time. Even if you have a Business Intelligence system you won't have the level of information needed to help you close the books or to answer questions like:

- Why do I have a variance on my trial balance?
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