Good DBAs Work Smarter – Not Harder

There's no doubt about it, Oracle DBAs have a tough job to do especially if they are managing many production instances. Most usually have a background in application development/design or system administration and have quickly established themselves as resident experts on everything Oracle as well as a host of other things, such as networking, system administration and data modelling.

In addition to their regular duties, DBAs are often called upon by application development teams to assist with things like creating new user accounts and SQL performance tuning. As a consequence, most DBAs find themselves in reactive mode (often called fire-fighting) and have little opportunity to plan ahead or be proactive. To that end, establishing, using and maintaining proven best-practice processes is an essential (albeit a difficult to achieve) ambition. This is especially important for those tasks that directly impact the business, such as ongoing performance, security and integrity of the production systems.

The Problem

Good database administration is essential to protecting critical business data and ensuring business applications operate efficiently. Database administrators have to perform many different tasks; many of which are reactive and some proactive. The challenge is achieving the correct balance rather than being driven be the reactive tasks.

Let's analyze the proportion of time typically spent by most Oracle DBAs:

Task	Proportion
Fire fighting	22%
Monitoring	33%
Performance Tuning / Change Mgt	12%
Development Support	33%
Planning for Growth	0%
Backup / Recovery Planning	0%
Learning	0%

Source: James F. Koopmann
An Expert's Guide to Database Solutions: A DBA's New Year Resolutions

Does this look familiar to you? This is obviously quite disruptive to the DBAs ability to plan a strategy for administering one of the company's most important assets and, as you can see, it's obvious that anything which is "forward-looking" gets relegated to the bottom of the list.

We can group the tasks, which DBAs do have time for, into 3 main categories:

- **Maintenance**
- **Performance Management**
- **Change Management**

If we could make these tasks more efficient, we could free up some time for the rest.

Let's look at these 3 groups in more detail:

Maintenance – this is essentially administration of the database including an assessment of its general well being through some sort of health check as well as ensuring end-users have the necessary access without compromising database security. It also includes backup and recovery to ensure business continuity in the event of loss or corruption as well as ongoing availability by means of replication or some other means.

Many of these tasks, especially around reporting, are routine and repetitive and should be automated. According to Forrester Research:

> "Automation (of administration) can typically save 15% or more in costs by way of reduced administration efforts. …relieving DBAs from trivial and routine tasks..."
>
> – Noel Yuhanna, Forrester Research, *Automating Database Administration Can Improve Efficiency and Lower Costs*

Performance Management – this covers the more obvious SQL-related application performance, but it also covers database performance. In other words is the database properly configured to deliver optimal performance?

In a rapidly changing environment, database performance bottlenecks are notoriously difficult to pinpoint let alone try to resolve, so quick diagnosis is essential and well as the ability to provide a swift, effective resolution.

According to Forrester Research 60-90% of database performance problems are related to SQL. This can lead to poor end-user response time which could impact the business.

Change Management – what we mean here goes beyond just schema change management; it includes the ability to predict the impact of any change on the database including such things as database configuration changes, patches, upgrades, consolidations, etc.

How can a DBA determine, in advance, what the production impact would be of implementing any of these changes before they implement them? If they can't do that, the DBA runs the risk of rolling out a change which could severely compromise business and end-user services.

According to expert Craig Mullins:

> "Database change quickly can monopolize a DBA's time. Preparing for change and implementing the proper tools, techniques, and procedures for database change management is one of the most important jobs undertaken by DBAs today."
>
> – Craig Mullins, data management strategist, researcher, and consultant

The Solution

So how can we turn things around and spend less time reacting to things and more time planning for future eventualities such as patches, upgrades, new configurations, etc.

Toad DBA Suite for Oracle addresses these 3 key areas of database administration enabling DBAs to become more proactive and, where they do have to react to problems, perform this task quickly and effectively.

Here's how the **Toad DBA Suite for Oracle** supports these three key areas:

Maintenance –

- Collectively views all managed databases enabling drill down to objects and execution of tasks all within the same window.
- Simplifies routine tasks, including the administration of users, roles, object privileges, storage and more.
- Automates the management and maintenance reporting of overall database health (including security vulnerabilities), schemas, index rebuilds, etc.

Performance Management –

- Diagnoses performance bottlenecks graphically and in real time to pinpoint the exact source of the problem.
- Leverages Oracle's AWR or StatsPack technology to display database performance metrics graphically and offer advisories. *(Note: AWR Browser requires the licensing of the OEM Diagnostics Pack)*
- Identifies SQL related problems directly from the application source code by scanning.
- Following criticality classification, allows the selection of the worst SQLs and submission for automatic optimization and the production of re-written SQL candidates.
- The DBA can ultimately decide which is the most suitable alternative SQL to use.

Change Management –

- Evaluate the impact of planned database changes by benchmarking current performance characteristics and assessing the effects of those changes in a test environment by using industry standard tests (such as TPC-C, etc) or through workload replay testing.
- Assess indexing strategy by using virtual indexes to predict likely behavior and plan change analysis to see how planned changes would affect SQL performance without having to build the index first.
- Employ either direct schema comparison or data modeling methodology to generate deployment scripts.

So how will all of this help the business?

Better database visibility combined with task simplification and automated reporting gets the job done efficiently while minimizing the risk of inconsistencies impacting production.

Accurate diagnosis and efficient resolution of performance problems due to inefficient code or inappropriate database configuration enables SLAs to be met.

Understanding the impact of changes together with on-time deployments will reduce the risk of production downtime affecting the bottom line.

Also, as a consequence of improved productivity, the DBAs workload will be reduced through ease-of-use, better workflow, automation, consistency and accuracy, thus enabling the DBA to become much more pro-active and focus on longer-term tasks.

Using **Toad DBA Suite for Oracle** is well within the capabilities of most DBAs and serves as a valuable complement to Oracle's own tools. All of its components can all be readily accessed through the Toad UI through contextual workflow and will ultimately enable less experienced DBAs especially to take ownership of many aspects of database administration usually left to their more experienced colleagues.

In the long term, **Toad DBA Suite for Oracle** will empower hard working DBAs to become **smarter** DBAs who will appreciate the ability to become more proactive and spend less time putting out fires.

About the Author

John Pocknell is a product manager at Quest Software based out of the European HQ in Maidenhead UK. He has been with Quest since 2000, working in the database design, development and testing product areas. John also spends significant time with customers at Toad User Groups and Oracle User Groups throughout Europe and the Asia/Pacific region, evangelizing Toad and holding Toad training courses.

John has worked in I.T. for over 20 years, primarily in Oracle-based application design and development. He is a qualified aeronautical engineer, with over 10 years as a Business Development manager provisioning I.T. consultancy services and implementation of Quality Assurance systems to ISO 9001.