

## ***Database Health Check***

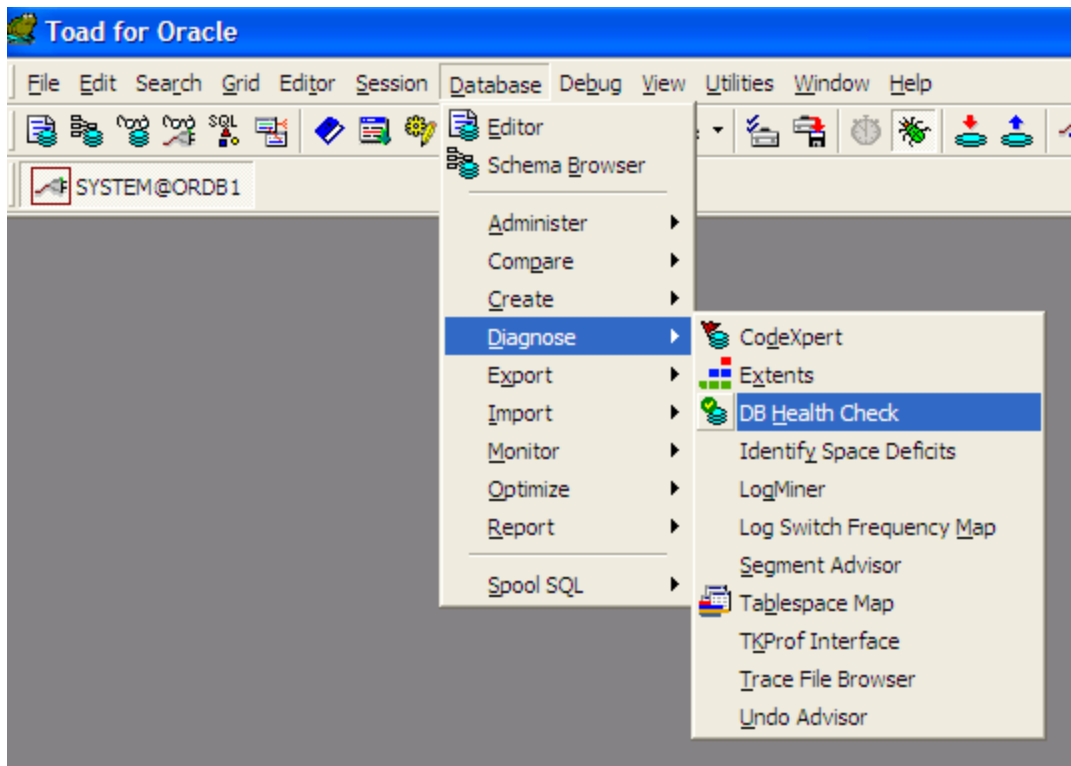
There is no single, universal method or practice defining how Oracle databases should be managed, monitored, diagnosed and then optimized. Although there are numerous opinions and papers published on this topic, the fact remains that it's almost universally performed differently (from marginally to radically). In this varied setting, one truth generally holds: the DBA is perceived as both the primary stakeholder and potentially the last bastion for database performance. Stuff rolls down hill, and the DBA is at the bottom. There is no one else for the DBA to pass the buck to, thus the DBA owns this.

As such the Oracle DBA is generally tasked to investigate, isolate, diagnose and correct database performance or database "*health*" issues. There are basically two universal approaches toward accomplishing this monumental task: reactively respond to missed SLA (Service Level Agreement) occurrences, or proactively prevent such scenarios where possible. There are pros and cons to each approach – with proponents espousing why each is superior. Needless to say, there are probably times that each applies better.

Regardless of your approach, Toad offers the Database Health Check screen, which should become your first step towards resolving almost any database performance issue.

The Toad Database Health Check screen works much like a doctor examine a patient and then charting all their symptoms, problems and potential course of corrective actions. In fact the Toad Database Health Check screen is so good at looking over a database and spotting any potential threats, as well as existing problems, that it ought to be run initially and then at regular intervals for all your databases. It will be time well spent.

Let's examine the Toad Database Health Check screen and its generated reports now. You can launch this screen via the Main Menu -> Database -> Diagnose -> DB Health Check, as shown in **Figure 1**.



**Figure 1: Launching Toad's DB Health Check**

The Toad Database Health Check screen, shown in **Figure 2**, is a fairly straightforward screen to use. But as with many Toad screens, you need to pay attention to all the various sections and/or tabs for the screen, and the various functionalities that they make possible. Look again at **Figure 2**, there are several key areas that display by default: the database selection area along the left hand side and the health check rules selection along with optional parameter value selections. As you can see, the database selector permits you to choose multiple databases (i.e. multi-select) that will be reviewed, diagnosed and that will have recommendations generated. The health check rules selection area also permits multi-selection, you simply check all those rules that you want to have applied. And if you want an entire category or classification of rules to be run (e.g. Settings), then you simply check that category's check box – which will check or uncheck all those child rules under it. Needless to say, the more databases and rules you select – the more output you're going to see generated, because all the rules selected are applied to all the databases selected. So choose wisely. Also note the occasional "[Params](#)" indicator that appears next to some rules. That simply means that that rule has some logic being applied with a default value that you can override. Since each of these varies so widely, their associated pop-up screen offering the valid options vary widely as well. But each is rather simple in its own right. Just choose those where you want to make a change and select the value, values or logic that makes sense within the context of that rule selection.

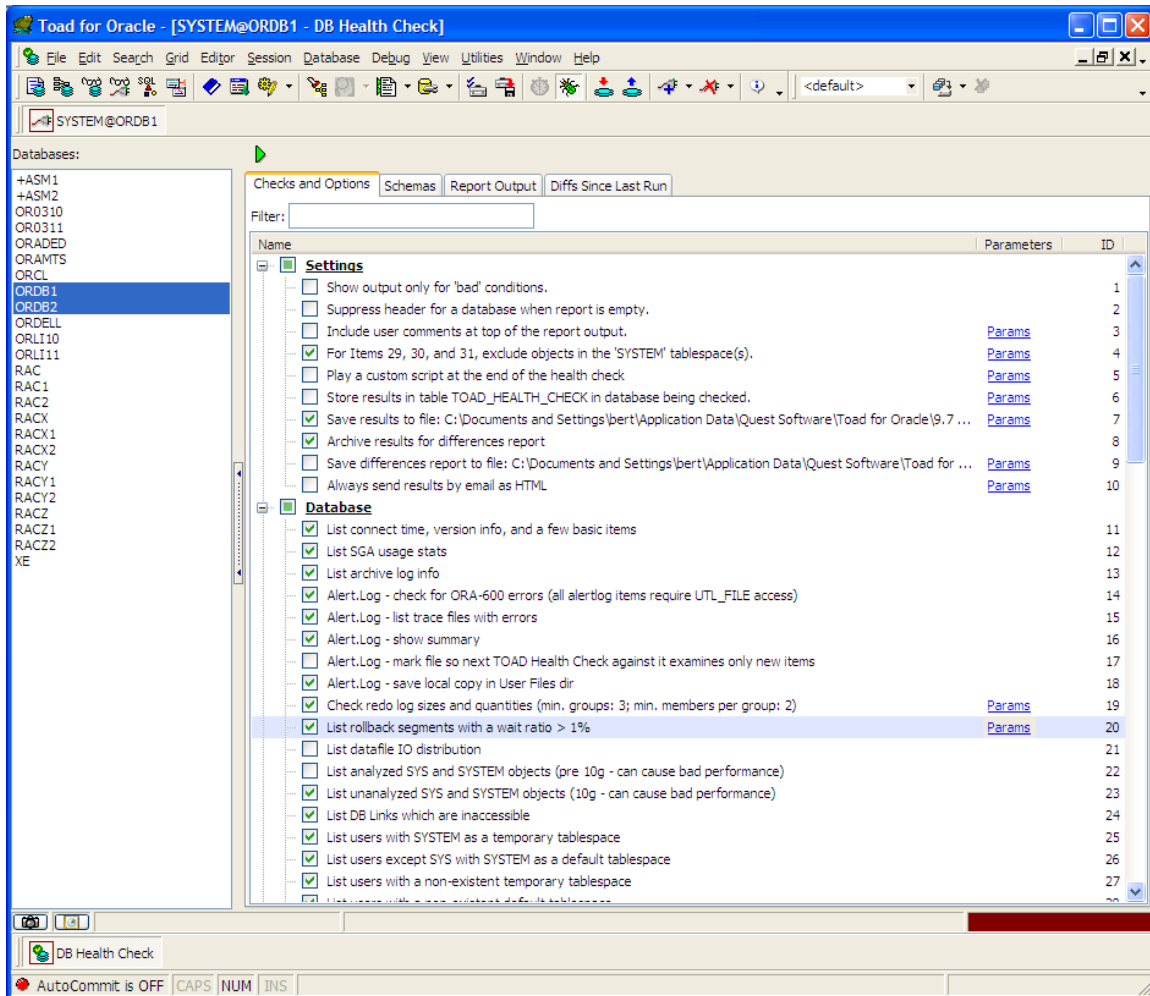


Figure 2: DB Health Check screen – main area

The second tab on the Database Health Check screen, shown in **Figure 3**, allows you to select the schema and/or schemas to apply the selected health check rules against. The choices for “all schemas” and “all schema except SYS, SYSTEM, etc” (default) will generate quite a bit of output for schema level health check rules (e.g. list schemas with unanalyzed tables) – as most of these rules will actually produce one row of output per object found per schema that violates that check. If you instead decide to name just the schemas to include in the search, the output will be more manageable – assuming you don’t pick too many selections. And if you instead choose the name the exclusions, now you should try to name as many schemas as you can – so as to once again reduce the report output. Because the larger the output from this report, the easier it might be for you to miss a key finding – even though the output is color coded to help you spot the serious findings (which we’ll see more clearly later in this chapter in a sample report’s output).

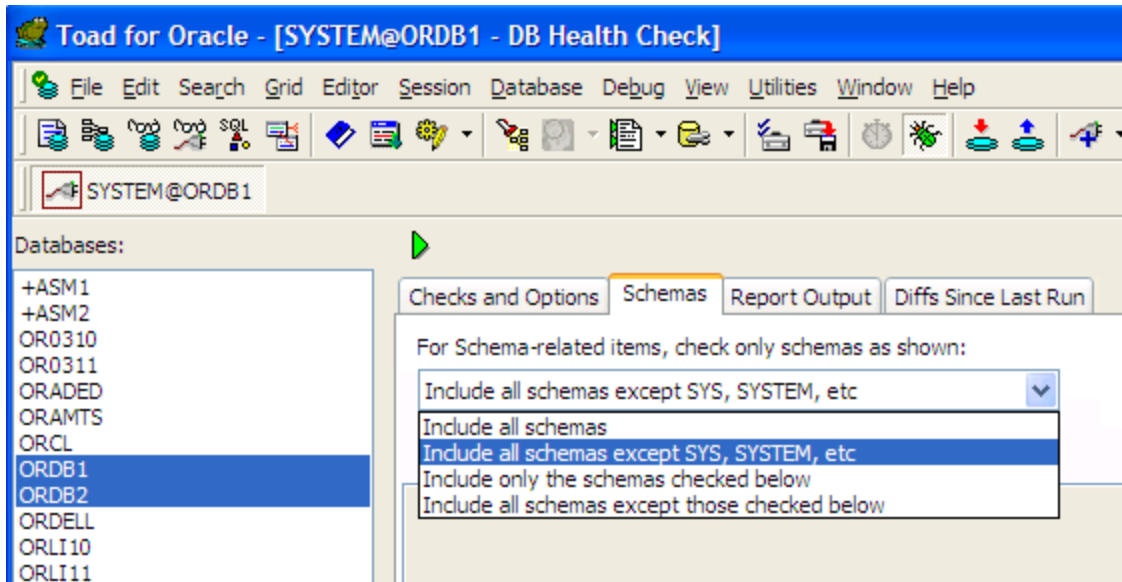


Figure 3: DB Health Check screen - schema filtering

Once you've selected your databases, health check rules, any optional parameters and filtered by schemas, you then simply press the green arrow icon above the tabs. This will run the health checks and display the output on the third tab, the "Report Output", as shown in **Figure 4**. Note that this report can take some time to run if you've selected multiple databases and numerous rules. But the output is well worth the wait, so be patient. When the report completes, you'll see a nicely organized tree-view type display of the results. Each section will show how many rules it fired, and a count of those that resulted in negative findings highlighted in red. So in the case of the "Basic Info" section, we see that seven rules fired – of which one results in a negative finding. Don't get too caught up on whether you agree or disagree with the rules themselves. For example many no longer believe that system ratios like the "Library Cache Hit Ratio" shown here in read matter (or at least not to the degree they did in the past). OK – then simply deselect that rule if you don't value its findings. There are over 90 rules currently to choose from. Toad should offer sufficient alternatives such that you can construct a database health check that finds thing you believe to be relevant. And remember, many rules permit you to define parameters to further enhance you're tweaking the search and findings to better suite you database tuning and optimization beliefs. Finally, note that you can save the report output contents to file (via the disk icon) in any of the following formats: html, htm, rtf, doc, or txt.

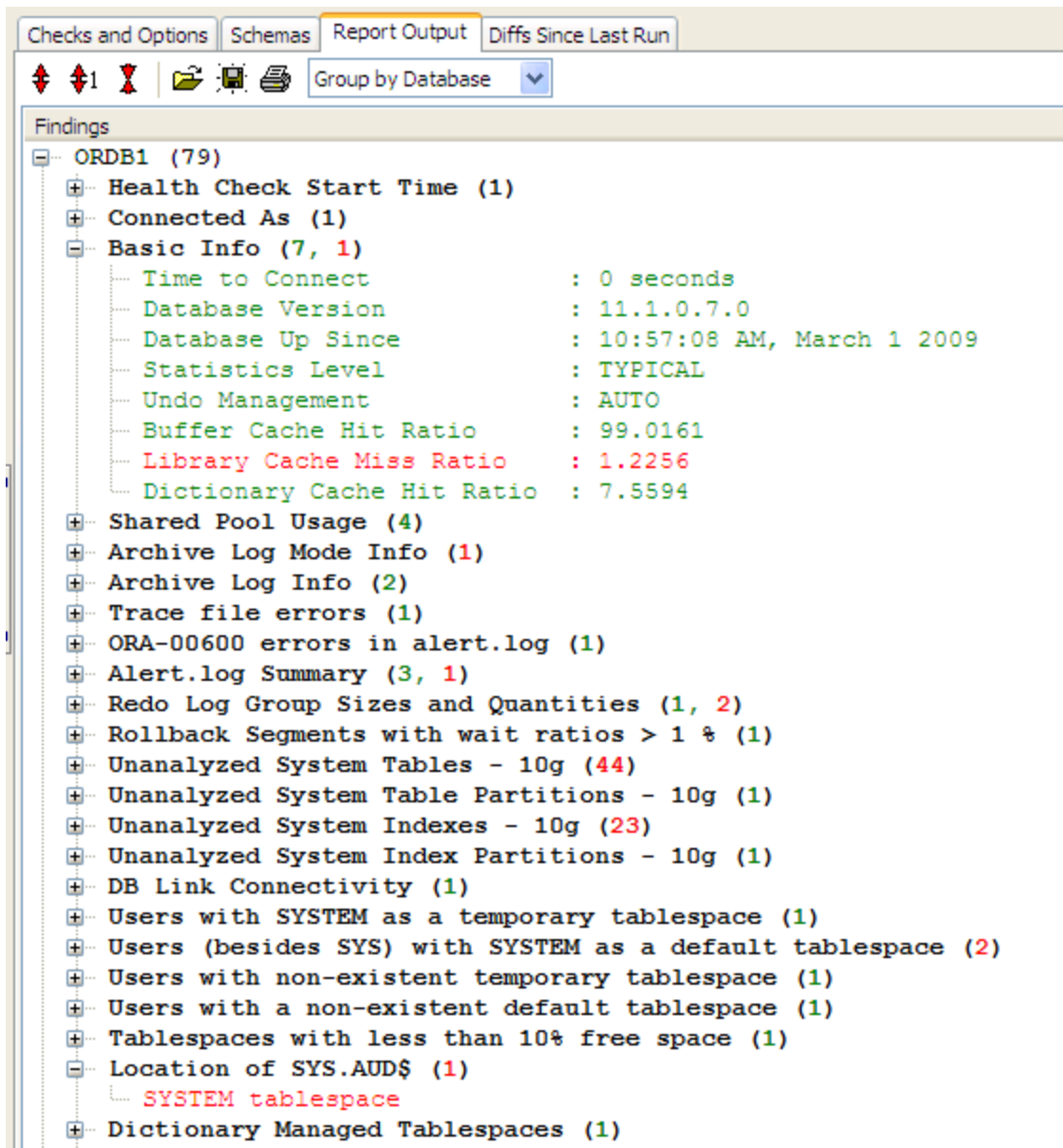


Figure 4: DB Health Check - report output

The fourth tab on the Database Health Check screen, shown in **Figure 5**, displays the differences found between successive runs of the Database Health Check. So as you can see the “tables with no unique key or index” results have changed. Why? Because I fixed the SCOTT BONUS and DUMMY tables by adding the missing indexes between runs. You will find this screen invaluable. Run the DB Health Check and look at your output. Then make all the changes you feel are justified (hopefully that will be all of them if you’ve taken the time to restrict the rules and schemas as suggested before), and then you can incrementally view your progress along the way by making iterative runs and comparing the output. When you get the report down to no all issues resolved – your work is done. Don’t overlook the usefulness of this tab. Finally, note that you can save the differences

report as well to file (via the disk icon) in any of the following formats: html, htm, rtf, doc, or txt.

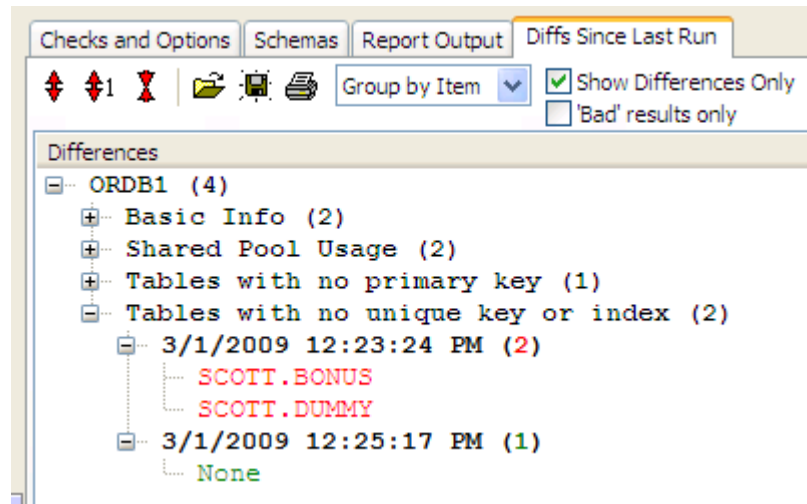
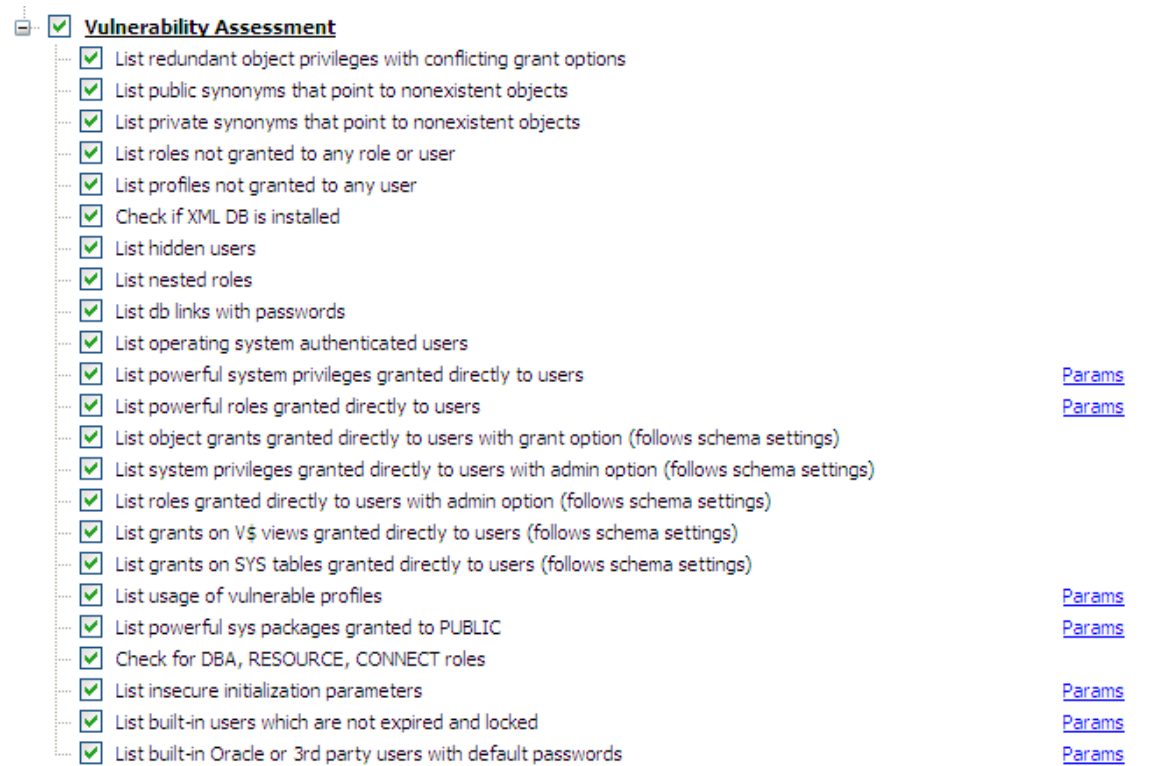


Figure 5: DB Health Check - comparing runs

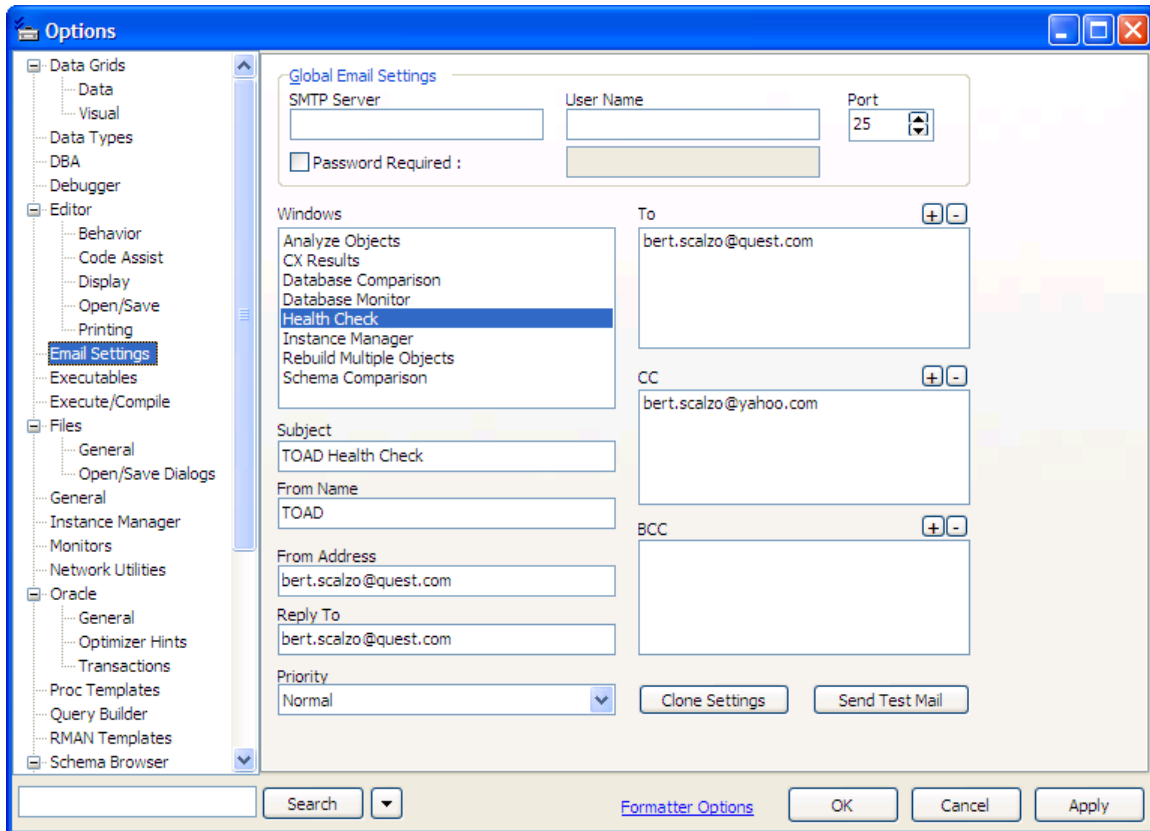
OK – now we have the basic idea of how to use this Toad feature. But are there any recommendations that we might all agree to – especially since performance checks and their parameter settings might not be so universally well defined? In Toad 9.6, Quest added a very useful new DB Health Check category called “Vulnerability Assessment”, shown in **Figure 6**. In today’s world database security is paramount, but unfortunately there are numerous news stories about data being stolen or compromised. Thus today’s DBA needs these 23 new checks to verify the non-susceptibility of all their databases.



**Figure 6: DB Health Check - vulnerability assessment**

Did you happen to notice that last vulnerability assessment rule in **Figure 6** – check for built in Oracle and 3<sup>rd</sup> party users/schemas with default passwords? Toad has in internal database of hundreds of default user names and passwords shipped with numerous 3<sup>rd</sup> party applications, including Oracle financials. This one check alone can very often increase or improve the security of the database – and justify the usefulness of the Toad Database Health Check. This is an especially handy argument when trying to convince your management about the value that Toad with its optional DB Admin module can bring to your organization.

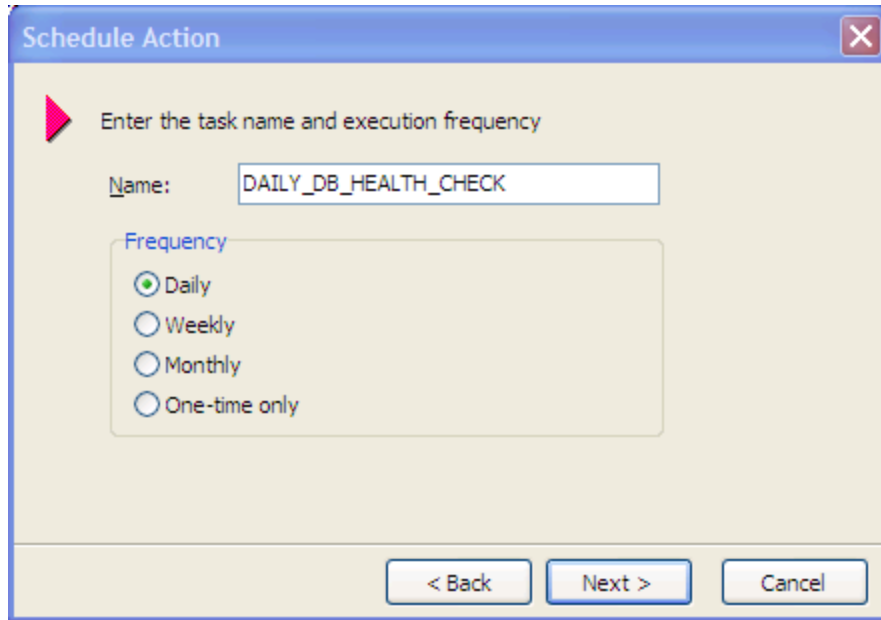
As with any Toad screen, wizard or utility, a common question should be are there any Toad options that apply or control the behavior of the feature in question. As shown in **Figure 7**, the “Email Settings” section of the Toad Options screen has an entry for handling the Database Health Check. Of course there were no areas within the information about the Database Health Check or screen snapshots presented so far for utilizing this email option setting – but that will segue quite nicely into what we’ll be examining next.



**Figure 7: DB Health Check - Toad options**

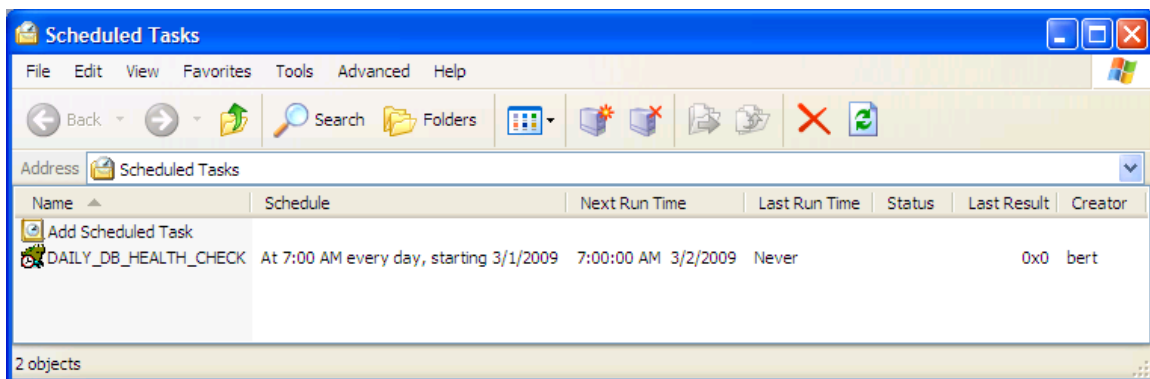
Let's assume that you want to automatically run the Database Health Check every morning at 7:00 AM and have the resulting report output emailed to your email. That way you can start your day by reading that report over your first morning cup of coffee as part of reading all your emails before starting your day. Toad can do that – and it's actually very easy to do. Refer back to **Figure 2**, there are two icons in the bottom left corner: one of a camera and one of a calendar. If you press the camera icon it launches the Toad interface to the Windows scheduler. So now you can simply navigate that wizard to create a Windows task to run Toad each morning to perform that Database Health Check and have the result emailed to you.





**Figure 8: Db Health Check - daily auto run**

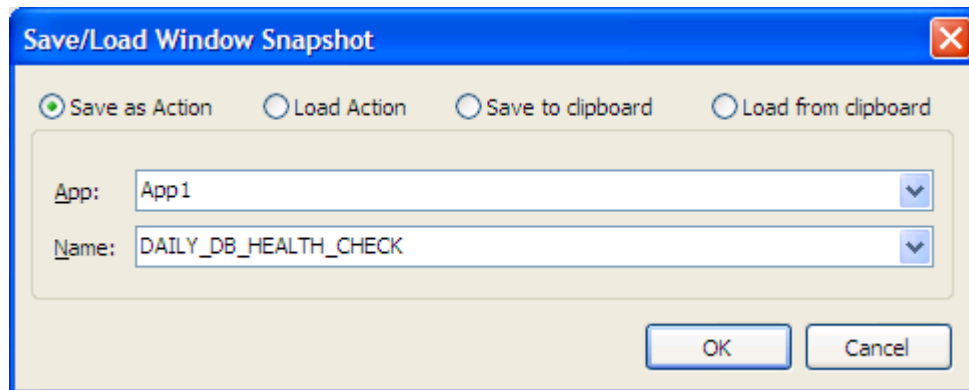
When you've completed that process, you'll see the Windows task as shown in **Figure 9**. And if you look at the properties for that Windows task, you'll see something like this: "C:\Program Files\Quest Software\Toad for Oracle\toad.exe" -a "[Internal] Scheduled Scripts->DAILY\_DB\_HEALTH\_CHECK". What is the -a? That stands for action, the command line interface for running Toad actions or applications. So what's an action or application, well that leads nicely into our next topic. This was simply a shortcut to simplify what comes next.



**Figure 9: Windows Task for Toad DB health Check**

Have you ever wished you could record what you're doing in Toad and then told Toad to simply replay that series of events? Well there just so happens to be a macro capture and playback facility for doing just this. Prior to Toad 9.7, this was supported both by the Toad old command line interface and a somewhat new, but unrefined task automation capability called Toad Actions. With Toad 9.7, both command line and actions are completely replaced by the newer and more robust Toad Application Designer. That's the camera icon mentioned before – but yet to be explained. When you press the

camera icon Toad will take a snapshot of your Toad screen interaction as shown in **Figure 9**. Simply think of this as being like a macro like snapshot of what you just did in that Toad screen.



**Figure 10: Toad Application Designer - take snapshot**

If you now go to the main menu, you will see the newly created application called "App1" as shown in **Figure 11**. Much like the Toad Script Manager, the main menu icon for the app designer lets you see and execute your existing applications. If you instead want to work on your application, you must instead select the main menu icon (and not the drop down as shown), which will bring up the Toad Application Designer screen as shown in **Figure 12**. The Toad Application Designer screen permits you to fully define your Toad applications (the interaction you've recorded with various Toad screens) and any parameters or programmatic control over that application. For example the Toad Application Designer would permit you to define a Toad Database Health Check and corrective application that might call some other Toad screen or user script based upon the output from the Database Health Check. This would permit one to fully automate and then schedule numerous tasks that you might do manually within Toad – possibly even making manual Toad interactions a thing of the past. However the Toad Application Designer is a very complex feature that is fully explained elsewhere in this book. For now it's enough to note that the Database Health Check screen is one of the screens that has been enabled for such application design – as indicated by the camera icon in the bottom left corner.



**Figure 11: Toad Application Designer – main menu**

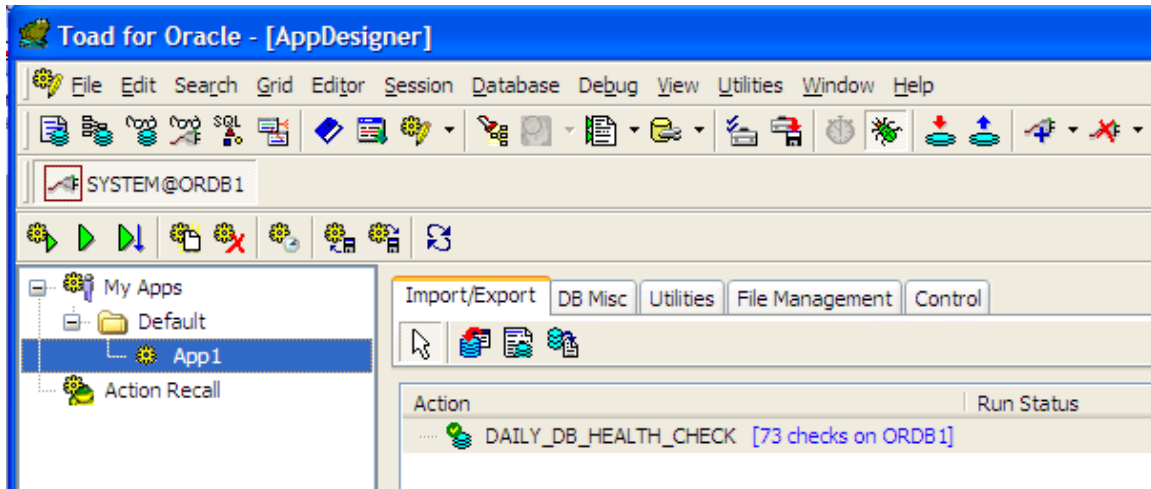



Figure 12: Toad Application Designer - design interface

## About the Author

Bert Scalzo  is a Database Domain Expert for Quest Software and a member of the TOAD team. He has worked extensively with TOAD's developers and designed many of its features. Mr. Scalzo has worked with Oracle databases for well over two decades, starting with version 4. His work history includes time at Oracle Education and Oracle Consulting, plus he holds several Oracle Masters certifications. Mr. Scalzo also has an extensive academic background - including a BS, MS and PhD in Computer Science, an MBA and several insurance industry designations. Mr. Scalzo is an accomplished speaker and has presented at numerous Oracle conferences and user groups - including OOW, ODTUG, IOUGA, OAUG, RMOUG, et al. His key areas of DBA interest are Data Modeling, Database Benchmarking, Database Tuning & Optimization, "Star Schema" Data Warehouses and Linux. Mr. Scalzo has written articles for Oracle's Technology Network (OTN), Oracle Magazine, Oracle Informant, PC Week (eWeek), Dell PowerEdge Magazine, The Linux Journal, [www.linux.com](http://www.linux.com), and [www.orafaq.com](http://www.orafaq.com). Mr. Scalzo can be reached via email at [bert.scalzo@quest.com](mailto:bert.scalzo@quest.com) or [bert.scalzo@yahoo.com](mailto:bert.scalzo@yahoo.com).

Bert was recently added to the elite list of **Oracle ACEs**. Oracle ACEs are known for their strong credentials as Oracle community enthusiasts and advocates, with candidates nominated by anyone in the Oracle Technology and Applications communities.