

**Embarcadero® DB Optimizer™ 1.5 New Features Guide** 

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# **New Features Summary**

DB Optimizer is an enterprise SQL development and optimization tool that provides an environment for building code, analyzing database performance, and optimizing query paths on specific data sources. This enables users to ensure the efficiency of the overall enterprise, and provides a single application from which to develop, diagnose, and optimize. This product provides support for IBM DB2 for LUW, Microsoft SQL Server, Sybase, Oracle, and generic JDBC data source platforms. It is available as a stand-alone application, or as an Eclipse plug-in.

DB Optimizer maximizes the performance of your database by enabling developers and DBAs to:

- Build statistical models of database loads to locate and diagnose problematic SQL code and event-based bottlenecks.
- Investigate execution and wait time event details for individually-stored routines.
- Drill down to individual, problematic statements to view underlying code.
- Discover and optimize efficient paths for queries that perform slower than they could be performing.
- Modify individual query paths to improve database functionality and lessen load overall.
- Manage enterprise data sources, as well as view, develop, and modify SQL code for development, maintenance, and upgrade purposes.

#### Interface Reorganization

DB Optimizer has been reorganized into three major interface pieces. This enhancement provides users with a more comprehensive workflow when analyzing queries across the enterprise, and provides more efficient task management in terms of time and efficiency, overall. The three major components of DB Optimizer are **SQL Profiler**, **SQL Tuner**, and **SQL Editor**.

#### **Continuous Monitoring of Data Sources**

SQL Profiler now enables the continuous monitoring of data sources by providing real time updates to the interface. This feature can be turned on and off via Profiler's configuration settings, and provides custom tweaking to suit machine efficiency with adjustable screen refresh rates in seconds.

## **Track Top Activities**

The Track Top Activity section of SQL Profiler enables users to examine more detailed information on waiting and executing sessions over the length of those sessions. When you select an item from the Top Activity section, details about your selection appear in the Profiling Details view, automatically.

#### Statement, Event, and Session Drill Down Functionality

Using the Top Session and Profiling Details views, you can drill down into statements, events, and sessions that have been monitored by SQL Profiler. This feature enables you to view and diagnose the underlying code in order to troubleshoot inefficient or otherwise non-ideal queries running on a data source.

## **Cross Platform Data Source Support**

In addition to Oracle platforms, SQL Tuner now supports Generic JDBC, IBM DB2 LUW, Microsoft SQL Server, and Sybase data sources. This enables more complete monitoring and tuning sessions and jobs that improve the overall efficiency of your entire enterprise.

# **Top New Features**

## Interface Reorganization

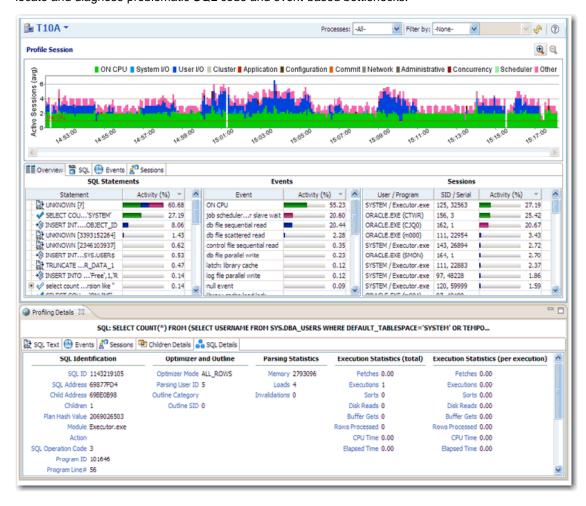
DB Optimizer has been reorganized into three major components. This enhancement provides you with a more comprehensive workflow when analyzing queries across the enterprise, and provides more efficient task management in terms of time and efficiency.

The following interface components have been reorganized in DB Optimizer:

- SQL Profiler
- SQL Tuner
- SQL Editor

#### **SQL Profiler**

**SQL Profiler** provides fixed-duration snapshots and continuous sampling of session activity on a data source, building up a statistical model of database load, top SQL, top events, and top sessions. This enables users to locate and diagnose problematic SQL code and event-based bottlenecks.

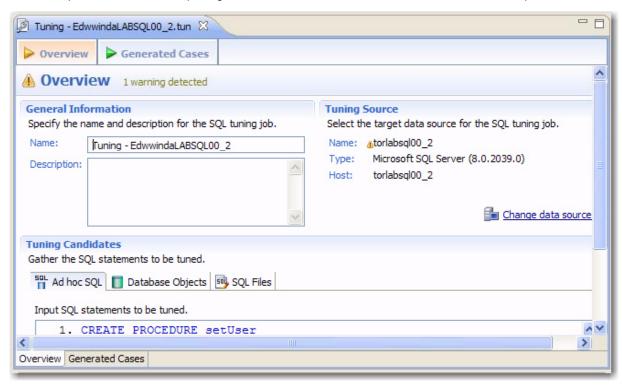


SQL Profiler provides fixed-duration snapshots and continuous sampling of session activity on data sources.

SQL Profiler also provides details regarding execution and wait events. Selected SQL statements can be drilled down on and imported into Tuner, where they may be addressed and altered based on tuning's automatic diagnostic results.

#### **SQL Tuner**

**SQL Tuner** enables the optimization of poorly performing SQL code statements through the detection of inefficient queries and the subsequent generation of case alternates that use different execution paths.



SQL Tuner enables you to optimize load issues by providing alternate query path cases for specified statements, and enabling you to alter them on the data source they reside in.

Once tuning has developed a series of cases, users can choose one and alter the statement on the data source to create more efficient queries. Tuning can be used in correlation with profiling, or as a stand-alone interface that enables ad-hoc, data source packaging, or SQL file submission, on a case-by-case basis.

## **SQL Editor**

**SQL Editor** simplifies SQL development with features for improving productivity and reducing errors. It provides a rich interface that offers code completion, real-time error checking, code formatting, and sophisticated object validation tools.

```
Benson.sql & sqltog.log

CREATE TABLE dbo.benson

(
    job char(8) NOT NULL,
    sal numeric(38,0) NOT NULL,
    loc numeric(38,0) NOT NULL,
    CONSTRAINT pjob
    PRIMARY KEY CLUSTERED (job)
)

go

If OBJECT_ID('dbo.benson') I5 NOT NULL
    PRINT '<<< CREATED TABLE dbo.benson >>>'

ELSE
    PRONT '<<< FAILED CREATING TABLE dbo.benson >>>'
go
```

SQL Editor provides an interface through which you can view, modify, and execute SQL code on registered data sources.

In the context of DB Optimizer, SQL Editor provides an interface for viewing and editing SQL files and database packages, as accessed through profiling and tuning functionality.

#### **Continuous Monitoring of Data Sources**

SQL Profiler now enables the continuous monitoring of data sources by providing real time updates to the interface. This feature provides custom tweaking to suit machine efficiency with adjustable screen refresh rates in seconds.

If you have set Profiler to run for a specified length of time, you can stop the process at any point as it runs via a stop button provided on the interface. This enables you to create specific snapshots of the database load for a specified length of time.



The Stop icon enables you to specify a finite length of time to run the profiling session.

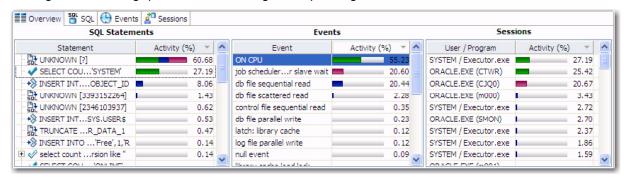
Once you have executed a profile session, the **Top Load**, **Top Activity**, and **Profiling Details** sections display the results. You can then perform analysis and diagnostics on this data in order to identify bottlenecks, poorly-running query statements, and other information related to database performance, overall.

#### To run and stop a profiling session:

- In Data Source Explorer, right click on the data source you want to profile and select Profile
   As > Data Source. The profiling session begins. Alternatively, you can click the Profiling icon
   on the Toolbar to automatically run a profiling session on your last selected data source.
- 2. When the session has run a specified length of time, stop the profiling session by clicking the Stop icon in the upper left-hand side of Profiler. The Load Graph and Top Activity components should be populated with data regarding the database load, for the duration of time you enabled the session to run.

## **Track Top Activities**

The **Top Activity** section of SQL Profiler enables users to examine more detailed information on waiting and executing queries over the length of a profiling session.



The **Top Activity** section of SQL Profiler provides detailed information about the SQL Statements, Events, and Sessions that were captured during the profiling session. These statements appear in order and describe where top load and activity is occurring on the database.

In addition to the Overview tab, Top Activity is also composed of a series of tabs that provide detailed statistics on individual SQL statements and sessions that were waiting or executing over the length of a profiling session.

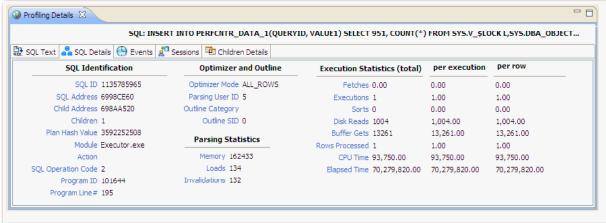
- The SQL tab provides more information about SQL statements in terms of execution parameters and other details.
- The Events tab displays more information about wait events profiled in the session.
- The Sessions tab provides more information about sessions profiled by the process.
- On Oracle platforms, a fourth tab named I/O will appear in Top Activity. This tab contains details about the load of specific objects within the database.

When you click on a specific item within any of the Top Activity tabs, details are displayed in the Profiling Details view. Depending on the nature of the Top Activity selection, details will be different to reflect that item's specific profiling information.

#### Statement, Event, and Session Drill Down Functionality

Using the Top Session and Profiling Details views, you can drill down into statements, events, and sessions that have been monitored by SQL Profiler. This feature enables you to view and diagnose the underlying code in order to troubleshoot inefficient or otherwise non-ideal queries running on a data source.





When you select an item from the **Top Activity** section of SQL Profiler, detailed information about your selection automatically appears in the **Profiling Details** view.

Depending on the nature of the **Top Activity** item that you selected, the tabs and information that compose the **Profiling Details** view will change to reflect that selection's specific session information.

- Selecting an SQL statement enables the view to show the full code of the SQL statement and
  information about the events that the selected statement is associated with. On Oracle
  platforms, Profiling Details also provides information about the sessions that the selected
  statement is associated with as well as the statement's execution details.
- Selecting an event enables the view to show statements involved in the selected event, as well as sessions that it is associated with.
- Selecting a session enables the view to show system details about the specified session and time and parameter information about it. On Oracle platforms, information about the SQL files that the session is associated with is also available.

## **Additional Resources**

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- Technical Papers
- <u>Discussion Groups</u>
- Knowledge Base

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