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The Extreme Enterprise Manager Makeover
An easy way to discover SQL optimizations!
By Jeff Ash

Everyone who manages a BBj® installation will at one time or another use the BBj Enterprise Manager to administer users, set various configuration options, create/modify databases, view open files, terminate hung processes, and a host of other options. Since this component of the BBj system is so important to those managing their system, BASIS redesigned the user interface, made a number of improvements, and added a number of features to make the job of the system and database administrator more efficient.

The New Interface

The new user interface is intuitive, easy to use, and quick to navigate. It is no longer necessary to navigate through multiple levels of tree nodes to find the sought after information because everything is much more visible to the user. BASIS replaced the Data Dictionary Module in the BASIS IDE with the new Enterprise Manager interface, so that developers can manage both their databases and all server configuration settings right from the IDE. One of the greatest benefits is that there is now only one interface to learn since the IDE and the Enterprise Manager both share this new interface.

The new interface also boasts a number of "ease-of-use" features to simplify the system administrator's tasks. For example, the user management panel is cleaner, makes setting permissions for users easier, and now includes [Select All] and [Select None] buttons as seen in **Figure 1**.
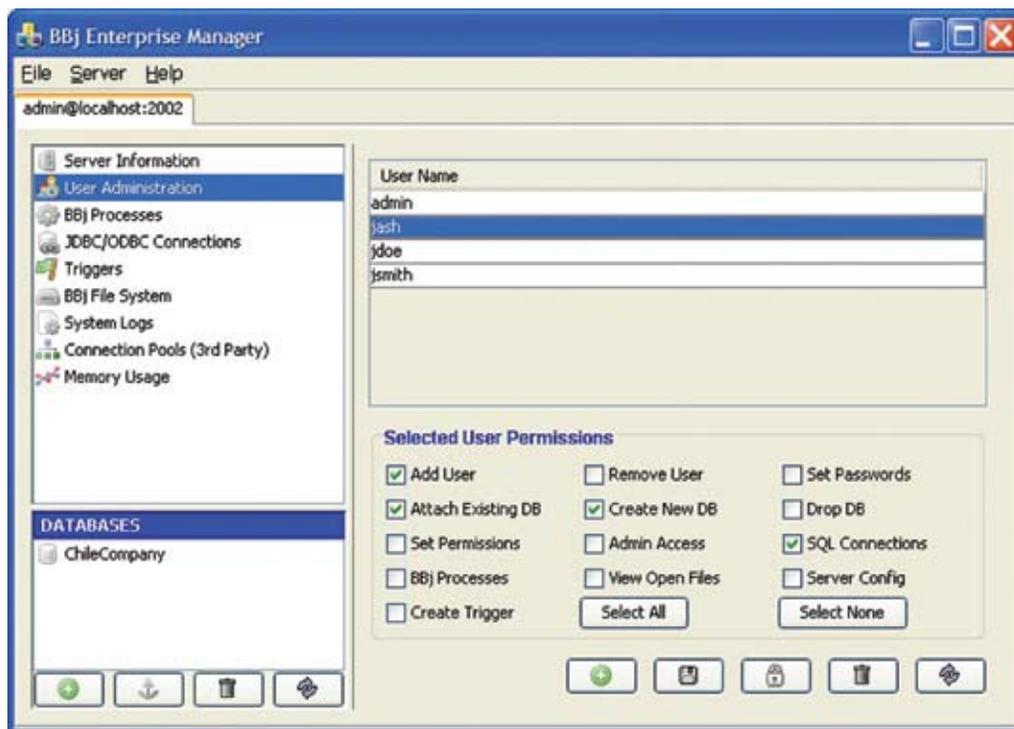

Figure 1. New Enterprise Manager interface

In addition, the trigger-editing dialog uses color coding and differing fonts to show the types of triggers currently configured on a file as well as the enabled/disabled state of each trigger. There are also a number of helpful dialogs with explanations or warnings when invoking specific user actions. The Enterprise Manager now offers tooltips on nearly every button.

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One of the most common uses of the Enterprise Manager is for managing and configuring databases. The new Enterprise Manager includes a number of new features and improvements to existing features, which make this job more efficient.

Configuration Features

An administrator can now specify up to three different date formats for interpreting date values in their database tables. While it is highly discouraged to use more than one date format for storing dates in a database, it is not uncommon to find older applications that use this technique.

Since a worldwide development community creates applications with BBj, administrators can now select the character set most appropriate for their local language to use when reading and writing data to a database. The database configuration panel, shown in **Figure 2**, displays a list of the available character sets on the server.
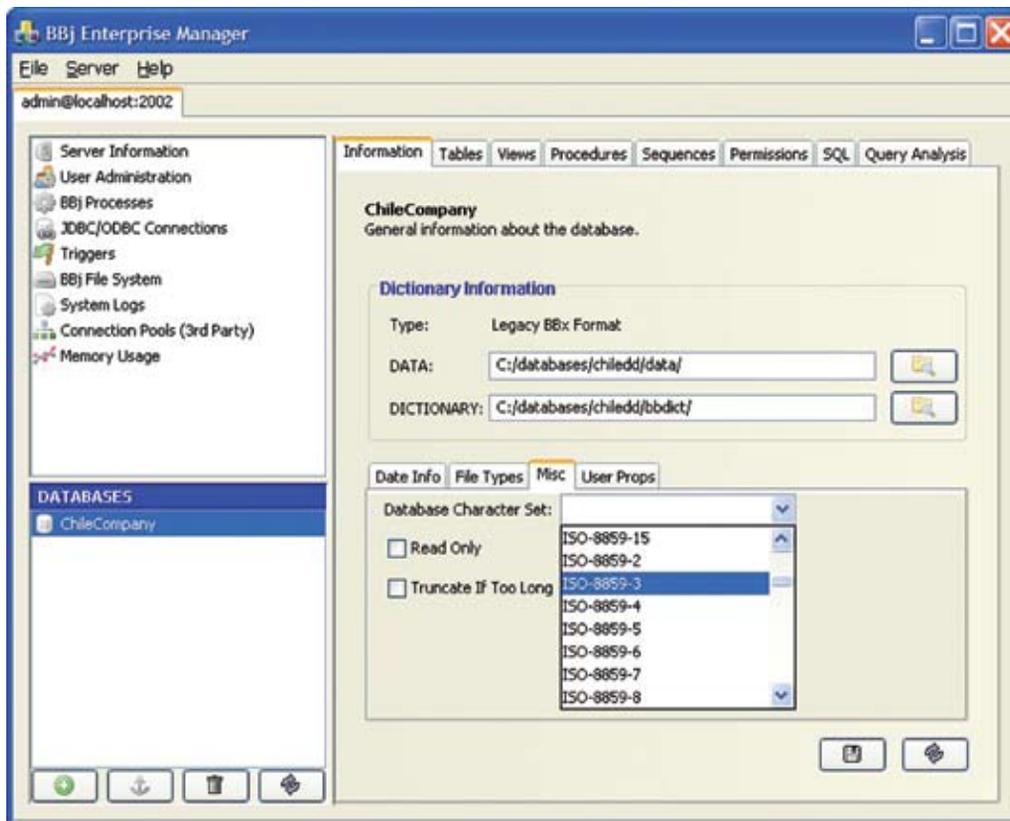

Figure 2. Database Configuration Panel

Database Management Features

In BBj 8.0, the Enterprise Manager introduces a host of new and/or improved features for managing the actual data and structure of BBj databases. The following list highlights some of the most prominent features:

- Create and manage ESQL tables (the new SQL-only file format in BBj that supports transactions, integrity constraints, and more)

- Create and drop Sequences and view the current value of the Sequence

- Change the file type of a table by selecting the type from a simple drop-down list, and automatically convert and update the file

- Generate a string template from the column definitions of a table

- Type or copy/paste a string template and generate the column definitions for a table automatically based on the template contents

- Add/remove/modify columns on a table and update the record layout and records of the physical data file automatically to match the new definition

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Query Analysis

It is often difficult to track down specific performance issues in SQL queries since these statements can be arbitrarily complex, creating the potential for numerous combinations of tables and columns. Determining which columns to index and the order the segments of the index should follow can be a difficult task. BASIS added a new feature - Query Analysis - to the SQL engine and the Enterprise Manager that removes the guesswork from this task.

The SQL engine automatically gathers information during execution of every SQL query regarding the columns included in the WHERE clause of each query. The Enterprise Manager retrieves this information and allows the database administrator (DBA) to analyze results such as those shown in **Figure 3**.
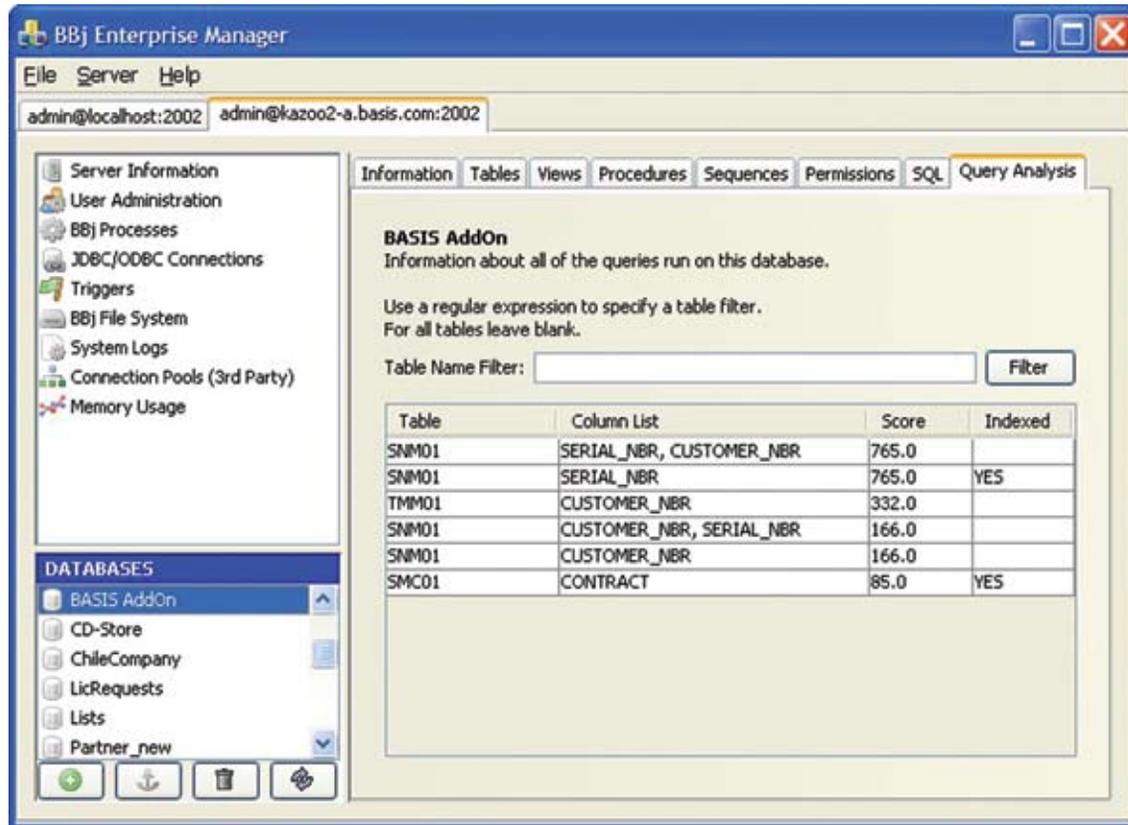

Figure 3. Sample Query Analysis

To access the Query Analysis information, select the database from the Databases list, then click on the Query Analysis tab. Each row shows the name of the table and a combination of columns in a specific order. The columns refer to the columns that were included in the WHERE clause of at least one SQL statement. There is a row for each possible permutation of the order of the columns. The score refers to the frequency of the combination of columns used in SQL statements and is a relative number. The final column shows "YES" if this specific combination of columns is currently indexed.

DBAs can use this information to help determine what, if any, indexes to create on a database to improve performance of their queries. As illustrated in **Figure 3**, users often employ a combination of SERIAL_NBR and CUSTOMER_NBR on the SNM01 table in their queries since it is at the top of the list. However, there is no index on this combination. This could potentially be a candidate for a new index.

The job of the DBA is to determine when to create an index to avoid creating indexes on every combination possible. For example, the database in the example above has an index on SERIAL_NBR. Knowledge of the database structure shows that there really is no need for another index on SERIAL_NBR and CUSTOMER_NBR because there should only be one CUSTOMER_NBR for each SERIAL_NBR.

Summary

BASIS continues to improve the productivity and experience of its end users and developers. The new Enterprise Manager interface and its availability in the BASIS IDE takes another giant step in this direction. DBA's will certainly enjoy the new database configuration options and table design capabilities. They can use the new Query Analysis information to find potential performance bottlenecks in SQL statements to make queries fly. With this new and cleaner interface, administrators can manage their tasks faster and with greater ease. ⏚BASIS⏚