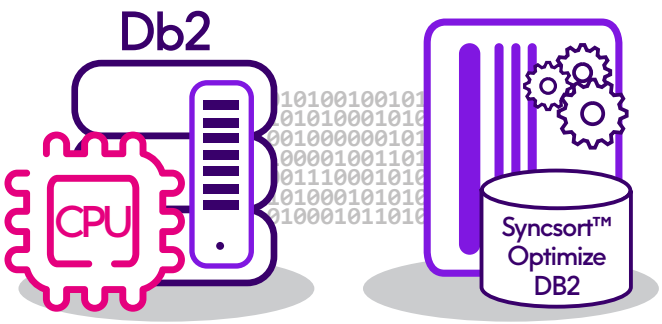
Syncsort™ Optimize DB2

Retrieve CPU capacity with advanced DB2 tuning



It's a complicated job to achieve optimal speed and efficiency in the operations of IBM's Db2 in a production environment and then to maintain it. But the job is important because it is not uncommon to find Db2 operations that are consuming more than half of mainframe CPU time and putting the squeeze on other critical applications. That means the returns on optimization can be substantial in terms of all-around performance as well as cost savings in CPU usage.

Top DBA Concerns

Relational database administrators worry about three things: (1) application response times, (2) throughput, and (3) mainframe CPU utilization — not necessarily in that order. And they have to keep those parameters at reasonably optimal levels.

Those worries are being intensified by growing volumes of dynamic SQL that emanate from distributed Java and .Net applications, as well as ad hoc query reporting tools and packaged applications like SAP® and PeopleSoft®.

As always, the challenge is to ensure that SQL performance meets SLAs and other service-quality goals while avoiding excessive CPU consumption. The latter also means avoiding or postponing costly upgrades.

It is also not uncommon to see Db2 shops operating with reduced staff levels and less than adequate optimization tools. Most such tools are essentially performance monitors that are constantly checking on the various events taking place in real time. Knowing the real-time status of these operations is important, of course, but Db2 shops also need a solution that supports a complete view of complex workloads, historic as well as real time, and a solution that enables database administrators to determine quickly where realizable savings exist. This describes a workload-centric approach, and that is where Syncsort™ Optimize DB2 comes in.

Beyond Real Time

As an SQL workload performance optimization suite, Syncsort™ Optimize DB2 goes beyond the capabilities of traditional Db2 tuning tools. While it shares many features of traditional tools, which focus on real-time monitoring of SQL statements and historical analysis of static SQL workloads, it also takes an end-to-end "workload-centric and workload- aware" approach.

That means capturing an SQL workload, then identifying 'top-n' SQL statements by consolidating statistics on the total CPU consumed across all instances of like-SQLs in the workload.

Syncsort™ Optimize DB2 consolidates statistics for "otherwise identical" statements where such statements have different literals and other variable information. In effect, Syncsort™ Optimize DB2 determines how the workload is distributed across its consolidated SQL statements ("Workload SQL Distribution"), then provides the tools to leverage the information to help better manage and optimize workload performance. See the accompanying illustration of the Syncsort™ Optimize DB2 environment.

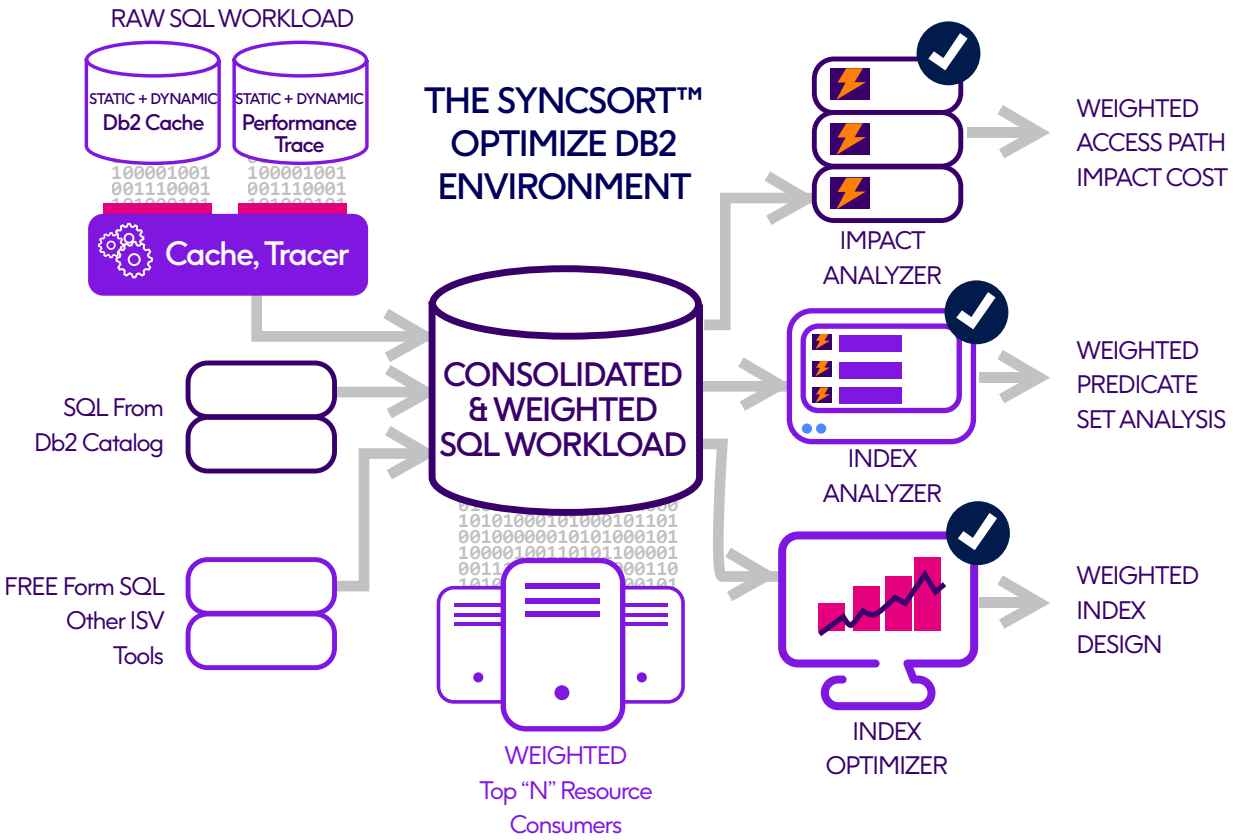
Syncsort™ Optimize DB2 typically saves organizations hundreds of thousands of dollars per year on an ongoing basis. Syncsort™ Optimize DB2 offers low-overhead capture of both static and dynamic SQL workloads; it offers SQL consolidation for a full understanding of resource consumption patterns; and it offers a low price point.

Rather than focusing on single statements, Syncsort™ Optimize DB2, captures and analyzes entire SQL workloads. It is workload- centric. In that way it identifies SQLs that, by virtue of their frequency of execution and aggregate consumption of resources, have the greatest impact on Db2 subsystem performance. Syncsort™ Optimize DB2 then prioritizes findings by the degree of impact on resources, thus focusing the tuning effort on those SQLs offering the greatest potential ROI.

Syncsort™ Optimize DB2 offers features such as:

- **Multidimensional analysis** of workloads. The user may view a workload by plan, package, program, AuthID, database name, table, index utilization, or SQL statement detail — in each case zooming-in on the high-cost or most problematic workload component.
- **Ability to see beyond cosmetic differences** in otherwise identical SQL statements. Being able to see the forest through the trees is important in discovering tuning opportunities.
- **"Weighting" of workload SQL distribution** to enable the administrator to rank SQLs by "greatest resource consumed" and to focus first on the most promising tuning opportunities.
- **The capability for full, automatic analysis** of thousands of tables and indexes, allowing for superior returns. Substantial CPU resources can be saved merely by identifying and dropping unused indexes.
- **Automatic accommodation of Db2** environmental changes, which can head off unexpected degradation of production performance.

Syncsort™ Optimize DB2 is a comprehensive family of tuning solutions with each one available separately, or together as a fully integrated suite. Precisely can work with you to help determine which solution or solutions are needed to address particular optimization requirements. Syncsort™ Optimize DB2 solutions may be used alone to address specific issues, or in combination to address all aspects of SQL workload performance optimization and management.



Six Primary Solution Areas

- **Tracing and caching:** Tools for these functions provide the performance analyst with deep insights into the impact of SQL activity on Db2 subsystem performance and resource consumption. Through the SQL consolidation feature in Precisely Optimize DB2, they provide a view of workload SQL distribution not available with other Db2 performance solutions. An otherwise innocuous SQL statement, for example, will be revealed as a new tuning opportunity if that statement is seen to run 100,000 times a day. Tools for tracing and caching functions help illuminate the top resource-consuming SQL statements and provide the organization with a new understanding of where true tuning opportunities lie.
- **Index analyzing and optimizing:** These tools work automatically to continuously assess how well the database index design is supporting a workload's SQL statements and where attention is most needed. Index tuning means better application performance, reduced resource consumption, and improved DBA productivity. Most organizations don't have the manpower to continually evaluate the index design in a constantly changing application environment, which makes automated index analysis and optimization tools a necessity.
- **Impact analyzing:** Determines the impact of environmental changes (e.g., REORGs, RUNSTATS, application migration, new indexes, new Db2 releases, new APARS, etc.) on Db2 access paths, whether static or dynamic. It weights the cost impact of these changes. It enables the DBA to take pre-emptive action to prevent undesirable changes and to better maintain service levels.
- **STATS:** Enables the DBA to copy the Db2 catalog statistics used for access-path selection between Db2 systems, letting the DBA explain SQL in a test environment and generate the same access path as used in production.
- **Alerting:** This is both a tuning tool and a QA tool. It is used to identify problem programs or SQL statements that breach coding standards or predefined performance rules. Used in a test/QA run, it can flag rogue programs or faulty SQL statements before they have a chance to impact production.
- **Warehousing:** This tool supports aggregation of multiple workloads collected over time and from a variety of sources. It provides a platform for further analysis of these aggregated workloads and reveals how workload performance is trending over time.