Highlights

- Automates the complex tasks involved in performing IMS database reorganization

- Uses space management analytics to determine when IMS databases should be reorganized

- Executes IMS database reorganization using parallel processing to achieve high performance and reduced IMS database unavailability

- Program Number: 5655-S35

IMS Database Reorganization Expert

Provides Smart Reorganization for IMS Databases

IMS™ is IBM's premier transaction and hierarchical database management system. IMS was designed for high availability, superior performance, growth and capacity, and full database integrity. The ability to operate and manage this highly complex IMS system and database environment determines the Total Cost of Operation (TCO). The IBM® IMS Tools lowers TCO by equipping IMS system programmers and IMS database administrators (DBAs) with the facilities they need to effectively monitor and manage this mission-critical environment. The IBM IMS Tools provide automation, validation, and auditing of all database and transaction management activities.

The *IMS Database Reorganization Expert* tool automates the IMS database reorganization process including unloading and reloading, prefix resolution for IMS logical relationships, pointer checking, and image copying for IMS full-function databases. The tool evaluates user-supplied policies and thresholds to determine when a database requires reorganization. The *IMS Database Reorganization Expert* tool provides the IMS Database Administrator (DBA) with a complete end-to-end database reorganization solution.

IMS Database Reorganization Expert

When IMS databases are changed frequently with record updates, deletions and insertions, the IMS databases loses their optimal structure. This is when IMS database reorganizations are required to restore data clustering and distribute free space evenly. An IMS database which is well-structured improves IMS application performance.

IMS Database Solution Key Component

The *IMS Database Reorganization Expert* product is part of two IBM Solutions. The first is the *IMS Database Solution Pack* as shown in Figure 1, and the second is the smaller *IMS Database Utility Solution* as shown in Figure 2.

Figure 1: IMS Database Reorganization Expert in the IMS Database Solution Pack

IMS Offline and Online Reorganization

The *IMS Database Reorganization Expert* product provides an offline reorganization with minimal database unavailability. It handles all of the tasks required to reorganize an IMS database in a single job step including unloading and reloading the data, resolving database prefixes, rebuilding secondary indexing, validating database pointers, and image copying the reorganized database. The online IMS database reorganization is provided by the *IMS Online Reorganization Facility* product.
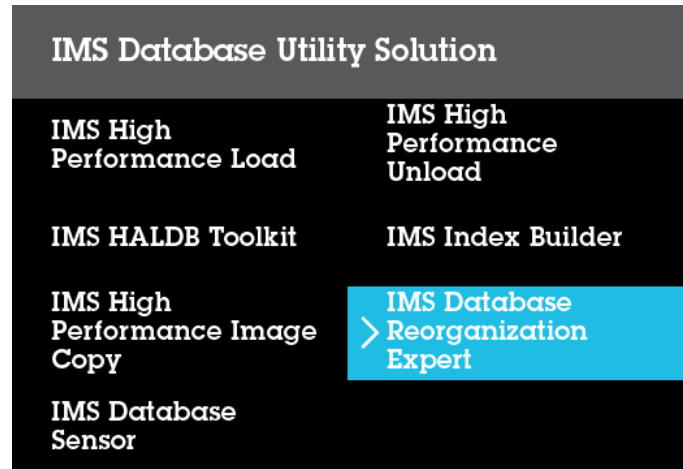

Figure 2: IMS Database Reorganization Expert in the IMS Database Utility Solution

IMS Parallel Reorganization

IMS Database Reorganization Expert uses the Parallel Reorganization Service to perform IMS database reorganizations. This facility invokes the *IMS High Performance Unload* tool, the *IMS High Performance Load* tool, and optionally, the *IMS Index Builder* tool, the *IMS High Performance Image Copy* tool, the *IMS High Performance Pointer Checker* tool, and the *IMS High Performance Prefix Resolution* tool concurrently in a single step allowing many of the reorganization processes to run in parallel with each other. The *IMS Database Reorganization Expert* product uses the input database data sets and matching shadow data sets for the reorganized data. The IMS database records are unloaded and reloaded into the shadow data sets. If there are secondary indexes, they are reorganized by the *IMS Index Builder* tool as the primary IMS database is being reorganized.

If pointer checking is requested, the *IMS High Performance Pointer Checker* tool performs the HASH check function while the reorganized database is being image copied by the *IMS High Performance Image Copy* tool. During the database reorganization, IMS applications can maintain read access to both the primary database and the indexes, too. When the IMS database reorganization has completely transferred all of the data to the shadow data sets, the database is automatically taken offline and the shadow data sets are renamed to the production database data set names. When this renaming process is completed, the IMS databases are brought back online automatically by the *IMS Database Reorganization Expert* tool.

IMS Conditional Reorganization Mode

The *IMS Database Reorganization Expert* product brings a high level of intelligence to the database reorganization process. The tool analyzes IMS databases and evaluates their space management status against a set of user-defined policies to determine if the database should be reorganized. If the *IMS Database Reorganization Expert* determines that the database would benefit from a reorganization, it automatically drives the reorganization procedure. However, if the tool determines that the reorganization does not meet the thresholds defined in the policies, then the reorganization is not done. An example of the Summary of Policy Evaluation report showing the before and after results of a database reorganization is shown in Figure 3.

Figure 3: IMS Database Reorganization Expert Summary of Policy Evaluation Report

The smart reorganization capability is also known as "Conditional Reorganization" and is now available with the *IMS Database Reorganization Expert* tool and the *IMS Online Reorganization Facility*.

IMS Unconditional Reorganization Mode

The *IMS Database Reorganization Expert* product also allows the IMS database to be unconditionally reorganized. This means that the user-defined policies are not checked to determine if the reorganization is needed. This option is a good idea when the user knows that the IMS database should be reorganized.

IMS Reorganization Diagnosis Mode

When the *IMS Database Reorganization Expert* tool performs conditional reorganization and parallel reorganization in diagnosis mode, the tool shows the comparison of the database space management status before and after the reorganization.

IMS Diagnosis-only Mode

The *IMS Database Reorganization Expert* tool can also run only in diagnosis mode. This means the IMS database will evaluate and report on the status of the IMS database, but it will not run the parallel reorganization even if it would benefit the performance of the IMS database. An example of a report showing a database that needs to be reorganized is shown in Figure 4.

Figure 4: IMS Database Reorganization Expert Database Diagnosis Report

IMS Database Reorganization Expert

The *IMS Database Reorganization Expert* tool provides the IMS Database Administrator (DBA) with an end-to-end solution for IMS database reorganization. The tool analyzes evaluates space management conditions against user-defined policies to determine when thresholds have been breached. The *IMS Database Reorganization Expert* tool detects problems before they can negatively impact IMS applications.

For more information

To learn more about the IBM IMS Tools product line, please contact your IBM representative or IBM Business Partner, or visit:

ibm.com/software/data/db2imstools/products/ims-tools.html

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