



Highlights

- Rebuilds IMS primary and secondary indexes and HALDB Indirect List Data Set (ILDS) to eliminate need to image copy indexes
 - Creates multiple IMS indexes in a single job step
 - Seamlessly integrated with IMS High Performance tooling to rebuild IMS indexes during reorganization and recovery
 - Program Number: 5655-R01
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IMS Index Builder

Rebuilds Indexes for Reorganization, Maintenance and Recovery

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 Index Builder* tool allows IMS primary and secondary indexes and IMS HALDB Indirect List Data Sets to be rebuilt easily. It uses a number of specialized sorting techniques and parallel processing to streamline index creation with high performance. The *IMS Index Builder* was designed to minimize the elapsed time in building one or more IMS indexes while maintaining high database availability.



IMS Index Builder

The *IMS Index Builder* allows IMS indexes to be rebuilt rather than recovered or reorganized using unload and reload processes. Rebuilding an index eliminates the need to create and store image copies of indexes. It is also easier and faster to add new indexes to an existing IMS database. The *IMS Index Builder* allows multiple indexes to be created in a single job step.

The *IMS Index Builder* product is integrated with many IMS Tools database administration processes. When an IMS database is reorganized or recovered, the *IMS Index Builder* is invoked to rebuild the indexes. It is also integrated with *IMS High Performance Prefix Resolution* to extract data needed for resolving IMS database prefixes for logical relationships.

IMS Solution Key Component

The *IMS Index Builder* product is part of three IBM IMS Solutions. The first is the *IMS Database Solution Pack* as shown in Figure 1, the second is the smaller *IMS Database Utility Solution* as shown in Figure 2, and the third is the *IMS Recovery Solution Pack* as shown in Figure 3.

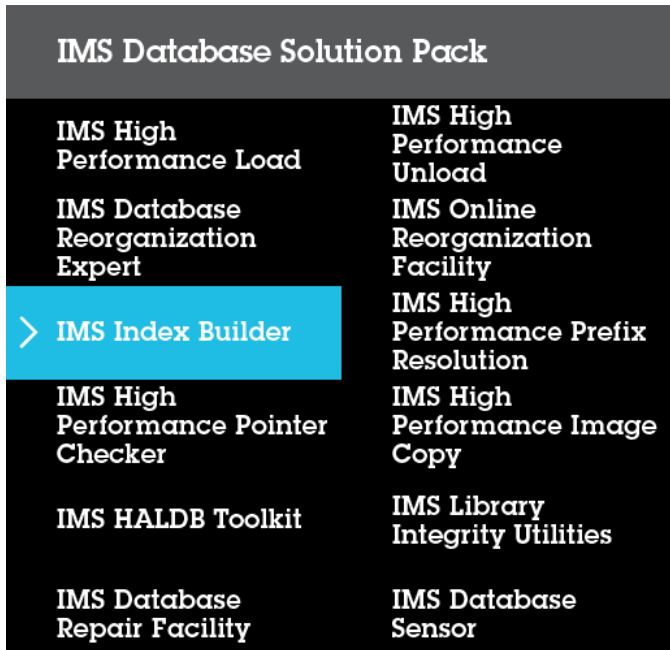


Figure 1: *IMS Index Builder* in the *IMS Database Solution Pack*

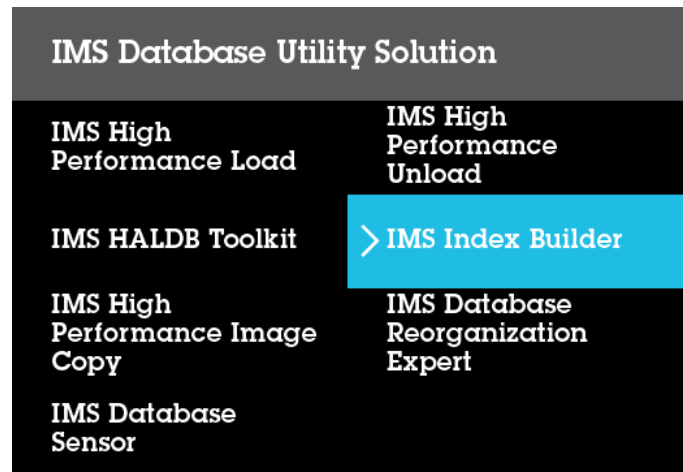


Figure 2: *IMS Index Builder* in *IMS Database Utility Solution*

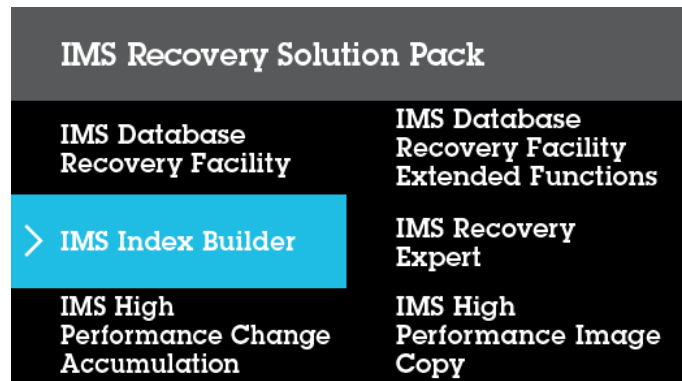


Figure 3: *IMS Index Builder* in *IMS Recovery Solution Pack*

Minimize Elapsed Time, Maximize Availability

The *IMS Index Builder* was designed with high performance in mind. It minimizes index creation elapsed time in building one or more indexes and maximizes high database availability which is important when batch and maintenance windows are shrinking. The *IMS Index Builder* issues IMS commands internally to take IMS databases offline and online for the minimal amount of time necessary to ensure there are no updates while the IMS indexes are being rebuilt.

The *IMS Index Builder* uses a number of parallel sort algorithms including buffered sorts to reduce I/O activity and improve performance. The *IMS Index Builder* uses striping during sorting to split the sort process into parallel consecutive steps. It also uses parallel load processes when multiple indexes are loaded into a single IMS physical database. These sophisticated algorithms ensure the rebuilding of an IMS index is faster than the process of image copying and recovering the IMS index.

IMS Database Types Supported

The *IMS Index Builder* creates indexes for HDAM, HIDAM, HISAM, PHDAM and PHIDAM databases. It builds primary and secondary indexes and also creates the IMS Link Data Set (ILDS) for IMS High Available Large Databases (HALDBs) and is fully integrated with IMS DBRC. It also supports secondary indexes with non-unique keys.

Generates Statistical Reports

The *IMS Index Builder* tool generates statistical reports which are stored in the *IMS Tool Knowledge Base (ITKB)* repository for centralized viewing and historical analysis. An example of an *IMS Index Builder* report is shown in Figure 4.

```
PRIME DATABASE:
MASTER DB NAME.....HAL1
DB ORGANIZATION....PHIDAM
ACCESS METHOD.....VSAM

PARTID  DSG  PARTNAME  DDNAME  DATA SET NAME
-----
00001   A   HAL11    HAL11A  TEMP.RCV.COMBINE.IER1.HAL1.A00001
00002   A   HAL12    HAL12A  TEMP.RCV.COMBINE.IER1.HAL1.A00002

DISCLAIMER: ACTIVE INPUT DATA SETS ARE LISTED
```

Figure 4: *IMS Index Builder* Report

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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