

Highlights

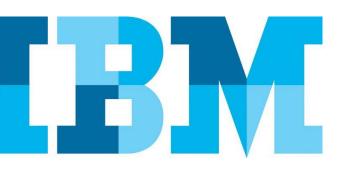
- Provides high speed data load for HDAM, PHDAM, HIDAM, PHIDAM, HISAM, and SHISAM databases
- Uses sophisticated sorting algorithms to improve the performance during database reloading
- Includes a Load API for a faster initial load capability
- Initializes IMS databases, both Full-Function HALDB and non-HALDB databases, and pre-formats Root Addressable Areas
- Generates statistical reports about data sets, segments, and segment pointers
- Program Number: 5655-M26

IMS High Performance Load

Reload IMS Full-Function and HALDB 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 High Performance Load tool reloads data that was unloaded by the IMS High Performance Unload, IMS Database Reorganization Expert, or the standard IMS Reorganization Unload utility. The IMS High Performance Load improves performance through sophisticated sorting algorithms. It supports Full-Function and HALDB databases and logical relationships and secondary indexes.



IMS High Performance Load

When an IMS database is initially created, unloaded for maintenance, restructuring, or IMS database reorganization, the *IMS High Performance Load* product is used to reload the data back into the IMS database. The data could be created by the *IMS High Performance Unload* tool, the *IMS Database Reorganization Expert* tool, or the standard *IMS HD Reorganization Unload* utility that comes with the IMS product.

When the reloading of data is initiated by the *IMS Database Reorganization Expert* product, the *IMS High Performance Load* program is driven during the reorganization along with the rebuilding of the index data sets and the image copying of the databases.

IMS Database Solution Key Component

The *IMS High Performance Load* 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.

IMS Database Solution Pack IMS High **IMS High** Performance Performance Load Unload IMS Database IMS Online Reorganization Reorganization Expert Facility IMS High Performance Prefix IMS Index Builder Resolution IMS High IMS High Performance Pointer Performance Image Checker Copy **IMS Library** IMS HALDB Toolkit Integrity Utilities IMS Database IMS Database Repair Facility Sensor

Figure 1: IMS High Performance Load in the IMS Database Solution

If the data was unloaded in a compressed format, the *IMS High Performance Load* product can reload the compressed data without first decompressing it. The *IMS High Performance Load* tool is fully integrated with

IMS DBRC and it supports dynamic allocation making it unnecessary to include a JCL DD statement for each database that is being loaded.

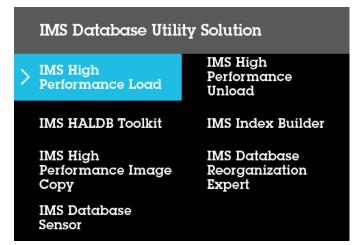


Figure 2: IMS High Performance Load in the IMS Database Utility Solution

IMS Database Types Supported

The *IMS High Performance Load* tool supports both IMS Full Function and IMS High Availability Large Database (HALDB) databases including HDAM, HIDAM, HISAM, SHISAM, PHDAM, and PHIDAM database types. It also supports IMS non-HALDB and HALDB databases with logical relationships and secondary indexes.

The IMS High Performance Load tool uses a specialized sort engine, called the Physical Sequence Sort for Reload Utility, to sort data prior to the database reload to improve performance. It also uses a space management utility, called the Bitmap Resetter Utility, to adjust the storage bitmap for HDAM, HIDAM, PHDAM, and PHIDAM databases to allow denser packing of the IMS database blocks.

For IMS HALDB databases, the *IMS High Performance Load* tool can automatically create the Indirect List Data Set (ILDS) and it can optionally initialize each partition during the loading of the data.

Initializing IMS Databases

The IMS High Performance Load tool can load an IMS database much faster than the traditional method of loading the database with an IMS DL/I application. There are additional benefits in using the IMS High Performance Load tool to load empty databases as the tool can also initialize the IMS HDAM, HIDAM, HISAM, SHISAM, PHDAM, and PHIDAM databases. For HDAM databases and each PHDAM partition, the entire Root Addressable Area can be preformatted. The *IMS High Performance Load* tool also includes a Load Application Programming Interface (API).

Generates Statistical Reports

The *IMS High Performance Load* tool generates statistical reports about data sets, segments, and segment pointers that can be useful in tuning IMS databases.

```
DATA SET STATISTICS
DBNAME = PHD00100 PARTITIONS = 1
                                          ORG = PHDAM
                                                                ACCESS METHOD = OSAM
PARTNAME = PHD001A
                          PART ID = 00001
RMNAME = DFSHDC40 MAX INSERT = 400
                                          NBR OF RAPS = 5
                                                                MAX RRN = 45 000
                                                BLKSIZE = 8,192
                                                                       LRECL = 8,192
DS GROUP = 001 OF 001 DDNAME = PHD001AA
                                          SCAN = 0
= 536
DISTRIBUTED FREE SPACE = (000,00)
 THRESHOLD OF LIMITED FREE SPACE BLOCK
                                                           (LARGE SEGSZE 536 )
                                                  66,741
 NUMBER OF TOTAL BLOCKS
 NUMBER OF BITMAP BLOCKS
NUMBER OF LIMITED FREE SPACE BLOCKS
NUMBER OF FULL BLOCKS
                                                  21,741
                                                  4,349
 NUMBER OF FREE BLOCKS
                                                  44
 AVERAGE SIZE OF FREE SPACE ELEMENT
                                                  4272.3
 NUMBER OF HOAM ROOT SYNONYM CHAINS
                                                  86,674
 AVERAGE NUMBER OF ROOTS / SYNONYM CHAIN
 NUMBER OF ROOTS NOT ON SYNONYM CHAINS
                                                  78,810
 NUMBER OF ROOTS ON SYNONYM CHAINS
                                                  221,190
NUMBER OF ROOTS OUT OF RANDOMIZED BLOCK
NUMBER OF HDAM RAPS USED
                                                  165,484
 NUMBER OF HDAM RAPS UNUSED
NUMBER OF HDAM OVERFLOW BLOCKS
                                                  59,516
                                                  21,741
 NUMBER OF SEQUENTIAL WRITES
                                                  66,741
 NUMBER OF DIRECT READS
 NUMBER OF DIRECT WRITES
NUMBER OF DSPB ROUTINGS
HIGHEST LENGTH OF DATA IN DSPB
                                                  Ø
 AVERAGE LENGTH OF DATA IN DSPB
                                               = 0.0
 NUMBER OF DSPB ROUTINGS(OVERFLOW)
 HIGHEST LENGTH OF DATA IN DSPB(OVERFLOW)
 AVERAGE LENGTH OF DATA IN DSPB(OVERFLOW)
```

Figure 3: IMS High Performance Load Data Set Statistics Report

These reports can help analyze IMS HALDB partition randomizing parameters as shown in Figure 3. The *IMS High Performance Load* tool stores all of the reports it generates in the IMS Tool Knowledge Base (ITKB) repository for centralized viewing and historical analysis.

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/soft-ware/data/db2imstools/products/ims-tools.html

© Copyright IBM Corporation 2016

IBM Corporation Route 100 Somers, NY 10589

Produced in the United States of America June 2016

IBM, the IBM logo, ibm.com, and IMS are trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the web at "Copyright and trademark information" at: ibm.com/legal/copytrade.shtml

This document is current as of the initial date of publication and may be changed by IBM at any time. Not all offerings are available in every country in which IBM operates. THE INFORMATION IN THIS DOCUMENT IS PROVIDED "AS IS" WITHOUT ANY WARRANTY, EXPRESS OR IMPLIED, INCLUDING WITHOUT ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND ANY WARRANTY OR CONDITION OF

NON-INFRINGEMENT. IBM products are warranted according to the terms and conditions of the agreements under which they are provided.

