

E32

HALDB Conversion Aid Technical Introduction

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Agenda

- HALDB Overview
- Conversion to HALDB
- “IMS HALDB Conversion Aid”
- Future Directions

HALDB Overview

- Why should we go to HALDB
 - Keep more data online
 - No “purges”
 - Cheaper disks
 - More 24*7
 - Partitions are independent
 - Less online changes
 - Physical characteristics no longer in DBD
 - Add of new partitions

HALDB Overview

- /DBRs
 - Authorization on partition
 - Schedule on DBD
 - But: “BA” status code
- Utilities
 - Can take advantage of better /DBR capability
- Multiple DSG
 - Still available if required

HALDB Overview

- Things to consider
 - Index record size significantly larger
 - There is no WF1
 - Data maintenance during REORG
 - Prefix increases by 8 or 12 bytes
 - More if LP pointer (+24)

HALDB Overview

- Pointer Healing
 - Cost of pointer healing
 - Will be heavily discussed over the next 5 years
- ILK
 - HD Unload dataset format changes
 - ILK needed for RELOAD

Conversion to HALDB

- Locate all DBDs
 - All related DBDs must convert together
- Find “reasonable” partition boundaries
 - What are those for secondary indexes?
- Run conversion Unload
 - MIGRATE vs. MIGRATX

Conversion to HALDB

- What about “old” DBRC information
- Change the DBDs
- Define Partitions
- Allocate all files
- Run Reload (several)
- Do all required image copies
- ACBGENs, Online Change

IMS HALDB Conversion Aid

- HILITES
 - From Full Function to HALDB
 - HISAM to PHIDAM
 - Previous partitioning product
 - On “cruise control” if wanted
 - ISPF application
 - Who does the TEST databases?
 - Why not convert ALL databases?

IMS HALDB Conversion Aid

- Conceptual View
 - IMS Environment
 - Defines IMS datasets and setup parameter
 - Could be seen as a global IMS ID
 - Conversion Project
 - Is attached to an environment
 - Contains all databases to be converted together

IMS HALDB Conversion Aid

----- IMS HALDB Conversion Aid -----

Command ==>

Select Function	Current Settings
	Environment: PECK-TEST
	Project: HDO2
Administration Functions	
1 Add-Modify-Delete Environment	
2 Add-Delete Conversion Project	
3 Projects in Progress	
Utilities	
4 Disassemble DBD	
5 Show partition definition	
6 Generate JCL	
Project Handling	
7 Select an Environment	
8 Select a Project	
9 Start or Continue with the Current Project	

IMS HALDB Conversion Aid

```
----- IMS HALDB Conversion Aid -----  
Command ==>  
  
          Datasets  
RESLIB   :   IMS710.SDFSRESL  
          :  
  
MACLIB   :   IMS710.SDFSMAC  
  
LOADLIB  :   PECK.COMMON.LOAD  
  
DFSVSAMP :   PECK.COMMON.JCL  
          Member name: VSAMP  
  
MDALIB 1:   PECK.COMMON.MDALIB  
          2:  
  
RECON MDA located in: 1    1 RESLIB  
                       2 MDALIB 1  
                       3 MDALIB 2  
                       4 Specify RECON datasets
```

IMS HALDB Conversion Aid

```
----- IMS HALDB Conversion Aid -----  
Command ==>  
  
          DBD Libraries  
DBDLIB  1:  PECK.COMMON.DBLOAD  
        2:  
        3:  
        4:  
        5:  
        6:  
        7:  
        8:  
        9:
```

IMS HALDB Conversion Aid

- DBD Conversion
 - Change back to single DSG
 - Change was done because of space
 - From VSAM to OSAM
 - Now is a good opportunity
 - OSAM has many advantages

IMS HALDB Conversion Aid

----- IMS HALDB Conversion Aid -----

Command ==>

DBD Conversion Rules

Multi DSG:	1	1 To single DSG
		2 Leave as is
		3 Ask during Conversion
Convert VSAM to OSAM:	2	1 Yes
		2 No
		3 Ask during Conversion
Change DBD name:	1	1 Yes
		2 No
Selection Exit:	3	1 Yes
		2 No
		3 Ask during Conversion
Heal Index Pointer:	1	1 Yes
		2 No
		3 Ask during Conversion

IMS HALDB Conversion Aid

```
----- IMS HALDB Conversion Aid -----  
Command ==>  
  
                Save Source Statements  
  
DBD Source:      2  1  No  
                  2  Yes  
Source File:     PECK.COMMON.NEWDBD  
  
IDCAMS Source:   3  1  No  
                  2  Yes  
                  3  Yes, but no DELETE file  
  
Member Name:     2    1 DBD Name  
                  2  Partition Name  
                  3  DD Name  
  
Del File:        PECK.COMMON.DELETES  
Def File:        PECK.COMMON.DEFINES
```


IMS HALDB Conversion Aid

- How to partition
 - Specify number of partitions
 - Specify size of partitions
 - Specify key ranges
- What to do about Secondary Indexes

IMS HALDB Conversion Aid

----- IMS HALDB Conversion Aid -----

Command ==>

Data Collection Rules

Combine Database records: 5000 (number of database records)

Main DB Partition: 3 1 Fixed Number of Partitions 2
 2 Fixed Partition Size (MB) 0512
 3 Ask during Conversion
 4 Specify High Keys

Index Partition: 1 1 Fixed Number of Partitions 1
 2 Fixed Partition Size (MB) 1024

PDB Conversion: 3 1 Use existing Keys or Partitions
 2 Create new Partition boundaries
 3 Ask during Conversion

Additional Partitioning Layouts to be created?

 2 1 Yes
 2 No, use the one created during Collect

IMS HALDB Conversion Aid

----- IMS HALDB Conversion Aid -----

Command ==>

Partition Naming Rules

Partition Name: 4 1 DBD name (up to 6) and 0-9,A-Z
 2 DBD name (up to 6) and A-Z
 3 Ask for partition name during Conversion
 4 Ask for constant (6 char) during Conversion
 5 DBD pattern **.**.* and 0-9,A-Z
 like ..**.*

Partition DSN: 3 1 High qualifier and DBD name
 2 High qualifier and Partition name
 3 Ask during Conversion

High-level qualifier

PECK.IMSDB

IMS HALDB Conversion Aid

```
----- IMS HALDB Conversion Aid -----  
Command ==>  
  
          Space Allocation Rules  
          for PHDAM and PHIDAM  
  
HDAM RAA Size:      1      1  Clone from DBD  
                   2      2  (1) and increase 10 percent  
                   3      3  Ask during Conversion  
  
Overflow Size:      1      1  Clone from original dataset  
                   2      2  (1) and increase 10 percent  
                   3      3  Ask during Conversion  
  
Byte limit:         1      1  Same as old DBD  
                   2      2  None  
                   3      3  Ask during Conversion  
  
SMS Allocation:     2      1  Yes  Dataclass:  
                   2      2  No, ask for Volume serial  
                   3      3  Yes, no Dataclass
```

IMS HALDB Conversion Aid

----- IMS HALDB Conversion Aid -----

Command ==>

Space Allocation Rules
for ILDS datasets

Free Space per CI:	1	1 Do not specify 2 Set to 10 percent 3 Ask during Conversion
Free Space per CA:	1	1 Do not specify 2 Set to 10 percent 3 Ask during Conversion
Dataset Allocation:	1	1 Round to full Cylinder 2 Add 10 percent 3 Ask during Conversion
SMS Allocation:	2	1 Yes Dataclass: 2 No, ask for Volume serial 3 Yes, no Dataclass
CI Size:	4	(1, 2, 4, 6, 8, 12) in Kbytes

Do the Conversion

```
----- IMS HALDB Conversion Aid -----  
Command ==>  
  
      DBD CONVERSION SELECTION  
  
      Select one of the provided DBD libraries  
      or specify a DBD library  
1         PECK.COMMON.DBDLOAD  
2  
3  
4  
5  
6  
7  
8  
9  
  
      Specify a DBDLIB dataset name  
      PECK.COMMON.DBDLOAD  
  
DBD      *           "*" for list of DBDs  
  
      Display mode      B      Browse (default)  
                       V      View
```

Do the Conversion

```
----- IMS HALDB Conversion Aid ----- Row 1 of 60 |
Command ==>                                     Scroll ==> CSR |
|
|          Select  DBD
|-----|
|          DEDB1
|          HDO1
|          s     HDO2
|          HDO2TT
|          HDV1
|          HDV2
|          HDX2
|          HIDAM2
|          HIDO2
|          HIDV2
|          HISAM
|          HISAM1
|          HPI20
|          HPV20
|          LDBD1
|          PAIR1
|          PAIR2
|-----|
```

Do the Conversion

```
----- IMS HALDB Conversion Aid ----- Row 1 of 5
Command ==>

          DBD(s) in Project HDO2

S  DBD      Type Prim DBD   Log. Current Level      Current Status
          Rel.
-----
HDO2      D                Collect DBDs             Wait for User
SIO21     X  HDO2           Collect DBDs             Wait for User
SIO23     X  HDO2           Collect DBDs             Wait for User
SIO22     X  HDO2           Collect DBDs             Wait for User
SIO24     X  HDO2           Collect DBDs             Wait for User
***** Bottom of data *****
```


Conversion Phases

- Get all the data
- Prepare everything
- Unload the database
- Make all the changes and reload the database
- Post processing

What does the User need to do?

- Answer Questions
 - Presented as ISPF screens
- Submit JCL
 - Presented in an ISPF VIEW screen
- Check the Output
 - All processed should end with RC 0

Changes since GA

- New Functions
 - Save DBD source
 - Save IDCAMS source
 - Specification of key ranges
 - Support for non-unique indexes
 - Support for SHISAM
 - PDB settings can be copied

Changes since GA

- Partition Selection Exit
 - Utility to test the selection exit
 - based on HD unload file
- Generic Selection exit IHCPSEL0
 - Based on subset of the root key
 - Specification of offset and length
 - Uses data string in DBRC definition

Future Directions

- Next Versions
 - Status code “BA” handling
 - PROCOPT=L support
 - Allow logical related segments to be loaded
 - Solve PSINDEX performance issues
 - DEDB to HALDB
 - Maintain HALDB partitions

How to look at this

- Visit H05
 - Hands on: HALDB Conversion Aid
- Look at a DEMO
 - in the booth