



Creating a HALDB Test Environment

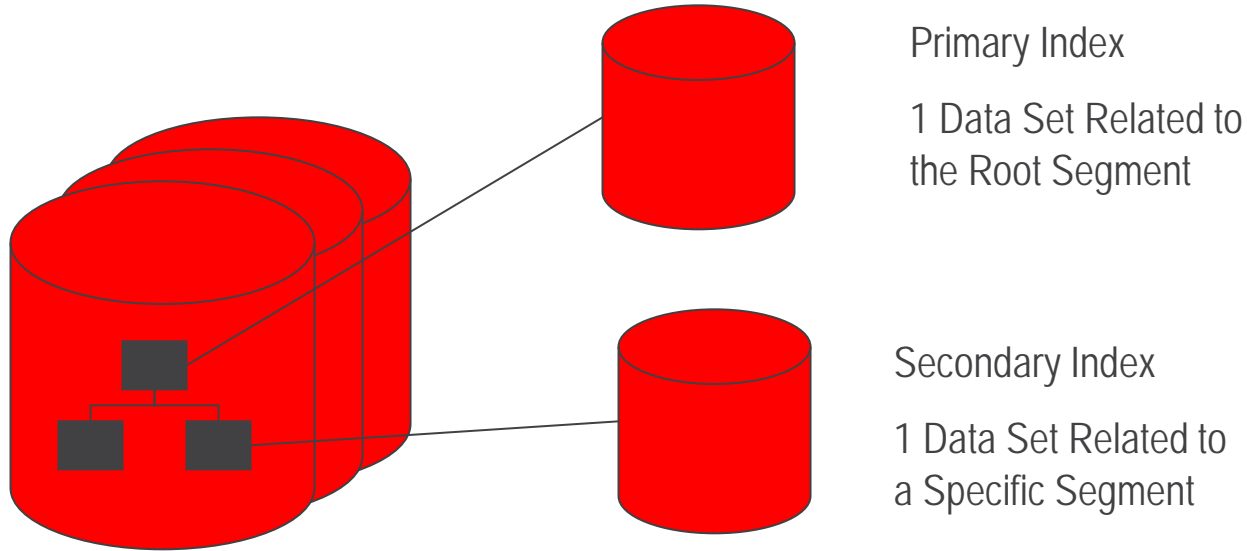
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IMS Database Utilities

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"Full Function" Not HALDB Traditional Database



Primary Index

1 Data Set Related to the Root Segment

Secondary Index

1 Data Set Related to a Specific Segment

HIDAM Database

1-10 Data Set Groups

Maximum Data Size = 80 gig OSAM

(10 x 8 gig)

HALDB Database

Primary Index

1 Data Set Related to the Root Segment

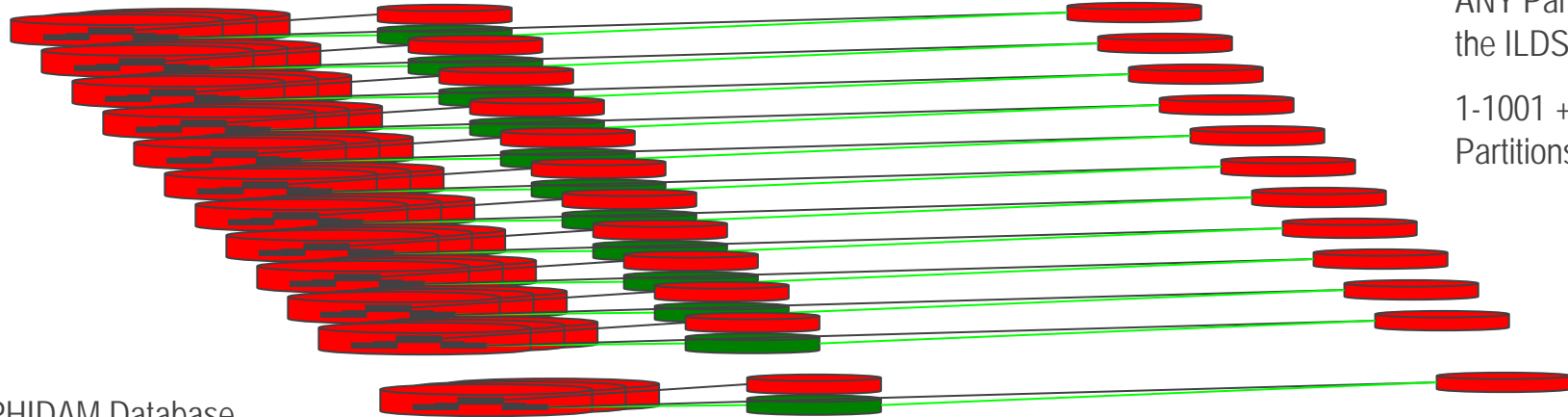
1 per Partition

PSINDEX

Secondary Index

1 Data Set Related to a Specific Segment in ANY Partition aided by the ILDS Data Set

1-1001 + Independent Partitions



PHIDAM Database

1-10 Data Set Groups

1-1001 + Data Partitions

Maximum Data Size = 40,040 gig + OSAM or VSAM

(10 x 4 gig) x 1001 (or more) or

80,080 gig OSAM (10 x 8 gig) x 1001 (or more)

ILDS

1 Data Set per Partition

Application Testing Environment

Developer has own databases

Code writing

Unit testing

DBRC not used

DLI or DBB

HALDB Allocation

- **Through RECONx data set**
 - 1 to 3 data sets required
 - Master DBD and partitions defined for each HALDB
- **A-J or M-V depending on IBM OLR status**
 - OLR occurs in online IMS
 - Not available for 8 gig OSAM HALDB databases

Setting Up A Test Environment

- **Define individual RECON data sets**
 - Multiple IMS releases
 - May need to train application development staff
- **Define HALDB DBDs, PSBs and ACBs**
 - Unique names in shared environment
- **Create Delete/Defines for database data sets**
 - Partitions, ILDS, indexes, etc.
- **Create test data from production data**

What's The Problem

- Shrinking DBA and systems staff
- Same for application developers
- Lack of knowledge
- Growing amount of data

Solution – Recon Substitution Facility

- **MAXM Reorg/Online for IMS provides a facility that can simulate a DBRC environment without a RECON data set.**
- **Extract DBRC INIT commands from production RECON data sets**
- **Use in a BMCRECON in DLI or DBB applications and BMC MAXM database utilities for IMS**
- **Eliminates the need to share RECON data sets and IMS release related data sets**
- **Database DBDs, PSBs, and ACBs can remain the same**

RSF - Extract

READRCN DBD(XIU0DBD) RELATED(Y) - DSNPREFX(MYDATA.&DBDNAME.&PARTNAME)

Returns database and related indexes

```
INIT.DB   DBD(XIU0DBD) TYPHALDB -  
          SHARELVL(3)  
INIT.PART DBD(XIU0DBD) PART(XIU0A) -  
          DSNPREFIX(MYDATA.XIU0DBD.XIU0A) -  
          KEYSTRNG(X'F3F7F1FFFFFFFF') -  
          BLOCKSZE(8192) -  
          FBFF(30) -  
          FSPF(25)  
INIT.PART DBD(XIU0DBD) PART(XIU0B) -  
          DSNPREFIX(MYDATA.XIU0DBD.XIU0B) -  
          KEYSTRNG(X'F7F6F7FFFFFFFF') -  
          FSPF(10)  
INIT.PART DBD(XIU0DBD) PART(XIU0C) -  
          DSNPREFIX(MYDATA.XIU0DBD.XIU0C) -  
          KEYSTRNG(X'FFFFFFFFFFFFFFFF') -  
          FSPF(15)
```

```
INIT.DB   DBD(XIU0NDX1) TYPHALDB  
NONRECOV -  
          SHARELVL(3)  
INIT.PART DBD(XIU0NDX1) PART(XIU0X1A) -  
          DSNPREFIX(MYDATA.XIU0NDX1.XIU0X1A) -  
          KEYSTRNG(X'FFFFFFFFFFFFFFFF') -  
          FFFFF')  
INIT.DB   DBD(XIU0NDX2) TYPHALDB  
NONRECOV -  
          SHARELVL(3)  
INIT.PART DBD(XIU0NDX2) PART(XIU0X2A) -  
          DSNPREFIX(MYDATA.XIU0NDX2.XIU0X2A) -  
          KEYSTRNG(X'FFFFFFFFFFFFFFFF') -  
          FFFFF')  
INIT.DB   DBD(XIU0NDX3) TYPHALDB  
NONRECOV -  
          SHARELVL(3)
```

```
INIT.PART DBD(XIU0NDX3) PART(XIU0X3A) -  
          DSNPREFIX(MYDATA.XIU0NDX3.XIU0X3A) -  
          KEYSTRNG(X'F6F1FFFFFFFFFFFFFFFF-  
          FFFFF') -  
          FBFF(10) -  
          FSPF(15)  
INIT.PART DBD(XIU0NDX3) PART(XIU0X3B) -  
          DSNPREFIX(MYDATA.XIU0NDX3.XIU0X3B) -  
          KEYSTRNG(X'FFFFFFFFFFFFFFFF') -  
          FFFFF') -  
          FBFF(5) -  
          FSPF(20)
```

RSF - BMCRECON

Works with DLI, DBB, and MAXM Reorg Utilities

```
//DLISTP01 EXEC PGM=DFSRR00,REGION=0M,  
//      PARM='DLI,DBREAD,PSBNM,,,,,,,,,,,,,Y'  
//STEPLIB DD DISP=SHR,DSN=BMC.PASSWORD  
//      DD DISP=SHR,DSN=BMC.DLI.IMLIB  
//      DD DISP=SHR,DSN=IMSVS.MDALIB  
//      DD DISP=SHR,DSN=IMSVS.RESLIB  
//DFSRESLB DD DISP=SHR,DSN=IMSVS.RESLIB  
//IMS      DD DISP=SHR,DSN=IMSVS.DBDLIB  
//      DD DISP=SHR,DSN=IMSVS.PSBLIB
```

```
//BMCRECON DD *  
INIT.DB      DBD(XIU0DBD) TYPHALDB -  
              SHARELVL(3)  
INIT.PART    DBD(XIU0DBD) PART(XIU0A) -  
              DSNPREFIX(MYDB.XIU0DBD.XIU0A) -  
              KEYSTRNG(X'F3F7F1FFFFFFFF') -  
              BLOCKSIZE(8192) -  
              FBFF(30) -  
              FSPF(25)  
INIT.PART    DBD(XIU0DBD) PART(XIU0B) -  
              DSNPREFIX(MYDATA.XIU0DBD.XIU0B) -  
              KEYSTRNG(X'F7F6F7FFFFFFFF') -  
              FSPF(10)  
INIT.PART    DBD(XIU0DBD) PART(XIU0C) -  
              DSNPREFIX(MYDATA.XIU0DBD.XIU0C) -  
              KEYSTRNG(X'FFFFFFFFFFFFFFFF') -  
              FSPF(15)
```

Number of partitions, high keys, etc.

Can be changed to meet test requirements.

Solution - PGM=DLICPYON

Creates a full copy HALDB and related data sets

```
//PLUSIN DD *  
COPY DBD(XIU0DBD) SWAP(N) DBRC(Y) IDCAMS(MODEL) -  
DYNALLOC(Y,Y,C) SECINDEX(YES) ILDS(Y)
```

- **SWAP(N)** keeps the copy
- **IDCAMS(MODEL)** creates the delete/define for OSAM or VSAM
- **SECINDEX(Y)** and **ILDS(Y)** copy the indexes and ILDS data sets

Solution – Backup and Recovery Solution

- Recover to alternate named database data sets
 - The Create Recovery JCL function provides an option for recovery to alternate database data sets.
 - Masking capabilities for creation of alternate names
 - SMS and volume matrix capabilities to map data sets to alternate locations
 - Automated creation of IDCAMS delete and defines
- Use this option to create an entire test HALDB with production data without affecting the original database data sets

Solution – Create Sample Data

- **File-Aid for IMS**
 - Extract selected partition or series
 - Step MXO into reload with BMCRECON
- **IEXTRACT**
 - Extract selected partition or series
 - Create standard unload format
- **DFSDDLTO**
 - Create data from scratch

Solution – Create Sample Data

- **MAXM Reorg/Online for IMS**
 - Initialize empty database and indexes in single step
 - Use empty file with INPUT(UNLDFILE)
- **LOADPLUS/EP for IMS**
 - Initialize empty database
 - DFSUINPT DD DUMMY

Solution – Coming Soon

MAXM Reorg Solutions – December 2015

- **CLONE function**

- Allows copy of database with the ability to limit copy with skip and count parameters
- Allows copy to modify data as it is cloned
- Cloning can be done directly to a database, image copy, or unload file

Summary

Application developers can work independent from others with HALDB databases. Using the Recon Substitution Facility (RSF) and HALDB can be created and used for unit testing

Reduce the need for multiple RECON data sets and DBDs that are named differently from the production DBD names



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