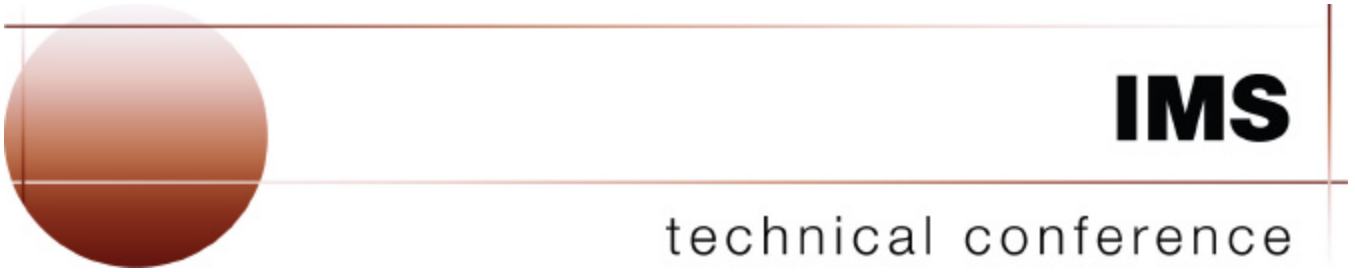
E55

New News in IMS HALDB Tooling

Christian Koeppen



Las Vegas, NV **September 15 – September 18, 2003**

Agenda

- Overview
  - HALDB Advantage
  - Changes
- Converting from Full Function to HALDB
  - How to Convert
  - Using a Tool
  - Single Databases
  - Partitioned Databases
  - Multiple Databases (User Partitioning)
- Maintaining HALDB Databases
  - Split or Consolidate Partitions
  - DBRC Specials
- Special Utilities and Functions
- Future Direction
- Demo

Overview

- HALDB Advantage
  - DBRC is required
  - Database size no longer limited
    - 40 TB possible today, 2560 TB by design
  - Physical description no longer in DBD
    - Adding partitions without online change
    - Changing RAA without DBD change
  - No JCL for database files
    - No longer in MDAlib
  - Partitions can be offline
    - Scheduling is on DBD, authorization on partition

Overview

- Changes
  - For Application
    - Secondary Index is used as database and has /SX
    - Logical related databases with PROCOPT=L
    - Status code “BA”, but only if partitions are offline
  - For Operations
    - Starting and stopping single partitions
    - Image copy and recovery
      - Special status and utility for ILDS and primary index
    - Copy databases to a different system
    - There is no WF1
      - Maintain data during reorganization !?!
      - Need a tool if index is set to NONRECOV

Convert from Full Function

- How to Convert
  - Select the DBD and all its related DBDs
  - Find “reasonable” high keys (including indexes)
  - Run the unload
  - Cleanup DBRC
  - Change the DBD
  - Define the partitions
  - Allocate all files
  - Run the reload
  - Do backups

Convert from Full Function

- Using a tool
  - Finds out how many partitions
  - Finds out the high keys
  - Creates the Unload
  - Changes the DBD
  - Creates the DBRC partition definitions
  - Calculates and allocates the partition files
  - Creates the Reload

Convert from Full Function

- Using a Tool
  - Creates a conversion project
  - Project connects to IMS environment
  - Ensures the right “sequence of events”
  - Checks completion of background JOBs
  - Can recreate JCL if necessary
  - Driven by setup parameter

Convert from Full Function

- Using a Tool
  - Partitioning rules
    - Number of partitions
    - Size of partitions
    - Keys of partitions
    - Partition selection exit
      - Product contains a generic selection exit (IHCPSEL0)
        - » Exit works on subset of the key
        - » Will need its “high” keys
    - Index partitions !!!!

Convert from Full Function

- Using a Tool
  - Partition names
    - Can be created from DBD name
    - Can be set by the user
    - Are checked against DBRC
  - Partition dataset names
    - User specifies “high level” qualifier
    - Can be appended with the database name
  - Allocation
    - IDCAMS statements can be saved to a PDS

Convert from Full Function

- Using a Tool
  - Changing the DBD
    - Secondary indexes are made unique
    - /SX related changes are applied to the index DBD
    - RKSIZE parameter created for index
    - Virtual paired is changed to physical paired
    - New DBD source can be saved to a PDS

Convert from Full Function

- Using a Tool
  - JCL
    - Creates all JCL and control statements
    - User is placed in ISPF VIEW to submit
    - JCL can be in single JOBs or 2 JOBs
    - Data collector can be during unload
  - DBRC
    - Create DBD and partition definition

Convert from Full Function

- Using a Tool
  - Other options
    - Change to single dataset group
      - Multiple dataset may have been used because of space constrains
    - Change from VSAM to OSAM
      - Take advantage of OSAM sequential buffering
      - Less CPU time for accessing database

Converting from Full Function

- Single Databases
  - Auto select for all related DBDs
    - Secondary indexes
    - Logical related DBDs
  - User may add other DBDs
    - Part of the same application

Converting from Full Function

- Partitioned Databases
  - One DBD with partitions defined in DBD
    - HIDAM has high keys
    - HDAM has number of partitions
  - Conversion options
    - Keep the current partitioning
      - HIDAM: high keys are reused
      - HDAM: number of partitions is used. High keys are created
    - Create new partition boundaries
      - High keys are created

Converting from Full Function

- Multiple Databases
  - Also referred to as “User Partitioning”
    - DBDs must be identical
    - No logical related DBDs
    - No secondary indexes
    - Conversion can be done in multiple iterations
    - User is responsible for
      - Changing his application interface (if needed)
      - Changing his PSBs
      - Ask for assistance (if you do not know how to handle this)

Converting from DEDBs

- Add a secondary index to the application
- May require application changes
  - Subset pointer used by application
  - Sequential dependent segment
- Randomizer conversion
  - Two phase randomizer replaced by
    - Partition selection via keys or exit
    - DFSHDC40 (or your own)
  - May require rewriting your own randomizer

Maintaining HALDB Databases

- Split or Consolidate Partitions
  - Single or multiple partitions as “input”
    - Multiple partitions must be in key sequence
  - “New” partition boundaries based on setup
    - High keys
      - New key boundaries are verified
    - Partition number
    - Partition size
  - IHCPSEL0 is supported
    - Will need “new” high keys

Maintaining HALDB Databases

- Process
  - Analyze the selected partitions
  - Unload the selected partitions
    - Partitions must be in key sequence
    - HD Unload utility
  - Define partitions to DBRC
    - Partitions may be deleted
  - Reload to the “new” partitions
    - //DFSHALDB will be used in the future

Maintaining HALDB Databases

- DBRC Specials
  - Display HALDB
    - Current Definition
    - Partitions
    - Partitions with exception Condition
    - Show subsystem allocation
  - Handle Exception Conditions
    - Create JCL to handle the exception

Copy to other RECON

- Clone HALDB definition
  - Define partitions in target RECON
    - Same definition but other DSNPREFX
  - Data may be transported via Unload/Reload
- Copy HALDB partitions
  - Define partitions in target RECON
  - Register image copies in target RECON
    - Non fuzzy image copies only
  - Create new target datasets
  - User must do RECOVER

Special Utilities and Functions

- PSINDEX pointer healer
- DBD source generator
- Testing for partition selection exits
- Support for PROCOPT=L applications
- OSAM multi volume (non SMS)
- Status code “BA” support

Future Direction

- HALDB Analyzer
  - Create suggestions to maintain partitions
  - Create suggestions to reorg partitions
  - Create suggestions to heal EPS pointer
- Logical EPS pointer healer

Demo

- We are in the Expo
- Ask for a product demo

RETURN TO INDEX