2024 CCDUG:

Understanding IMS Managed ACBs

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IBM

SOD Announcement
in
IMS 15.4 announcement

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Summer 2023 Announcement

Statement of direction

IMS management of ACBs

IBM intends to require IMS management of application control blocks (ACBs) for IMS Database (DB) clients in **June 2025**.

For **IMS Transaction Manager (TM) only clients**, IBM intends to provide support for IMS Management of ACBs. Following that support in future IBM IMS releases, IBM intends to require IMS management of ACBs for IMS Transaction Manager (TM) only clients.

Additionally, in future IMS releases, IBM intends to remove the generation processes for Program Specification Block Library (PSBLIB), Database Description Library (DBDLIB), and Application Control Block Library (ACBLIB). At that time, **the IMS catalog, SQL, and DDL** become the interface to IMS database management.

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Agenda

- How we started this journey
- Why & What of IMS Managed ACBs
- What changes with IMS Managed ACBs
- Implications on DLIBATCH jobs
- Items we are currently working on

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How it all began?

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IMS Catalog

- IMS Catalog was introduced in 2012 (a few months after **IMS V12** GA'd in October, 2011)
- Usage was and still is **optional**
- IMS Catalog is implemented as a **HALDB**
- Contains DBD, PSB metadata used by Java programs accessing IMS databases
- Required for some features introduced after IMS V12:
  - IMS Database Versioning (IMS V13)
  - **IMS Managed ACBs & DDL** (IMS V14)

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IMS Managed ACBs

- IMS Managed ACBs was introduced in **IMS V14** (GA'd in October, 2015)
- Is the Infrastructure for using **IMS DDL**
- Requires implementation of **IMS Catalog**

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Q: Why IMS Managed ACBs?
A: Want a robust infrastructure for DDL

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IMS Managed ACBs (Robust Infrastructure for DDL)

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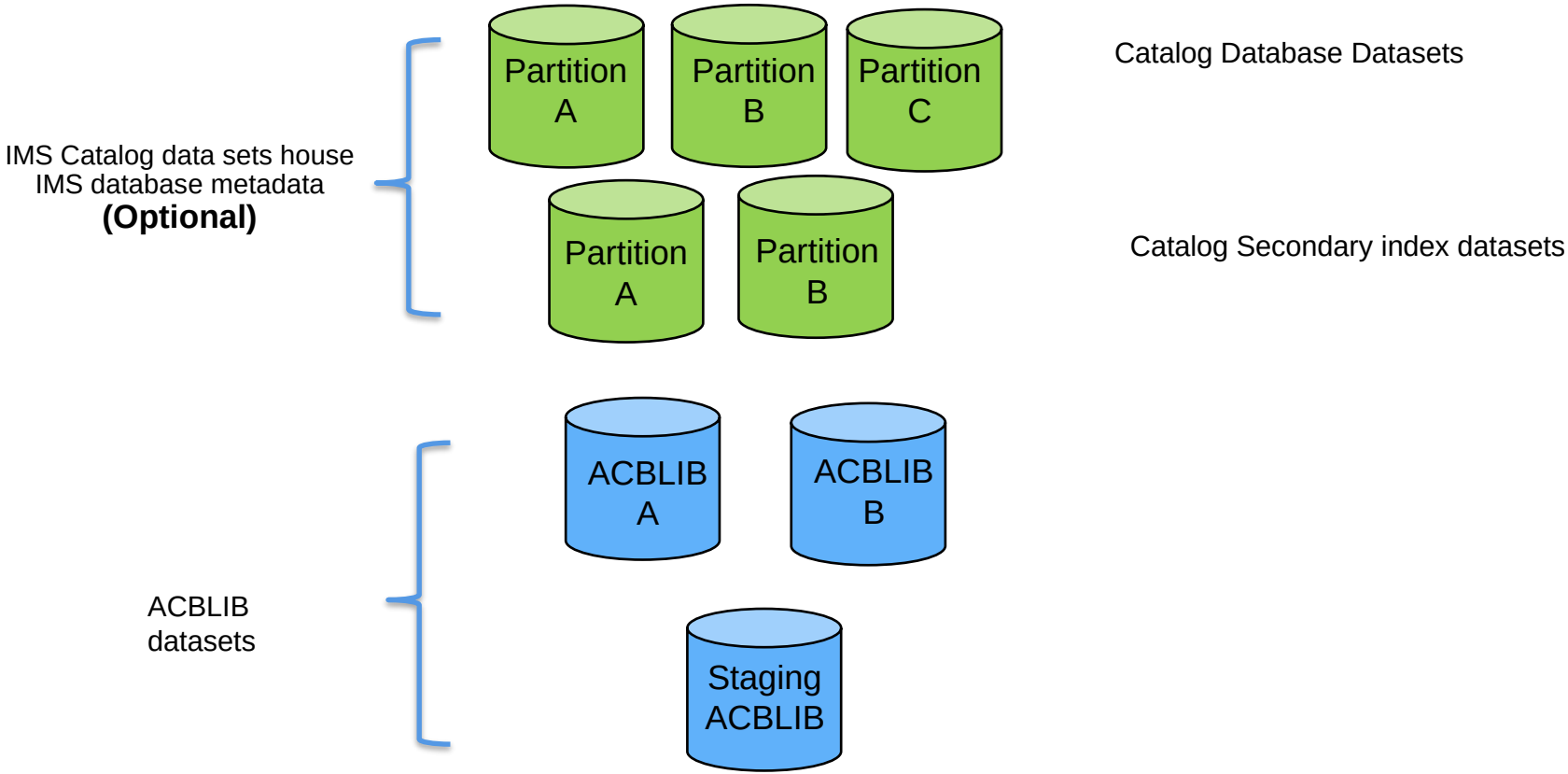
Non-IMS Managed ACB Environment



ACBLIBs are not Robust

- ACBLIBs are PDS (Partitioned Datasets)
- PDSs need to be compressed to reclaim space
- PDS can fill up
- PDSs have gotten corrupted

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PDSE benefits

- Uses dynamic space allocation and automatically reclaims space.
  - No manual compression required
- Allows up to 123 extents (vs 16 extents in a PDS)
- Maximum size of a PDSE member is 15,728,639 records
- Maximum number of PDSE members is 522,239
- All updates to a PDSE are atomic, unlike a traditional PDS
  - Canceled jobs or system crashes will not corrupt a PDSE
- Can be shared across a SYSPLEX

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IMS Managed ACBs:

- Replace ACBLIB PDS with PDSE & call it **IMS Directory**
- **Have Multiple Active directories**
  - No more 2 ACBLIBs (one active & one inactive).
  - **Start with 2 IMS active directories**
    - If you need more, IMS will automatically create a new one (roadmap item)
- Boot Strap Data set (BSDS) keeps track of IMS directories.

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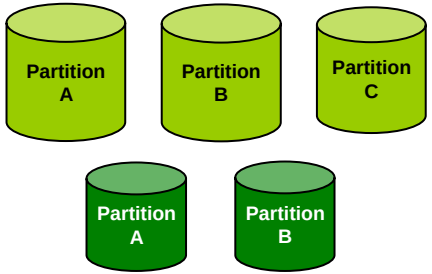
IMS Managed ACBs Components

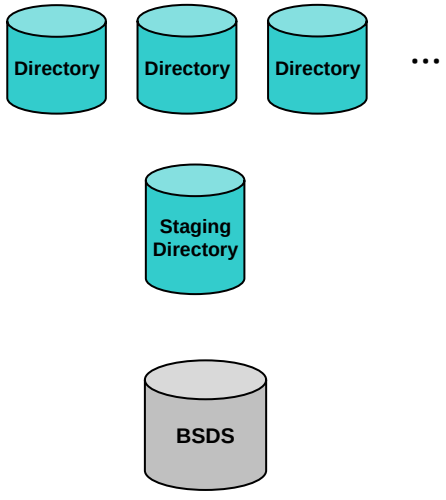
IMS Catalog
No longer optional



Catalog Database datasets

Catalog Secondary Index datsets

IMS Directory (PDSEs)
has ACBs



Directory Datasets

Boot Strap Datasets

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Directory vs ACBLIB

- Directory is a PDSE (ACBLIB is a PDS)
- IMS directory houses ACBs (just like an ACBLIB)
- Directory records have a format much like the ACBs in an ACBLIB
- The directory has functionality similar to an ACBLIB
  - IMS will reference the directory to get the runtime ACBs

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Difference between Directory & ACBLIB

- Today, GSAM database control blocks stored in DBDLIB and PSBLIB, **not in ACBLIB**

- With IMS management of ACBs, GSAM DBDs will be stored in the Directory
  - IMS will use the directory to load the GSAM runtime control blocks at each dependent region schedule

- Today, logical database control blocks are stored in the DBDLIB, **not in ACBLIB**

- With IMS Management of ACBs, logical DBDs today are stored in the IMS Catalog
  - Work is in progress to also store Logical DBDs in the IMS Directory

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What changes with IMS Manged ACBs?

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Changes with IMS Managed ACBs:

- ACBGEN
- Online Change for ACBs
  - online change for FMTLIB & MODBLKs does NOT change (still use /Modify PREPARE & /MODIFY COMMIT)

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ACBGEN

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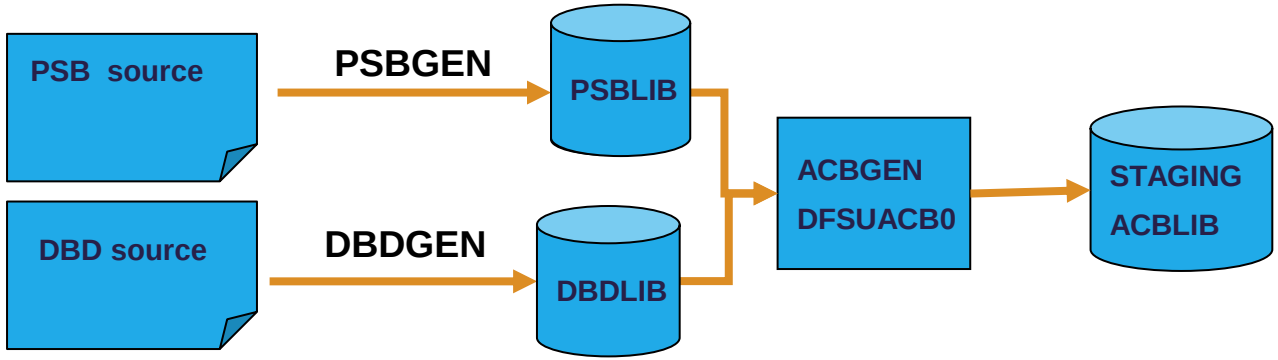
Traditional gen process



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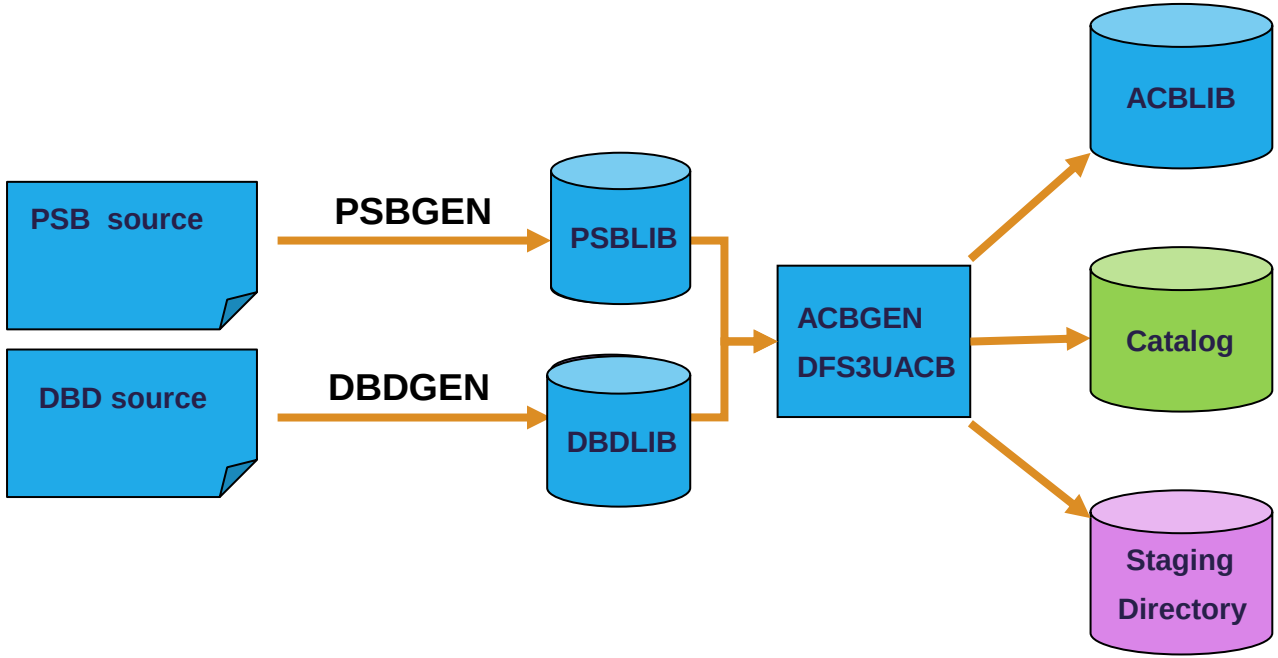
ACBGEN process in an IMS Managed ACB environment



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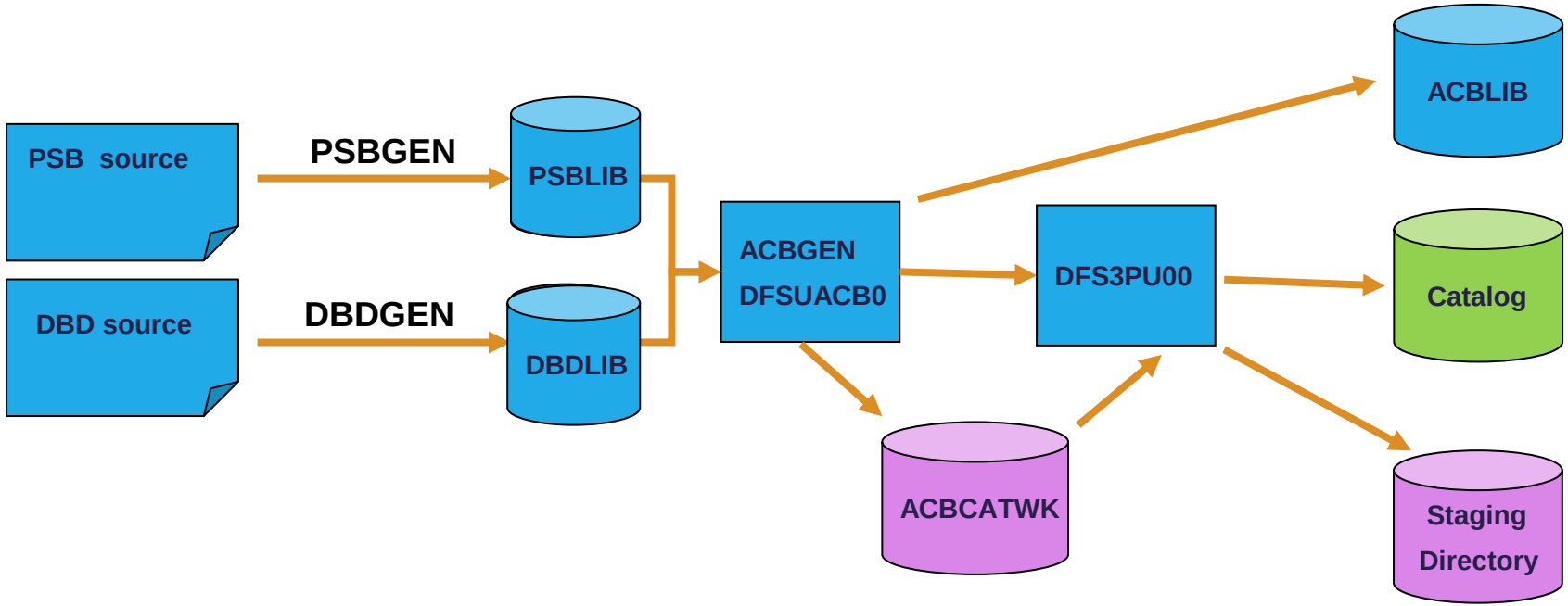
ACBGEN process in an IMS Managed ACB environment



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Online Change (for ACBs)

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Online change today (without Managed ACBs):

1. ACBGEN into Staging ACBLIB
2. Copy from Staging ACBLIB to the INACTIVE ACBLIB
3. Switch the active & inactive libraries:
   - /MODIFY PREPARE & /MODIFY COMMIT
4. If /MODIFY COMMIT fails, then /DIS MODIFY

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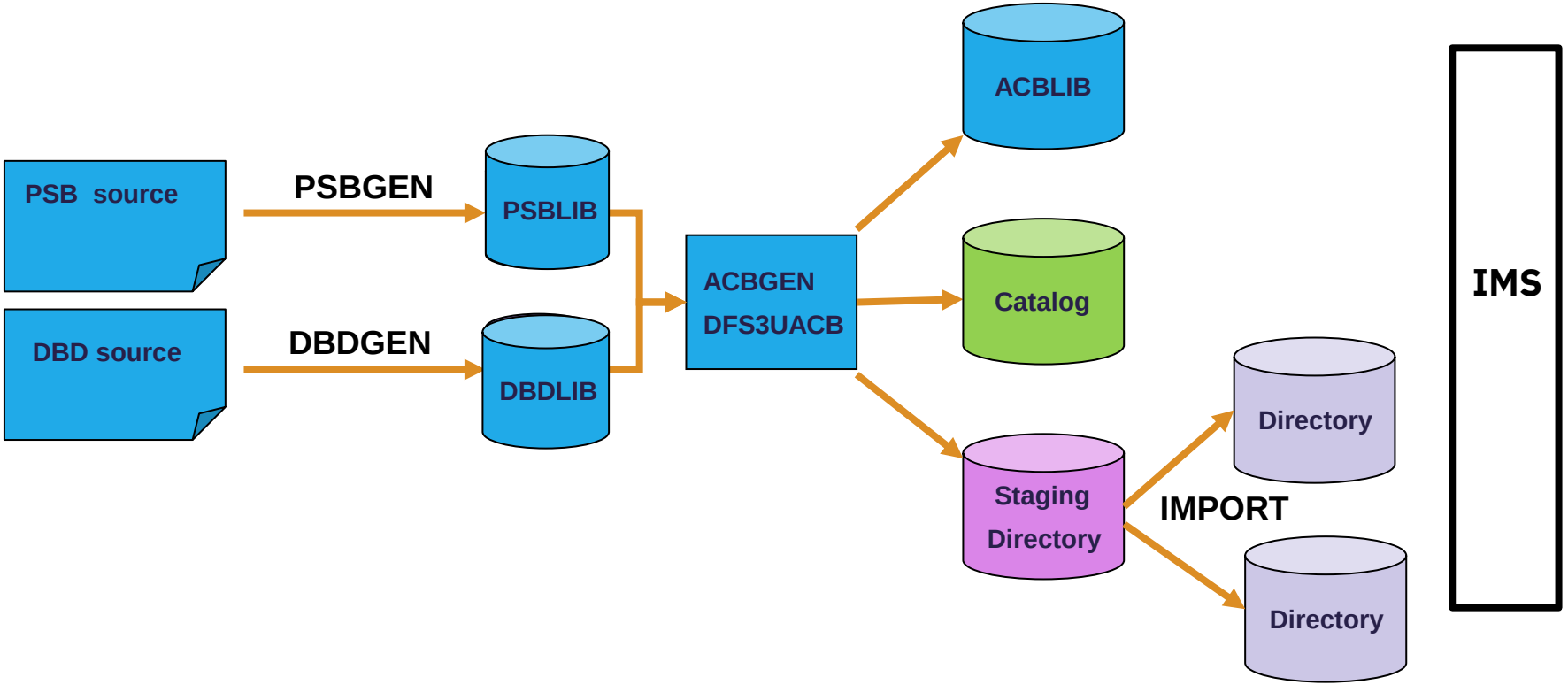
Online change in an IMS Managed ACB environment



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IMPORT DEFN Command

- Type 2 command
  - Requires SCI & OM and a SPOC
  - Requires SCI, OM & RM when ACBSHR=Y (Catalog is shared)

- IMPORT DEFN SOURCE(CATALOG)
  - Moves members from STG directory to active directories

  - Can specify NAME() parameter
    - Names can have wild cards

  - Single process
    - Messages for problems are displayed in the output

  - **Imported resources are logged in 7002 log records that have the names of the resources that are changed or added**

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What about DLIBATCH jobs?

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Batch Implications

- Application batch jobs **do not have to be modified** for IMS Managed ACBs. They can continue to run with DBDLIBs & PSBLIBs

- However, to enable batch jobs for IMS Managed ACBs
  - Specify use of the IMS catalog and ACB management:
    - Add JCL PARM to specifiy DFSDFxxx PROCLIB member or
    - Use DFS3CDX0 exit as an alternative to modifying the JCL

    - IMS will load application control blocks from the catalog

    - If present, IMS ignores DBDLIB and PSBLIB, or ACBLIB

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What are we currently working on?

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Catalog Maintenance Utility (CMU)

Description:
The Catalog Maintenance Utility (CMU) will allow changes to be made to the IMS Catalog without an outage.

Status:
Beta code has been tested by our sponsor users.

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IMS utilities support for IMS Managed ACBs

Description:
Enable the ability for all IMS utilities to obtain their DBD metadata from the Catalog

Status:
Currently proceeding very well

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Logical DBDs in IMS Directory

Description:
Currently Logical DBDs reside in the DBDLIB and not the ACBLIB.
Similarly in an IMS Managed ACB environment, logical DBDs currently don’t reside in the IMS Directory.
With DDL, the PSBLIB, DBDLIB & ACBLIB won’t be used.
So where do we place Logical DBDs? The obvious answer is in IMS Directory.

Status:
Work has begun

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IMPORT related issues requiring investigation

- When IMPORT is running, there is no progress / heart-beat message

- **There is nothing like DIS MODIFY**. You can't check ahead, what will be imported and what may prevent the import. You first have to fail before you have a chance to act. This is very bad for automated solutions.

- IMPORT taking longer than traditional online change.

- IMPORT is **more restrictive** than online change. IMPORT fails if the relevant transaction is queuing. One of our DBA says that /MODIFY COMMIT was running successfully in non-mACB when TRAN was queuing.

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Questions?

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Thank You

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