



DBCTL Migration and Implementation Considerations

Dave Viguers and Steve Zemblowski



Topics

OVERVIEW

- ▶ What is this thing called DBCTL

PLANNING

- ▶ Additional Datasets
- ▶ MVS & Storage Considerations
- ▶ Application Considerations

INSTALLATION & DEFINITION

- ▶ How to get a system up and running quickly

MIGRATION

- ▶ Now I have a DBCTL system - what next?

OPERATION

- ▶ CICS and DBCTL

MONITORING & TUNING

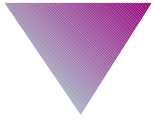
- ▶ CICS & DBCTL considerations

SUMMARY

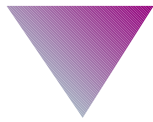


Session Description

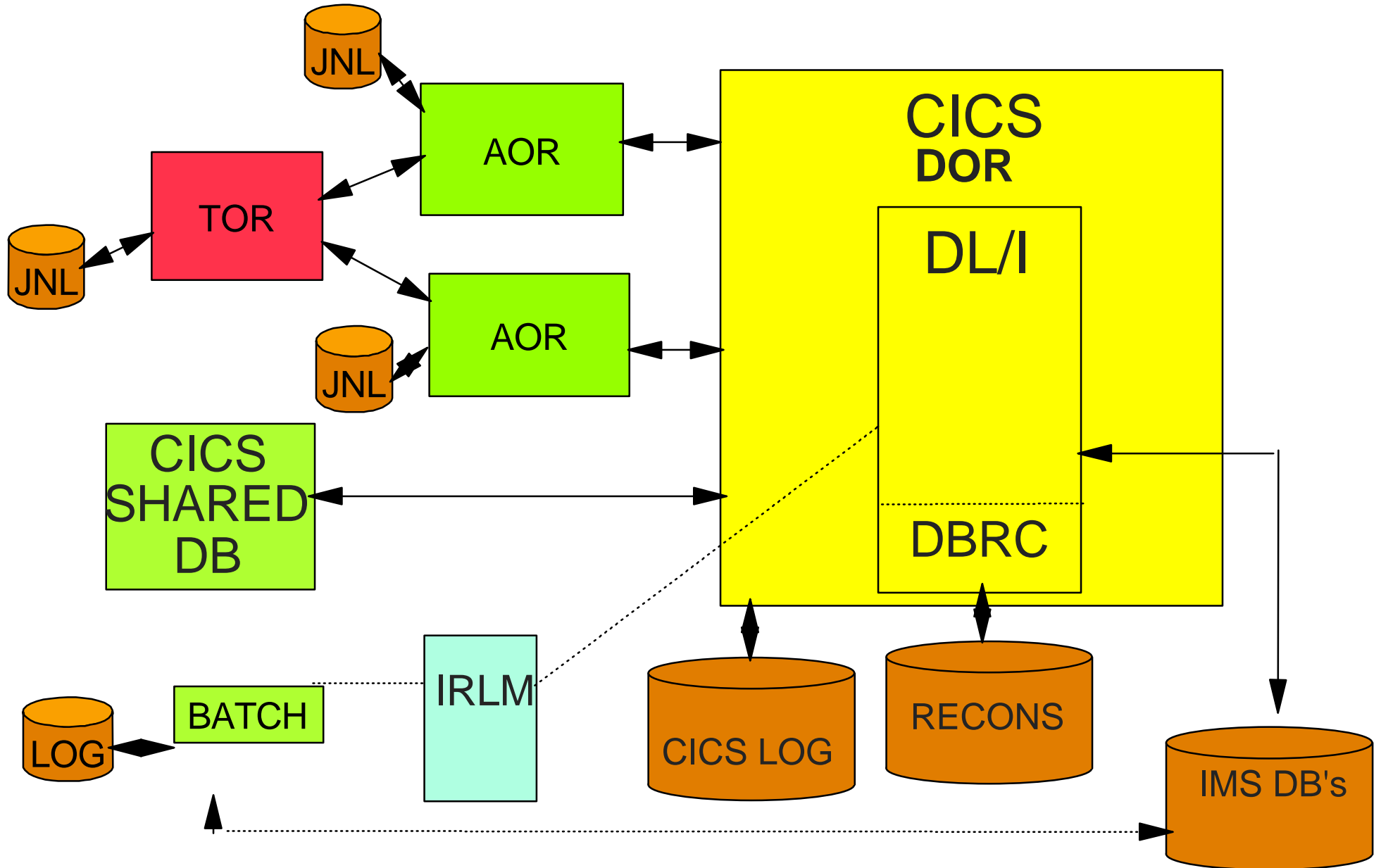
- ▲ **This Session is intended to help you plan and implement your migration from CICS/Local DLI to a DBCTL environment. We will look at the areas which should be considered in the planning, migration, and implementation process. We will see what effect this will have on your applications, operations, and recovery procedures as well as what impact there may be on storage and other system resources. Various options will be explored in both CICS and DBCTL to show how the impact of this change may be minimized and the benefits of DBCTL can be maximized.**

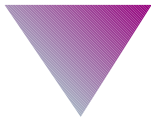


OVERVIEW



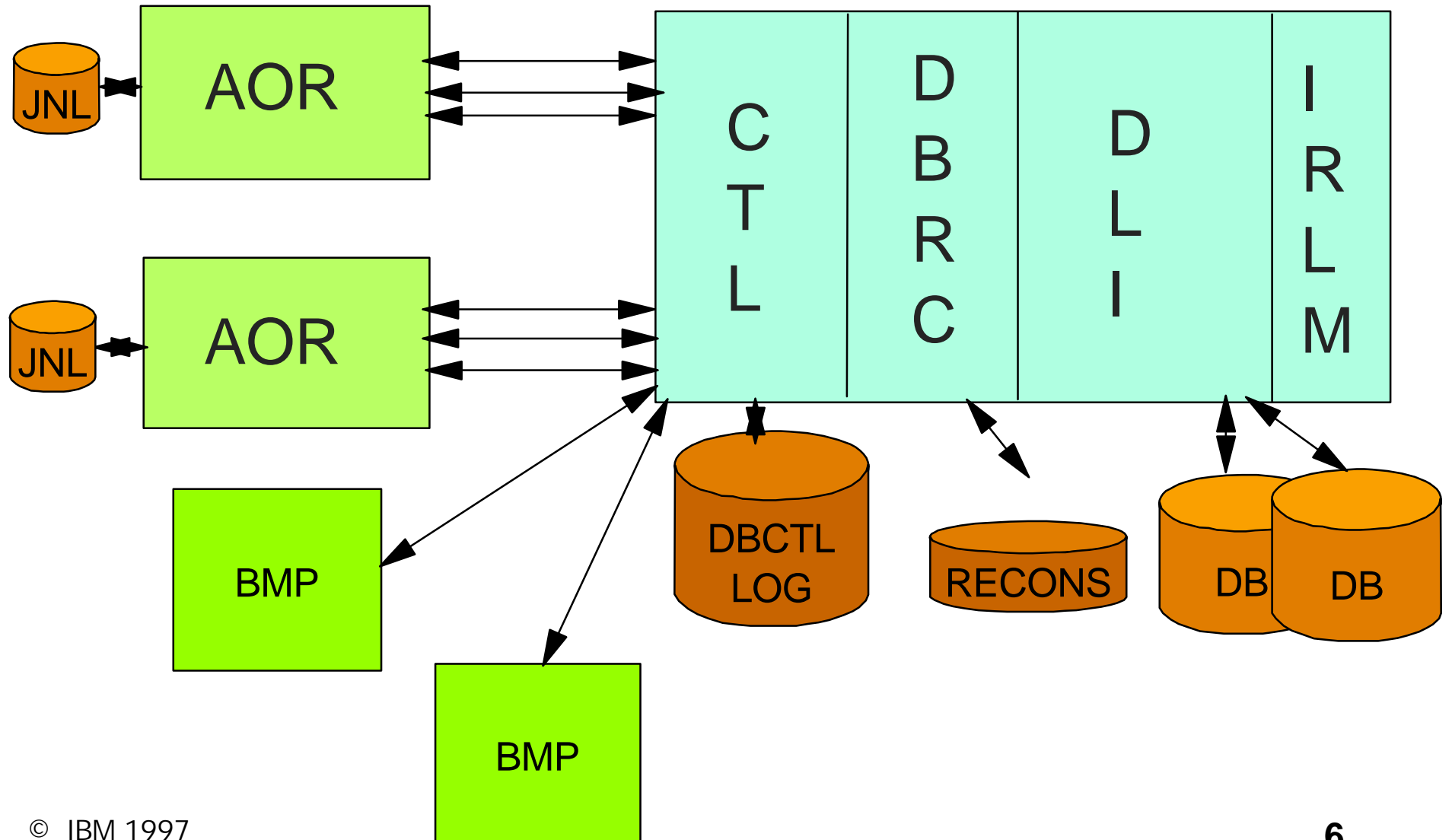
CICS/IMS Local DL/I





CICS - DBCTL

DBCTL





DBCTL BENEFITS (1)

IMS Database Support

- ▶ Concurrent batch (BMP) and CICS
 - Without Data Sharing
 - Without CICS Shared DB
- ▶ Data Entry Databases (DEDDB)

Availability

- ▶ System
 - Failure Isolation
 - Separate Address Spaces
 - Online Change
- ▶ Data
 - BMP allows concurrent online
 - Dynamic Backout



DBCTL BENEFITS (2)

Operational Flexibility

- ▶ Log management simplified
- ▶ Backout / Restart for BMP's
- ▶ Most DBCTL commands from CICS with IMS V5 / CICS V4
- ▶ Start / Stop independently

Performance

- ▶ DLI / DBRC code and pools removed from CICS region
- ▶ Multiple CICS's can attach to single DBCTL
- ▶ Improved Multiprocessor Usage
- ▶ DLI code and pools mostly above-the-line
- ▶ Less overhead than MRO or Shared DB but....
 - More than Local DL/I



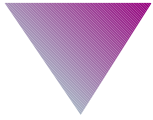
DBCTL BENEFITS (3)

Applications

- ▶ CICS applications run unchanged
- ▶ Backout / Restart for BMP's
- ▶ New Call Functions available
 - Improved availability
 - Additional functionality

Installation, Maintenance, Support

- ▶ No CICS gen required
- ▶ CICS / IMS independent
 - New releases / maintenance of either
- ▶ Fully supported interface
 - Local DL/I not supported in IMS V5 or CICS TS
 - IMS V5 (DBCTL only) is Year 2000 ready



 **PLANNING**



Additional Datasets (1)



Additional Datasets

- ▶ Logging
 - Online Log Datasets (OLDS)
 - Minimum of 3
 - Can be significant amount of space
 - Write Ahead Datasets (WADS)
 - minimum of 1
 - at least 1 additional strongly recommended
 - small dataset but high activity
 - Archived Logs (SLDS)
 - DASD or Tape
 - Probably DASD at least for initial testing
 - Recovery Logs (RLDS)
 - DASD or Tape
 - Optional - may choose to just use SLDS

Additional Datasets (2)

- ▶ **IMS System**
 - **ACBLIB**
 - Size same as current ACBLIB
 - Now need 3 Datasets (staging + 2 online)
 - **MODBLKS**
 - Fairly Small - DDIR's and PDIR's
 - 3 Datasets (staging + 2 online)
 - online Datasets must be APF authorized
 - **MATRIX**
 - IMS Security tables
 - Relatively Small or not used
 - 3 Datasets (staging + 2 online)
 - online Datasets must be APF authorized
 - **MODSTAT**
 - 1 - 80 byte record

Additional Datasets (3)

- ▶ IMS System (continued)
 - RESLIB
 - May use same for batch / Local DLI
 - PROCLIB
 - IMS Startup Parameters and Procs
 - IMSRDS (restart dataset)
 - Small - DBCTL restart information
- ▶ DBRC
 - RECONS
 - Minimum of 2 (3 recommended)
 - Were optional for Local DLI but now Mandatory
 - SHRCTL must be specified
 - JCLPDS
 - Fairly Small
 - JCL for Archive and other Utilities

Storage

- ▶ DBCTL mostly 31 bit
 - Both Private and ECSA
 - Allows much larger buffer pools
- ▶ CICS address spaces reduced significantly
 - Significant relief below-the-line
- ▶ CSA - plan on about 200K per DBCTL
 - Might require some juggling of private and csa below the line during migration
 - Actual amount will vary depending on
 - Options such as Fast Path support
 - Number of threads (TCB's)

MVS Considerations (1)

MVS

- ▶ APF authorize Datasets
 - Reslib, Modblks A & B, Matrix A & B
- ▶ Type 2 and 4 SVC's
 - May use existing ones if same release
 - Type 4 is for DBRC so may not be currently installed
- ▶ DFSMRCL0 and DFSAFMD0
 - Can use existing modules if same release else use latest



MVS Considerations (2)

- ▶ Check any Virtual Storage restrictions
 - IEFUSI, etc.
 - Region=0M ?
- ▶ Check Command Recognition Characters in use
 - DB2, etc.
 - CRC optional with IMS V5 and above
- ▶ Add IRLM (if using) subsystem names
 - IRLM & JRLM are preconditioned
 - Review IRLM requirements



Application Considerations



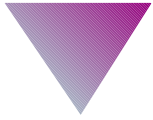
APPLICATIONS

- ▶ CICS Applications
 - NO Changes Required - CALL or EXEC DLI is fine
 - May want to take advantage of new functions
 - 31 bit parm lists / DB status inquiry
- ▶ BATCH vs BMP
 - Do not have to change to BMP
 - Consider advantages
 - Concurrent online without Data Sharing
 - No separate batch logs / reduced image copies
 - Automatic backout - batch backout not required
- ▶ CICS SHARED DB
 - Incompatible with DBCTL - use BMP

PSB Scheduling

▲ PSB Scheduling differences

- ▶ Scheduling continues for:
 - Stopped / Unauthorized Databases
- ▶ /STOP PGM xxxx to prevent scheduling
- ▶ Calls to stopped or unauthorized databases fail
 - ADCIabend
 - 'INIT' call to prevent abends
 - CICS XDLIPOST exit may be used
- ▶ PSB is stopped if application abends
 - While between Schedule and Terminate
 - Will therefore cause scheduling failures
 - Some people have usermod to prevent



INSTALLATION & DEFINITION

Installing and Defining DBCTL

▲ Consider IMS IVP (at least the first time)

- ▶ Documented in IMS/ESA Installation Volume 1
- ▶ TSO panel driven
- ▶ Provides JCL and documentation which can later be modified or cloned
- ▶ Somewhat confusing and tedious at first
- ▶ Once past Variable Gathering phase it becomes easier
- ▶ Some editing and skipping of Jobs possible
 - e.g.: Not using Fast Path or IRLM
- ▶ Can have DBCTL up and running in a few hours
 - It's not as bad as you may have thought

INSTALL / IVP Dialog (1)

▲ Variable Gathering Tips

- ▶ Set BLKSIZE variable properly for OLDS & Monitor
 - IXUOLDVB & IXULOGVB - 26624 for 3390 type device
- ▶ Set JESx Proclib DDNAME
 - Cannot be blank
 - Must be a valid name in JES proc
- ▶ Set Job Accounting and associated Variables
 - IXUJACTx , etc.
 - Saves a lot of time modifying jobs later
- ▶ Set IMSID's
 - IXUIMIDB and IXUIMID3

INSTALL / IVP Dialog (2)

▲ Variable Gathering Tips

- ▶ Consider JCLLIB statement
 - IXUJESC1
 - //MYLIB JCLLIB ORDER=IMSDBC.PROCLIB
 - Allows jobs to be run without moving procs to JES proclib
- ▶ DBCTL / IRLM names
 - IXURLNMx

▲ File Tailoring Phase

- Sets variable into various INSTALIB members
- Can go back and 're-do' selected or all members

INSTALL / IVP Dialog (3)

Execution Phase

- ▶ If variables set properly then little editing required except:
- ▶ IV2C210T - Browse Stage 1 Source Deck
 - Change IMSCTF
 - CPLOG=(100000)
 - RDS=(LGDK,4096)
 - Change IMSCTRL
 - CMDCHAR=NONE - Can override at execution
 - SYSTEM= specify correct MVS level

INSTALL / IVP Dialog (4)

▲ Execution Phase (continued)

- ▶ IV2C201T (continued)
 - If Fast Path not wanted (minimizes CSA usage)
 - Delete or comment out the FPCTL macro
 - Same for DATABASE DBD=IVPDB3
 - Same for APPLCTN PSB=DFSIVP8 & DFSIVPC
 - Add CICS/DBCTL command application (PSB)

**APPLCTN PSB=DFHDBMP,PGMTYPE=BATCH,
SCHDTYP=PARALLEL**

- Check IMSGEN macro
 - ASM specification (HLASM?)
 - JCL info
 - UJCL1 - If JCLLIB specified in VG phase delete it here

INSTALL / IVP Dialog (5)

▲ Execution Phase (continued)

- ▶ IV2C402T - Edit Proclib MBRS
 - Check JOBJCL and ARCHJCL
- ▶ IV2E202J - PSBGENS
 - Add step for MBR=DFHDBMP
 - Go to IMS.DFSISRC and add member for DFHDBMP

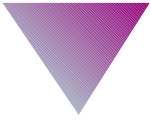
```
PSBGEN LANG=ASSEM,PSBNAME=DFHDBMP,  
        IOASIZE=1000
```

```
END
```

INSTALL / IVP Dialog (6)

▲ Execution Phase (continued)

- ▶ IV2E303J - Edit StartupParms
 - If no FP then put in null values for
 - BSIZ, OTHR, DBFX, DBBF, EPCB
 - Set AOIS=S and ISIS=0 to bypass security for test
 - Set CRC= to null or appropriate value
- ▶ IV2Fxxxx - Batch - bypass for now
- ▶ IV2G102J / IV2G103J / IV2G104J
 - Delete references to IVPDB3 if no Fast Path



MIGRATION



So we have DBCTL - Now what?

▲ Evaluate Current CICS / DLI environment

- ▶ Number of CICS regions
 - Production / Test / Development
 - DB Versions - same DB name in multiple regions
- ▶ Local DLI
- ▶ Remote DLI
- ▶ MRO
- ▶ CICS Shared DB
- ▶ Batch
- ▶ Data Sharing
 - Across Multiple CICS regions
 - Batch sharing



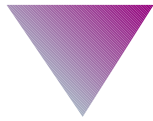
Mixed Environments

- ▲ **Not always necessary to convert everything all at once**

- ▲ **For example**
 - ▶ Some PSB's using Local DLI - some DBCTL
 - All DB's for a PSB must be one or the other
 - Local DLI can continue to use CICS SDB
 - DLI code / buffers will exist in multiple regions

 - ▶ DBCTL data sharing with Local DLI / Batch

 - ▶ Batch not sharing with DBCTL
 - Shutdown DBCTL
 - Take DB's offline



CICS / IMS Release Compatibility

IMS



THE WORLD DEPENDS ON IT

CICS	Local DLI	DBCTL
CICS/MVS 2.1.2 *	IMS/VS 1.3 * IMS/VS 2.2 * IMS/ESA 3.1 * IMS/ESA 4.1	N/A
CICS/MVS 3.1.1 *	IMS/VS 1.3 * IMS/VS 2.2 * IMS/ESA 3.1 *	IMS/ESA 3.1 *
CICS/ESA 3.2.1 *	IMS/VS 2.2 * IMS/ESA 3.1 * IMS/ESA 4.1	IMS/ESA 3.1 * IMS/ESA 4.1
CICS/ESA 3.3	IMS/VS 2.2 * IMS/ESA 3.1 * IMS/ESA 4.1	IMS/ESA 3.1 * IMS/ESA 4.1 IMS/ESA 5.1 IMS/ESA 6.1
CICS/ESA 4.1	IMS/ESA 3.1 * IMS/ESA 4.1	IMS/ESA 3.1 * IMS/ESA 4.1 IMS/ESA 5.1 IMS/ESA 6.1
CICS/TS 1.1 CICS/TS 1.2	N/A	IMS/ESA 3.1 * IMS/ESA 4.1 IMS/ESA 5.1 IMS/ESA 6.1

▲ Convert CICS PSB directory to DBCTL

- ▶ Copy DFHDLPSB macros to new PDS member
- ▶ Change DFHDLPSB to APPLCTN
- ▶ Change MXSSASZ=xxxx to null
- ▶ Change TYPE=ENTRY to
PGMTYPE=BATCH,SCHDTYP=PARALLEL
 - May optionally add RESIDENT to above
- ▶ Add any Batch PSB's that may be converted to BMP's
- ▶ EXAMPLE:

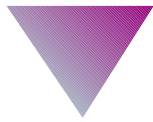
DFHDLPSB TYPE=ENTRY,PSB=DFHSAM14,MXSSASZ=200

APPLCTN PSB=DFHSAM14,PGMTYPE=BATCH,SCHDTYP=PARALLEL

▲ Covert CICS DMB directory to DBCTL

- ▶ Copy DFHDLDBD macros to new PDS member
- ▶ Change DFHDLDBD to DATABASE
- ▶ Change TYPE=ENTRY to null or RESIDENT
- ▶ If Sharing then verify ACCESS= is appropriate
 - EXclusive is the default
- ▶ Add any DB's that were batch only to be converted to BMP
- ▶ Example

```
DFHDLDBD TYPE=ENTRY,DBD=DI21PART,ACCESS=EX  
DATABASE [RESIDENT,]DBD=DI21PART,ACCESS=EX
```

▲ Place these definitions in DBCTL Stage 1 Source

- ▶ IV2C201T is the INSTALIB member
- ▶ Either move into source or use COPY statement
- ▶ May remove IVP definitions (or not)
- ▶ Be sure to leave the DFHDBMP application
- ▶ Change the IMSCTRL macro:
 - (ALL,DBCTL) to (MODBLKS,DBCTL)

▲ Rerun Stage 1

▲ Rerun Stage 2 (much smaller)

DBCTL Online Change

- ▲ **We Just finished building the PDIR and DDIR**

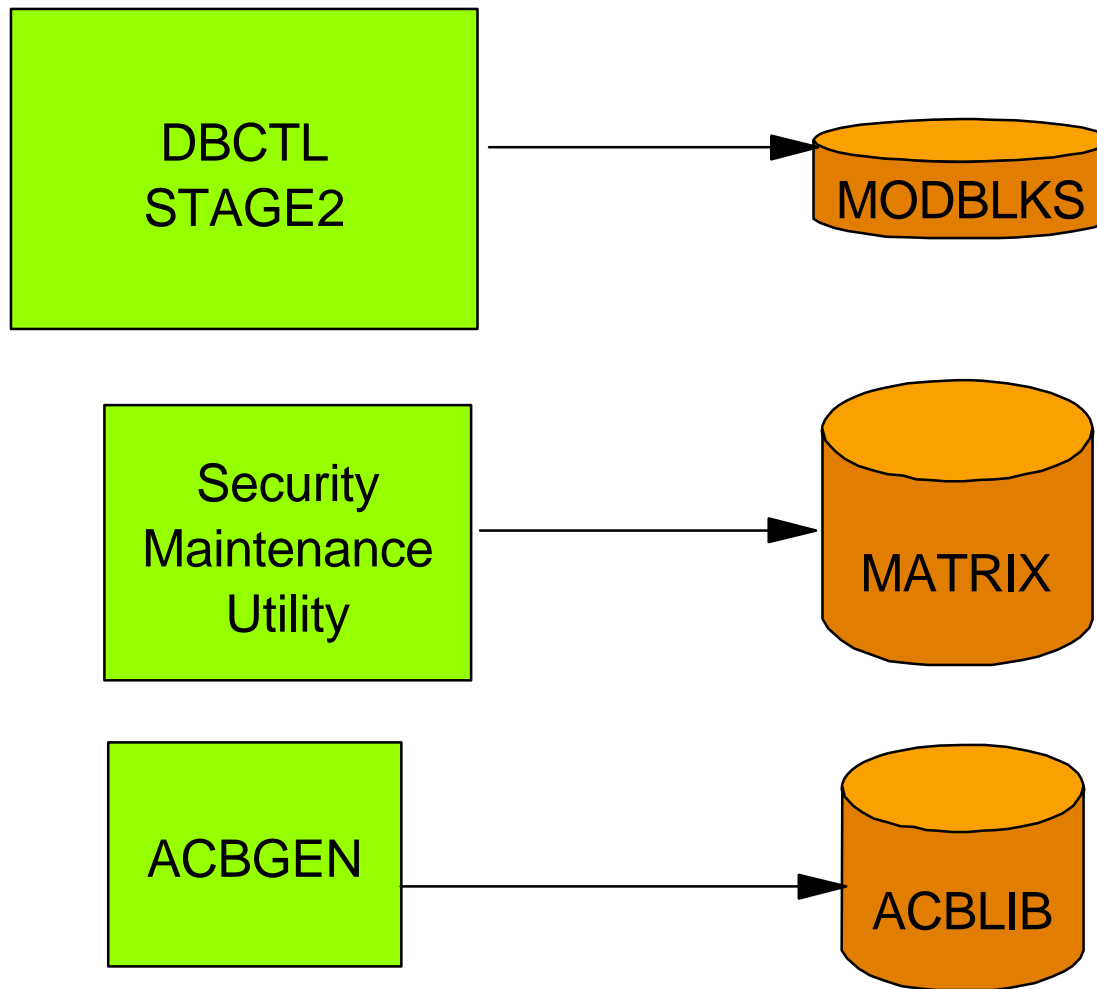
- ▲ **DBCTL will need the online ACB's**
 - ▶ If same release then you can copy to 'staging' ACBLIB
 - ▶ If not the same run ACBGEN into 'staging' ACBLIB'

- ▲ **Copy Staging Libraries to DBCTL 'inactive' library**
 - ▶ Go back and edit IV2E315J - Copy Staging Libraries
 - ▶ Change 'OUT=A' to 'OUT=U' for all steps
 - It will stay this way from now on
 - ▶ Run the Job

- ▲ **Now let's add the resources into the active DBCTL**
 - ▶ /MODify PREPARE ALL & /MODify COMMIT

DBCTL Online Change Step 1

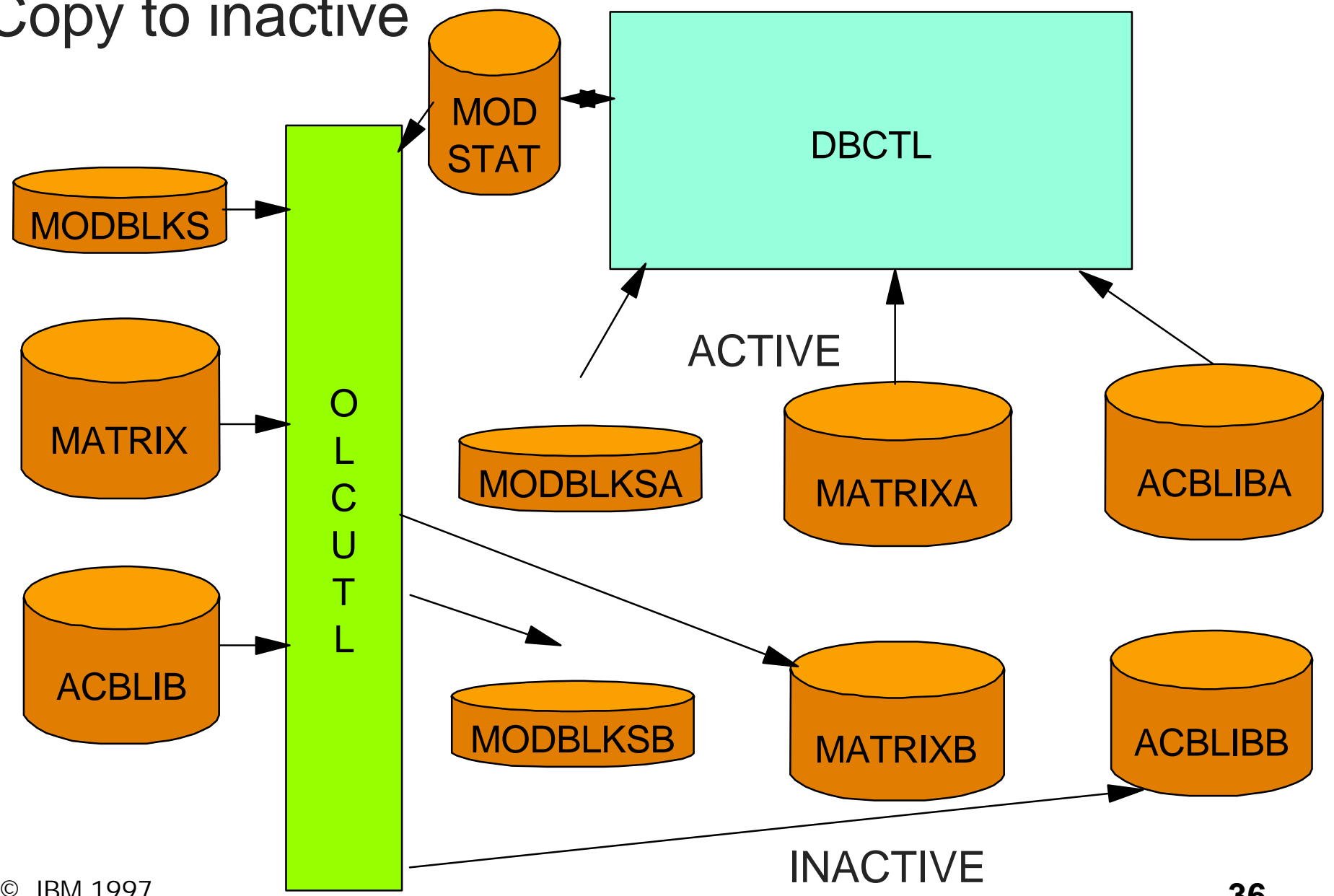
Populate staging libraries

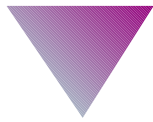




DBCTL Online Change Step 2

Copy to inactive

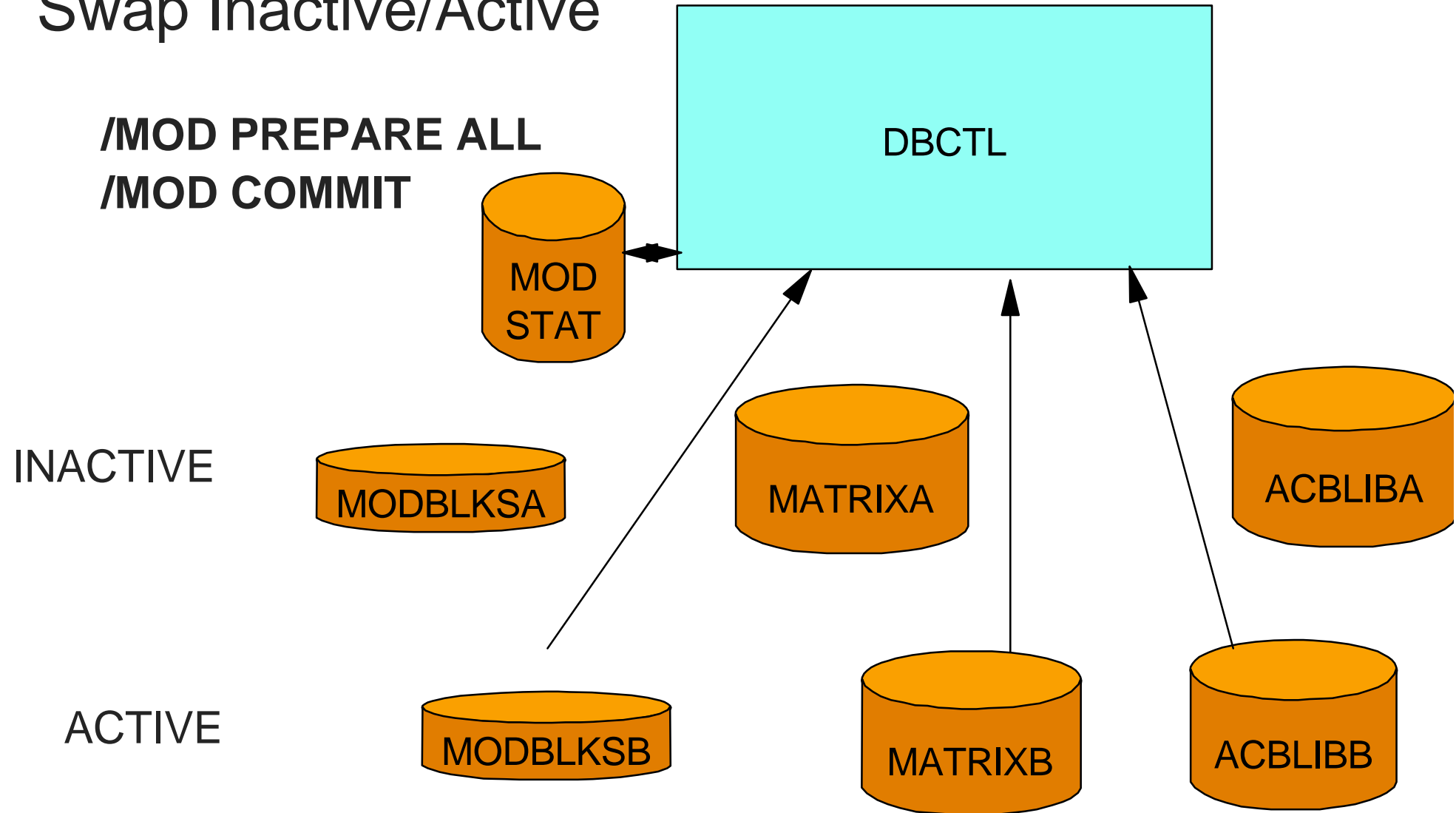




DBCTL Online Change Step 3

Swap Inactive/Active

/MOD PREPARE ALL
/MOD COMMIT



Making Databases Available to DBCTL

▲ If using DD statements

- ▶ Move to DLISAS region JCL
- ▶ Fast Path DEADB's go in CTL region but you don't have them yet if Local DLI

▲ If using MDA (Dynamic Allocation)

- ▶ Move or regen members to DBCTL steplib dataset
 - IMS.RESLIB
 - IMS.MDALIB (make sure it's APF authorized)

▲ Make sure DBCTL is RACF authorized to access Datasets



Before (re)Starting DBCTL



REEVALUATE IMS.PROCLIB MEMBERS

- ▶ DFSPBxxx
 - Adjust DMB=, CSAPSB=, DLIPSB=, PSBW=
 - Look at CICS DMBPL, PSBPL, etc.
 - AUTO=N or Y
- ▶ DFSVSMxx
 - Pointed to from DFSPBxxx
 - Add / Merge CICS DFSVSAMP as a start



Check DBCTL Region Sizes

- ▶ REGION=0K ?
- ▶ IEFUSI limitations ?



What About CICS

STEPLIB CONCATENATION

- ▶ IMS.RESLIB - The one with DBCTL
- ▶ OR Copy DFSPZPxx and DFSPRRC0 over to CICS library

ALL DBCTL

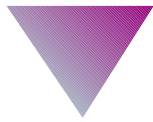
- ▶ Set DLI=NO

SOME DBCTL

- ▶ Remove DBCTL PSB's and DBD's from CICS PDIR / DDIR

Check / Install DBCTL Transactions

- ▶ CDBC - Connect / Disconnect
- ▶ CDBI - Inquire about connection status
- ▶ CDBM - Issue DBCTL commands (CICS V4 & DBCTL V5)



Database Resource Adapter Parms

- ▶ XX is suffix
- ▶ Same table may be used by multiple CICS's
- ▶ PARMs
 - AGN - Application Group Name
 - Only if AGN security checking specified for DBCTL
 - DBCTLID - Default DBCTL for connection
 - TIMER - Reconnection wait time
 - TIMEOUT - Wait for thread completion
 - DDNAME & DSNAME - IMS RESLIB to be dynamically allocated
 - MINTHRD & MAXTHRD - specify normal and peak thread (TCB) usage



Batch (or Shared DB) to BMP (1)

▲ BENEFITS

- ▶ Concurrent database access with CICS
- ▶ Logging by DBCTL
- ▶ Dynamic backout for abends
 - Batch backout not required
- ▶ Automated checkpoint selection for restarts
- ▶ Simplified JCL - The DB's belong to DBCTL
- ▶ Operational Flexibility - Can run anytime



Batch (or Shared DB) to BMP (2)

▲ Conversion tasks

- ▶ JCL
 - Remove DB's, Logs, ACBLIB, DBRC, IRLM
 - Model after IMSBATCH proc
- ▶ BMP's always get passed I/O PCB
 - Programs may already account for one
 - If CMPAT=Y in Shared DB JCL
 - If CMPAT=YES in PSB for Batch
 - If not then ...well you know



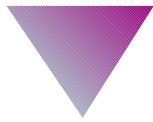
Batch (or Shared DB) to BMP (3)

- ▶ Checkpoint / Restart Logic
 - DB position must be re-established after CHKP
 - Allow for external parm if possible
 - Easier to change frequency
 - Checkpoint every 'n' updates
 - READS
 - IT DEPENDS
 - ◆ If no other concurrent users of DB - no worry
 - ◆ Procopt=GO - no worry
 - ◆ Moving from record to record - no worry
 - ◆ Reading a control record - worry
 - Restart (XRST)
 - Allows program to restart from (last) checkpoint
 - Allows program to save user data on CHKP



Batch (or Shared DB) to BMP (4)

- ▶ GSAM
 - Can use for Sequential files
 - Standard DL/I calls
 - VSAM or BSAM access
 - Checkpoint / Restart support
- ▶ Review DB Backup strategy
 - May not need Before / After copies
- ▶ DBCTL Considerations
 - May need larger DB buffer pools
 - Check / Adjust PIINCR / PIMAX values



▲ **XDLIPRE**

- ▶ Invoked on entry to CICS/DLI Interface
- ▶ May Change or Reject Parameters
- ▶ Might be used to change PSB name
 - DB Versioning
- ▶ Sample in CICS/DBCTL Guide

▲ **XDLIPOST**

- ▶ Invoked on exit from CICS/DLI Interface
- ▶ Let your imagination determine possibilities

▲ **DFHDBUEX**

- ▶ Invoked at successful DBCTL connection
- ▶ Invoked at DBCTL disconnect

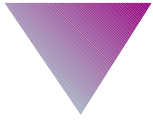
Avoiding DBCTL U0113 Abends

▲ What is it?

- ▶ DBCTL was executing a DL/I call when task abended

▲ How to Avoid

- ▶ Break IMS / non-IMS resources deadlocks from CICS
- ▶ Review Timer Specifications
 - CICS
 - DTIMOUT / FTIMEOUT
 - SPURGE=YES
 - XRF Takeover value (ADI)
 - IRLM deadlock cycle
 - DRA TIMEOUT value
 - DB2 Resource Timeout value
- ▶ Review BMP Checkpoint frequency and PARDLI specification
- ▶ Attempt to cancel hung tasks from DBCTL with /STOP cmd



 **OPERATION**



STARTING DBCTL (COLD)



S DBCTL1 (AUTO=N)

- ▶ DBCTL will automatically start:
 - DBDLS1 (DLISAS region)
 - DBDRC1 (DBRC region)
 - IRLM will NOT be started automatically
 - DFS989I message when initialized



/NRE CHKPT 0 [FORMAT ALL]

- ▶ Cold start DBCTL
- ▶ Format RDS, WADS
- ▶ DFS994I COLD START COMPLETED message



STARTING DBCTL (WARM)



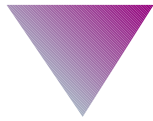
S DBCTL1

- DBCTL will start other regions
- DFS989I IMS (DBCTL) READY (CRC=/) DBCA



/NRE

- ▶ Warm start DBCTL
- ▶ DFS994I WARM START COMPLETED message



STARTING DBCTL (EMERGENCY)

IMS



THE WORLD DEPENDS ON IT

▲ **S DBCTL1**

- ▶ DBCTL will start other regions
- ▶ DFS989I IMS (DBCTL) READY (CRC=/) DBCA

▲ **/ERE**

- ▶ Emergency start DBCTL from prior failure
- ▶ DFS994I EMERGENCY START COMPLETED

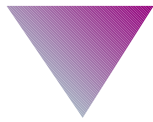
DBCTL AUTO RESTART

▲ S DBCTL1,PARM1='AUTO=Y'

- ▶ AUTO=Y can be specified in DFSPBxxx member
- ▶ DBCTL will determine required restart
 - Warmstart if previous normal shutdown
 - Emergency start if not
 - DFS3136 (or 3137) NORMAL RESTART IN PROCESS
 - DFS994I WARM (EMERGENCY) START COMPLETED

▲ Auto Restart Failure

- ▶ DFS0618A - AN EMERGENCY RESTART OF A NON-ABNORMALLY TERMINATED SYSTEM MUST SPECIFY BACKUP OR OVERRIDE
- ▶ May happen after MVS or Power failure
- ▶ Enter /ERE OVERRIDE



STOPPING DBCTL

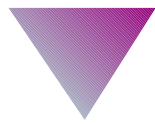
▲ /CHE FREEZE

- ▶ No more Schedule requests allowed
- ▶ Allows active threads to complete
- ▶ Terminates BMP's at next Checkpoint

▲ /CHE PURGE

- ▶ No more Schedule requests allowed
- ▶ Allows active threads to complete
- ▶ BMP's allowed to run to completion

✓ **Restart Note: No automatic connection**



Connecting CICS to DBCTL

▲ CDBC Transaction

- ▶ May override DRA Startup Table
- ▶ May override DBCTL ID

▲ AUTOMATIC

- ▶ After Failure - CICS or DBCTL
- ▶ CRLP
 - CDBC CONNECT SUFFIX(xx) DBCTLID(iiii)
- ▶ INITPARM=(DFHDBCON='xx,iiii')



▲ CDBC Transaction

- ▶ Orderly disconnect
 - Prevents new PSB schedules
 - Allows existing threads to complete
 - Implied by CEMT PERFORM SHUTDOWN

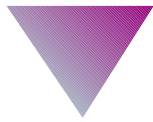
- ▶ Immediate disconnect
 - Prevents new PSB schedules
 - Prevents new DL/I requests
 - DL/I call or PREPARE - Programabend
 - COMMIT request - Task remains in-doubt
 - Waits for TIMEOUT in DRA for active threads
 - Implied by CEMT PERFORM SHUT IMMEDIATE

▲ **CDBI Transaction**

- ▶ Show current status connection status

▲ **CDBM Transaction**

- ▶ Must be at least IMS V5 and CICS V4
- ▶ Allows MOST DBCTL commands from CICS
- ▶ Requires DFHDBMP ACB and APPLCTN in DBCTL



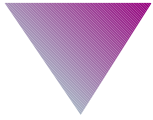
DBCTL COMMANDS

▲ Entered from either:

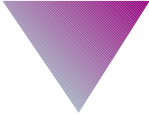
- ▶ MVS Console
 - USE CRC (if defined) or IMSID
/DIS PGM ALL or
DBCADIS PGM ALL
- ▶ CDBM Transaction
 - Enter CDBM
 - Enter DBCTL command on panel

▲ Documented in IMS/ESA OPERATOR's REF

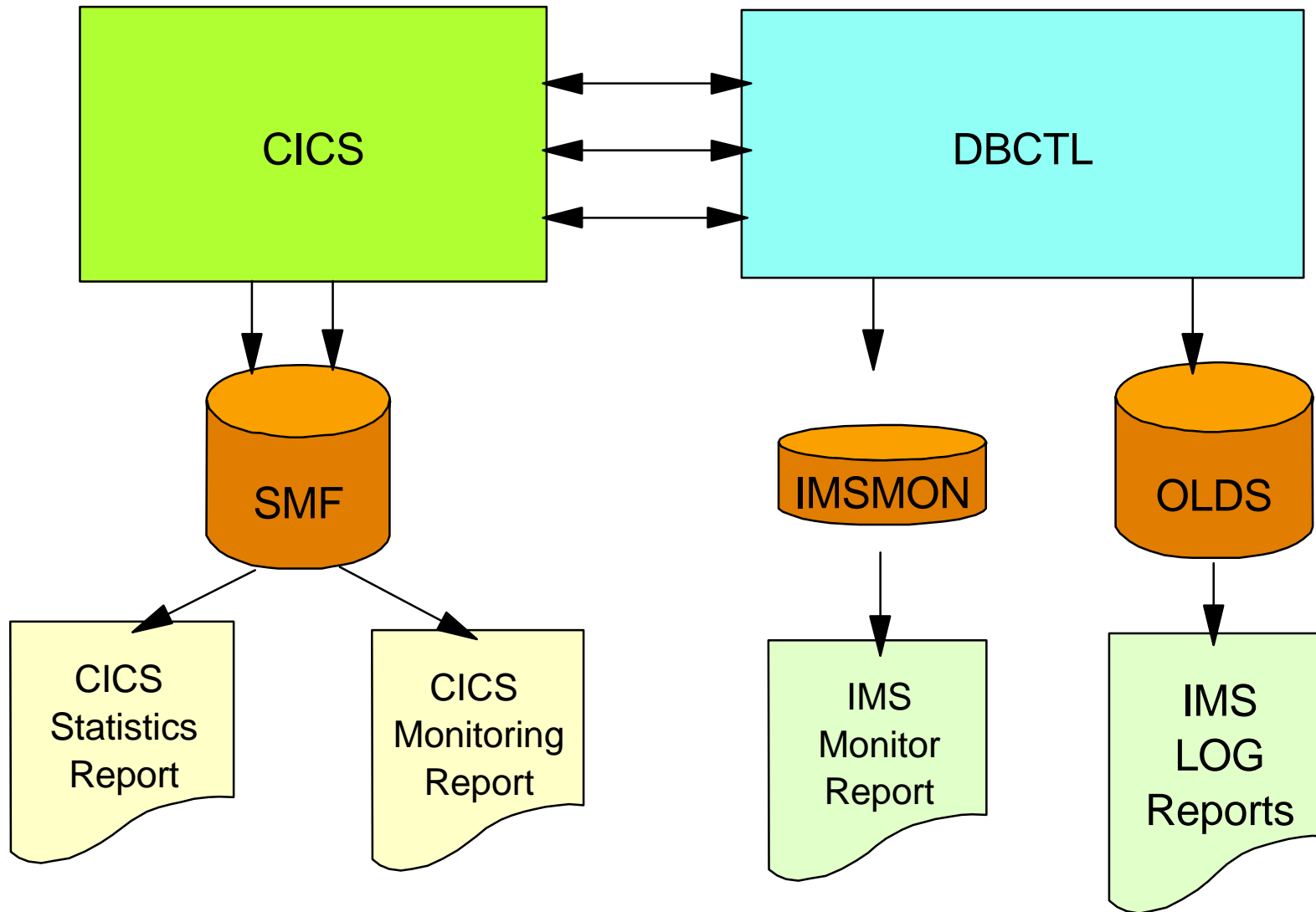
- ▶ All IMS (DBCTL) commands may be abbreviated with 1st three characters - others ignored

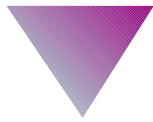


MONITORING AND TUNING



Monitoring / Statistics Overview

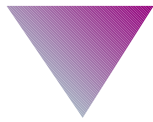




▲ Installation determines when written

- ▶ DBCTL Information
 - Connection time
 - Disconnection time
 - Minimum thread value
 - Maximum thread value
 - Number of times min thread hit
 - Number of times max thread hit
 - Elapsed time at max thread
 - Peak number of threads used
 - Number of successful PSB schedules

- ▶ Print with DFHSTUP utility



▲ For each PSB Schedule

- PSB name
- Scheduling elapsed time
- Scheduling time of day
- Thread TCB CPU time
- Database I/O wait time (Full Function)
- PI wait time
- Number of full function DB I/O's
- Full function DB call counts (by type)
- Number of DEADB calls
- Number of DEADB reads
- etc.



DBCTL DISPLAY Commands

/DIS POOL ALL

- ▶ Scheduling Pool Usage (DMB, PSB, etc.)
- ▶ Database Buffer Pools

/DIS ACTIVE

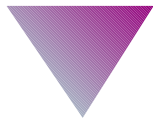
- ▶ Shows DBCTL threads and BMP regions

/DIS CCTL

- ▶ Shows only CICS/DBCTL threads

/DIS PGM , /DIS DB, /DIS AREA

- ▶ Status of PSB's, Databases, Areas



▲ Part of DBCTL

- ▶ Easily turned on and off

`/TRA SET ON/OFF MONITOR ALL`

- ▶ Best performance (least overhead) if DD in JCL

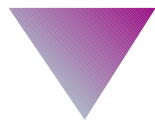
`//IMSMON DD ..,DCB=(BUFNO=5,BLKSIZE=26624)`

- ▶ REPORT created with DFSUTR20 utility

- ▶ Use only for short periods - lots of output
- ▶ Keep output around for comparison

- ▶ Useful Reports

- | | |
|-----------------------|-----------------|
| ▶ Buffer Pool Stats | Program Summary |
| ▶ Program I/O | Reports Report |
| ▶ Transaction Queuing | Call Summary |



▲ **Statistics written at IMS System Checkpoint**

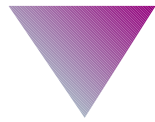
- ▶ Triggered by CPLOG Sysdef Parameter
- ▶ or /CHE [STATISTICS] command
- ▶ Use IMSPARS or User written program to analyze

▲ **Other Statistical Analysis Programs**

- ▶ Process x'08' and x'07' Scheduling and Termination
- ▶ etc.

▲ **Other Vendor Packages**

- ▶ Some create own log records



▲ **IMS Traces**

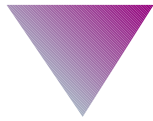
- ▶ Started and Stopped by commands
- ▶ Lock Trace
- ▶ PI Trace
- ▶ PSB Trace
- ▶ Scheduling Trace
- ▶ Various IMS Utility modules to format data

▲ THREADS

- ▶ MIN / MAX in DFSPZPxx for each CICS
- ▶ PST / MAXPST in DBCTL DFSPBxxx must accomodate ALL attached CICS's

▲ SCHEDULING POOLS

- ▶ PSBW
 - Must hold max concurrent requests else scheduling failures
 - Too big does not hurt
- ▶ CSAPSB / DLIPSB
 - Must hold max concurrent requests else scheduling failures
 - Larger will reduce ACBLIB I/O
- ▶ DMB
 - MUST hold all database control blocks else close/open
- ▶ Consider RESIDENT option on APPLCTN / DATABASE macro



▲ DATABASE BUFFER POOLS

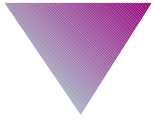
- ▶ Don't skimp - think DB2

▲ OLDS Buffers

- ▶ Defined in DFSVSMxx member
- ▶ Monitor 'waits-for-buffers' in x'4507' log record or...

▲ WADS placement

- ▶ Should be isolated if possible
- ▶ Can have impact on response times / thruput



 **SUMMARY**



Reference Material

- ▲ **SC33-1184 - CICS-IMS Database Control Guide**
 - ▶ Almost everything you wanted to know about DBCTL

- ▲ **SC26-8020 - IMS/ESA Customization Guide**
 - ▶ DRA Interface information

- ▲ **SC26-8023 - IMS/ESA Installation Vol 1**
 - ▶ IMS IVP process

- ▲ **SC26-8024 - IMS/ESA Installation Vol 2**
 - ▶ IMS Sysdef Macros, Procedures, Customization parms



Summary

▲ **Migrate Now**

- ▶ Avoid the Year 2000 rush
- ▶ IMS is alive and well and won't go away

▲ **Many Benefits**

- ▶ How many depends on your environment

▲ **Devote some time to planning a migration strategy**

- ▶ Decide what functions and features are right for you

▲ **Install as soon as possible**

- ▶ It's not all that difficult

▲ **Start testing**

- ▶ Experiment with BMP conversion / operational differences, etc.

▲ **Go back and review initialization and tuning parms**

- ▶ Don't go production until you do