E42

Newly Announced IMS Tools

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  - Program number: 5697-H77
- **IMS Batch Backout Manager V1**
  - Program number: 5697-H75
- **Batch Terminal Simulator V3**
  - Program number: 5655-A14

Part 1 IMS Buffer Pool Analyzer

- **The IMS Buffer Pool Analyzer provides the user with a technique for analyzing IMS batch job and online subsystem database buffer pool performance.**
- **Overview**
- **Data Gathering component**
- **Modeling component**
- **Implementation**
- **Reporting**
- **Summary**

Overview

- Provides more information than IMS database buffer pool hit ratios and I/O rates. In addition, it helps you determine the impact of buffer pool changes before they are made to take the guess work out of changes to the process.
- Modeling facilities to assist with making informed decisions.
- Statistical analysis of the impact of changes affecting buffer pools.
- Provides I/O rates and buffering requirements for a specific database.
- Performs ‘what if’ scenario analysis such as identifying the impact of splitting a specific database into a new buffer pool.
- Implementation- no changes to any IMS subsystems or batch jobs.

Data Gathering component

GTF to gather data

- Procs
  - BPLTRACE PROC
  - BPLGTF PROC

Initiated by the BPLTRACE started task

- Data sets
  - hlq.GTF.PARMLIB
  - hlq.TRACE
- BLPTRACE parameters
  - IMSID= / JOB=
  - DT=, WT=, GT=
  - START BPLTRACE,IMSID=IMSA,DT=360,WT=5,GT=20

Modeling component

- **Batch reporting job.**
- **Output used to improve IMS database buffer pool hit ratios.**
- **The output from a buffer pool modeling execution provides the user with information that can be used to improve IMS database buffer pool hit ratios.**
- **Provides the capability to model different scenarios.**
  - Add subpools
  - Assign database data sets to different subpools
  - As a future direction it is our intent to be able to change the block size / buffer size of database data sets
- **These modeling capabilities allow the user to make changes to IMS database buffer pools (either DL/I batch or IMS control region) with confidence in the resulting performance.**

Implementation

- **Executes on any supported IMS/ESA, OS/390 or z/OS platform**
- **Buffer Pool Analyzer load library (SBPLLOAD) must be APF authorized**
- **Security Requirements**
  - There are no security requirements other than typical data set access
  - The BPLGTF PROC requires the ability to update the TRACE data set specified in the IEFRDER DD statement in the PROC and read access to the GTF.PARMLIB data set specified in the SYSLIB DD statement.
  - The BPLTRACE PROC requires the following accesses:
    - Update access to the GTF.PARMLIB data set
    - Read access to the RECON data sets used by the batch job or IMS subsystem being monitored
    - Read access to the active ACBLIB data sets used by any IMS subsystems to be monitored. For batch (DLI/DBB) jobs, ACBLIB access is not required.

Reporting
DB Data set report

PAGE 3 IMS BUFFER POOL ANALYZER 1.1.0 (H28A110) DATE: 08/26/2002
OSAM DATASET INFORMATION TIME: 00:32:25

DBDNAME	DDNAME	DB TYPE	MASTER HALDBD	DMB NUMBER	DCB NUM	BLOCK SIZE	BUFFER SIZE	SUB-POOL	DSNAME
FLT007	FLT007F1	DL/I		386	1	4,084	4,096		HLQ.IMSV7.FLT007.FLT007F1
LDB001	LDB001F1	DL/I		469	1	4,096	4,096	LDB	HLQ.IMSV7.LDB001.LDB001F1
NRK001	NRK001F1	DL/I		506	1	4,096	4,096		HLQ.IMSV7.NRK001.NRK001F1
PXW001	PXW001F1	DL/I		549	1	8,192	8,192	PX01	HLQ.IMSV7.PXW001.PXW001F1
PXW002	PXW002F1	DL/I		550	1	6,144	6,144		HLQ.IMSV7.PXW002.PXW002F1
PXW016	PXW016F1	DL/I		562	1	8,192	8,192	PX16	HLQ.IMSV7.PXW016.PXW016F1
RNT001	RNT001F1	DL/I		616	1	8,184	8,192		HLQ.IMSV7.RNT001.RNT001F1
RNT002	RNT002F1	DL/I		617	1	8,184	8,192		HLQ.IMSV7.RNT002.RNT002F1
RNT008	RNT008F1	DL/I		623	1	8,184	8,192		HLQ.IMSV7.RNT008.RNT008F1
RNT080	RNT080F1	DL/I		624	1	4,096	4,096		HLQ.IMSV7.RNT080.RNT080F1

PAGE 4 IMS BUFFER POOL ANALYZER 1.1.0 (H28A110) DATE: 08/26/2002
VSAM DATASET INFORMATION TIME: 00:32:25

DBDNAME	DDNAME	VSAM COMP	DB TYPE	MASTER HALDBD OR AREA	DMB NUMBER	DCB NUM	CI SIZE	BUFFER SIZE	SUB-POOL	DSNAME
WCMPDB24	WCM024F1	DATA	DL/I		725	1	4,096	4,096		HLQ.IMSV7.WCMPDB24.WCM024F1

Subpool summary

PAGE 5 IMS BUFFER POOL ANALYZER 1.1.0 (H28A110) DATE: 08/26/2002
DATABASE SUBPOOL SUMMARY TIME: 00:32:25

BUFFER SIZE	TYPE	SUB-POOL	VSAM TYPE	NUMBER BUFFER	BUFFER LIFE	HIT RATIO	REQUESTS PER SECOND	READS PER SECOND
4,096	OSAM	NONE		300	6,169.50	50.0%	0.0	0.0
6,144	OSAM	NONE		200	35.61	95.9%	137.6	5.6
8,192	OSAM	NONE		200	2,056.50	66.6%	0.2	0.0
4,096	OSAM	LDB		300	12.51	97.6%	1,011.1	23.9
8,192	OSAM	PX01		500	10.95	85.3%	310.7	45.6
8,192	OSAM	PX16		500	13.30	85.7%	263.7	37.5
4,096	VSAM		DATA	0	0.00	89.4%	641.1	67.6

DB data set statistics

PAGE 6 IMS BUFFER POOL ANALYZER 1.1.0 (H28A110) DATE: 08/26/2002
OSAM DATABASE STATISTICS TIME: 00:32:25

DDNAME	BLOCK SIZE	BUFFER SIZE	SUB-POOL	HIT RATIO	NUMBER REQUESTS	NUMBER OF READS	REQUESTS / SECOND	READS / SECOND
FLT007F1	4,084	4,096		50.0%	4	2	0.0	0.0
LDB001F1	4,096	4,096	LDB	97.6%	41,590	986	1,011.1	23.9
NRK001F1	4,096	4,096		71.7%	429	121	10.4	2.9
PXW001F1	8,192	8,192	PX01	85.3%	12,780	1,878	310.7	45.6
PXW002F1	6,144	6,144		95.9%	5,663	231	137.6	5.6
PXW016F1	8,192	8,192	PX16	85.7%	10,849	1,546	263.7	37.5
RNT001F1	8,184	8,192		89.6%	126	13	3.0	0.3
RNT002F1	8,184	8,192		91.9%	187	15	4.5	0.3
RNT003F1	8,184	8,192		66.6%	12	4	0.2	0.0
RNT004F1	8,184	8,192		93.8%	49	3	1.1	0.0
RNT005F1	8,184	8,192		91.7%	73	6	1.7	0.1
RNT006F1	8,184	8,192		84.8%	66	10	1.6	0.2
RNT007F1	8,184	8,192		84.2%	57	9	1.3	0.2
RNT008F1	8,184	8,192		72.0%	43	12	1.0	0.2
RNT080F1	4,096	4,096		91.0%	9,468	852	230.1	20.7
**TOTALS				93.0%	81,396	5,688	1,978.9	138.2

Subpool statistics

```
PAGE     10                    IMS BUFFER POOL ANALYZER 1.1.0  (H28A110)                DATE: 08/26/2002
OSAM SUBPOOL STATISTICS / MODELS                                                        TIME:  00:32:25

ACTUAL SUBPOOL CONFIGURATION:
   IMSID/JOBNAME:
   BUFFER SIZE:              4,096  OSAM
   BUFFER POOL ID:            LDB
   NUMBER BUFFERS:            300

ACTUAL SUBPOOL PERFORMANCE:
   BUFFER REQUESTS:         41,590       1,011.1 PER SECOND
   BUFFER HITS:             40,604         987.2 PER SECOND
   BUFFER READS:               986          23.9 PER SECOND
   HIT RATIO:                97.6%
   BUFFER LIFE:              12.51 SECONDS
```

Subpool DB activity

PAGE 11 IMS BUFFER POOL ANALYZER 1.1.0 (H28A110) DATE: 08/26/2002
DATABASES WITH ACTIVITY IN THIS SUBPOOL: TIME: 00:32:25

DBDNAME	DDNAME	BLOCK SIZE	HIT RATIO	NUMBER REQUESTS	NUMBER OF READS	REQUESTS / SECOND	READS / SECOND
LDB001	LDB001F1	4,096	97.6%	41,590	986	1,011.1	23.9

Model projections

MODEL OF VARYING BUFFER POOL SIZES FOR ACTUAL SUBPOOL CONFIGURATION:

		PROJECTIONS				
NUMBER BUFFERS	POOL SIZE (K)	HIT RATIO	READS PER SECOND	HITS PER SECOND	BUFFER LIFE	MARGINAL REDUCTION
4	16	81.3%	188.6	822.5	0.02	
8	32	85.3%	148.5	862.6	0.05	9,020
16	64	88.4%	117.2	893.9	0.13	3,517
32	128	91.2%	88.9	922.2	0.35	1,593
64	256	93.1%	69.0	942.0	0.92	557
128	512	94.9%	51.1	960.0	2.50	252
192	768	95.9%	40.5	970.6	4.73	149
256	1,024	96.7%	33.0	978.1	7.74	104
384	1,536	97.4%	26.1	985.0	14.69	48
512	2,048	97.6%	24.0	987.0	21.24	14
768	3,072	97.6%	23.4	987.7	32.73	2
1,024	4,096	97.6%	23.4	987.7	43.64	0
1,536	6,144	97.6%	23.4	987.7	65.46	0
2,048	8,192	97.6%	23.4	987.7	87.28	0
...						
24,576	98,304	97.6%	23.4	987.7	1,047.47	0
28,672	114,688	97.6%	23.4	987.7	1,222.05	0
32,768	131,072	97.6%	23.4	987.7	1,396.62	0

Summary

- Review storage resources and paging activity.
- Gather BPLTRACE database I/O information.
- Review buffer pool sizes.
- Balance subpools.
- Review subpool buffer allocations.
- Validate the results.
- Implement the updated buffer specifications.

Part 2 IMS Batch Backout Manager

- IMS Batch Backout Manager helps you manage DL/1 application ABENDs and improves database availability. It helps automate the normally manual task of backing out database updates after an IMS Batch Application failure
- Overview
- Primary benefits and use
- Product highlights
- System requirements
- Summary

Overview

- **IMS batch DLI application abend**
  - Close current batch SLDS
  - Perform batch backout
- **Databases unavailable**
  - Data sharing, IRLM locks remain held
- **Application access to data denied**
- **Manual process**
  - Reaction time to initial abend
  - JCL preparation and submission
- **Additional delay time**
  - Wrong logs were used as input for backout

Primary Benefits and Use

- IMS Batch Backout Manager for z/OS performs the following functions whenever an IMS batch DLI application abends:
- Dynamically allocates a batch SLDS for log closure
- Closes the interim batch SLDS
- Dynamically allocates the new batch SLDS for batch backout
- Performs the batch backout
- Works with IMS Extended Restart facilities
- Supports IMS Program Restart Facility V2.1

Primary Benefits and Use *(continued)*

- *Additional functions that IMS Batch Backout Manager performs:*
- *Forces the allocation of batch SLDS for jobs with no logs allocated (by specific or generic job name)*
- *Forces DBRC=Y (or DBRC=N) for IMS batch systems not generated with DBRC=FORCE (by specific or generic job name)*
- *Dynamically allocates a Batch Backout Control Data Set (BBDS)*
  - ***Log info at the time the batch job was running***
- *Options Data set or //BCM$CNTL DD statement*
  - ***GBL/PGM/PSB/JOB records***
  - ***all jobs, or a particular job, program, and/or PSB***

Product Highlights

- *Automation of the batch backout process after specific application abends*
- *Dynamically handles log close and allocation*
- *Ease of implementation and use*

Sytem Requirements

- IMS/ESA Version 6
- IMS/ESA Version 7
- IMS/ESA Version 8
- OS/390 V2R10 or later
- z/OS platform.

Summary

- IMS Batch Backout Manager automatically cleans up uncommitted database updates without any manual JCL changes
- IMS Program Restart Facility automaticaly supports IMS Extended Restart by supplying the correct CHKPTID without JCL Changes

Part 3 Batch Terminal Simulator V3

- What is BTS ?
- What does BTS provide ?
- Supported IMS applications
- IMS Regions for running BTS
- BTS Limitations
- Why use BTS ?

Contents *(continued)*

- *How does BTS work ?*
- *What goes in BTSIN ?*
- *BTS Commands Summary*
- *What is contained in BTSPUNCH ?*
- *What is contained in BTSOUT ?*
- *BTS V3 Highlights*

What is BTS

Tool for Debugging and Testing IMS DB/DC

- Executes in TSO or IMS BATCH/Online Environment
- Simulates IMS DC calls
- Provides Trace of all DL/I calls, SQL calls and MQ calls and related details

What does BTS provide ?

- **Provides a comprehensive means for:**
  - Checking IMS application program logic
  - Testing IMS application Interfaces
  - Interactive testing
    - COBOL Interactive Debugging
    - TSO test for Assembler
    - PL/I Interactive Debugging
    - LE/370 Interactive Debugging
  - Simulating Teleprocessing Activity
  - Formatting of 3270 Input/Output
  - Database Activity

What does BTS provide ? *(Continued..)*

- **Multi-version IMS support from a single BTS loadlib**
- **All supported IMS versions supported**
- **Supports all current releases of DB2, Websphere MQ**
- **Full Screen Support**
  - Runs in TSO Foreground
  - Makes TSO Terminal appear as IMS Terminal
  - Interacts with application as though online
  - Invokes MFS to format screen
  - Allows user to enter new data through formatted screen
  - Invokes any application to access any data base under user control

What does BTS provide ? *(Continued..)*

- **Supports programs using the following interface**
  - Application interface block (AIB)
  - Common execution environment (CEE)
  - Common execution library (CEL)
- **Supports IMS DLI Changed Data User Exit (CDUE)**
- **Supports DB2 Changed Data Capture (CDC)**
- **Supports APPC applications**
- **Supports IMS Spool API Advanced Function Print Facility**
- **Supports user exit interface for SAIL and TSS call**

Supported IMS applications

- **BTS supports the following IMS applications**
  - MSG (MPP)
  - BATCH
  - BMP
  - Fast Path (IFP)
  - JBP
  - Conversational Teleprocessing

IMS Regions for running BTS

- **BTS can be run under the following IMS regions**
  - DLI/DBB - Batch Execution
  - BMP - Online Execution
  - JBP - Online Execution

BTS Limitations

- Does not duplicate complexity of IMS DC
- Access Fast Path Data Base in only BMP type region
- Can not access Terminal Related MSDB
- Limited support for MFS bypass

Why Use BTS ?

- Stabilizes the testing and production environment
- Testing is transparent to the application program
- Provides Regression test capabilities
- Enhances performance

How does BTS work ?

- Attaches IMS Region Controller
- Passes PSBNAME and EXEC PARMs to it
- IMS Region Controller Initialization
- All IMS/DB2/Websphere MQ calls are intercepted by BTS
  - for IMS DB calls, IMS program request handler is called
  - for IMS DC calls, BTS routines are called to process request
  - for SQL calls/Websphre MQ calls, IMS External Subsystem program request handler is called
- The MFS modules are called to provide 3270 formatting services

What goes in BTSIN ?

BTS Commands

- Define IMS/DC Environment
  - Transaction
  - Program
  - SPA (if conversational)
  - Format of BTS Simulator statements
- Control BTS Output
  - BTSOUT Listing
  - BTSSNAP Dump Generation

What goes in BTSIN ? *(Continued..)*

BTS Simulator statements

- Cause the actual program execution
- For Batch & Non-Message Driven BMP it consists of a dummy transaction code
- For MP (MPP/IFP) and Message Driven BMP it consists of the transaction code that a program receives from GU to IOPCB
  - Process by MFS first if formatted
  - Directly to program if not formatted

What goes in BTSIN ? *(Continued..)*

IMS Commands

- /FORMAT defines the following data if formatted
- /EXIT ends conversational processing
- /SET, /RESET used for Message Switching
- Others

BTS Commands Summary

- **./C**
  - Defines the usage of interactive Debug of some language
- **./D**
  - Defines the device by supplying the logical terminal name for the IOPCB
- **./E**
  - Defines the environment that the transaction is executed in
- **./O**
  - Specifies what is to be reported in BTSOUT and whether messages will be displayed on the TSO screen

BTS Commands Summary *(Continued..)*

- **./P**
  - Defines a patch which is to be applied to the application program (ZAP)
- **./R**
  - Defines the input format of the simulator statements or the SPA command (hex or char)
- **./S**
  - Defines some special action of SNAP
- **./SPA**
  - Defines the BTS Scratch Pad Area for Conversational Processing

BTS Commands Summary *(Continued..)*

- **./T**
  - Defines each primary and secondary transaction name
  - Defines alternate logical terminals
  - Transaction code must be defined prior to application processing
- **./***
  - Comment line

What is contained in BTSPUNCH ?

- Contains any input transactions or input data specified in BTSIN or from a TSO Terminal
- This input data is saved mainly for Regression testing

What is contained in BTSOUT ?

- **Displays the activities which has occurred in BTS**
  - Screen image/layout
  - Data base segments
  - Message queue segments
  - Statistics per PCBNAME
  - DL/I calls and related details
    - Segment search argument
    - Scratch Pad Area
    - Key Feedback Area
    - I/O Area

What is contained in BTSOUT ? *(Continued..)*

- SQL calls and related details
  - SQL calls function
  - Error status in the SQL communication area
  - IFI SQL statement information
  - Input/Output variables
- MQI calls and related details
  - MQI call function
  - Error status
  - Input/Output message variables

BTS V3 Highlights

BTS Playback report program

- **Generates BTSIN control statement with the corresponding MFS associated with the MODNAME from IMS transaction log records ('01'X, '03'X)**
  - **Step 1: Determination of Log Datasets**
    - a. Extraction of Log Dataset names from RECON
    - This step is optional - the log datasets can be coded directly in the JCL for Step 2.
  - **Step 2: Analysis of Log Data**
    - a. Extraction of the '01'X and '03'x Log records from the IMS OLDS or SLDS Log
    - This step creates the various log statistics and usage lists which are used to determine which queue log records should be processed
- **Prints containing screen images of transactions including data, USER/LTERM identification, timestamp by extracting from BTSOUT**
  - **Step 3: Creation of the Playback Screens**
    - a. Preparation of the data for processing by BTS
    - b. Processing of the data by BTS
    - c. Editing of the final report
    - This step creates the files containing the screen images. .

BTS V3 Highlights *(continued)*

Java Language application under JBP region supported

- provides support for DB2 call trace, WebSphere MQ call trace, LU6.2/APPC, ETO Status code and more.

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