

Tuning IMS Batch

Glenn Witt

Lead MSM SQA Engineer



IMS: Mission Critical but Expensive

Reduced IT Costs

24x7 Access via Mobile and Internet

Improved Availability

Ongoing Requirement to Do More with Less

Enhanced Performance

Skills Shortage Growing More Critical

Increased Productivity

Reduce Cost: Lower MIPS usage

Reduced IT Costs

Minimal Impact: Dynamic Deployment

Improved Availability

Evolving: Adopt & Exploit environment changes

Enhanced Performance

Policy Based: Leave the user in control

Increased Productivity

Mundane tasks are automated – your workload decreases

CPU and Elapsed time usage is reduced – your cost decreases

Faster response to changes – your availability increases

Tune DFSVSAMP Buffers

Costly Solution

Activate OSAM Sequential Buffering

Static Solution

Analyze Application Check Point Logic

BMC Application Restart Control



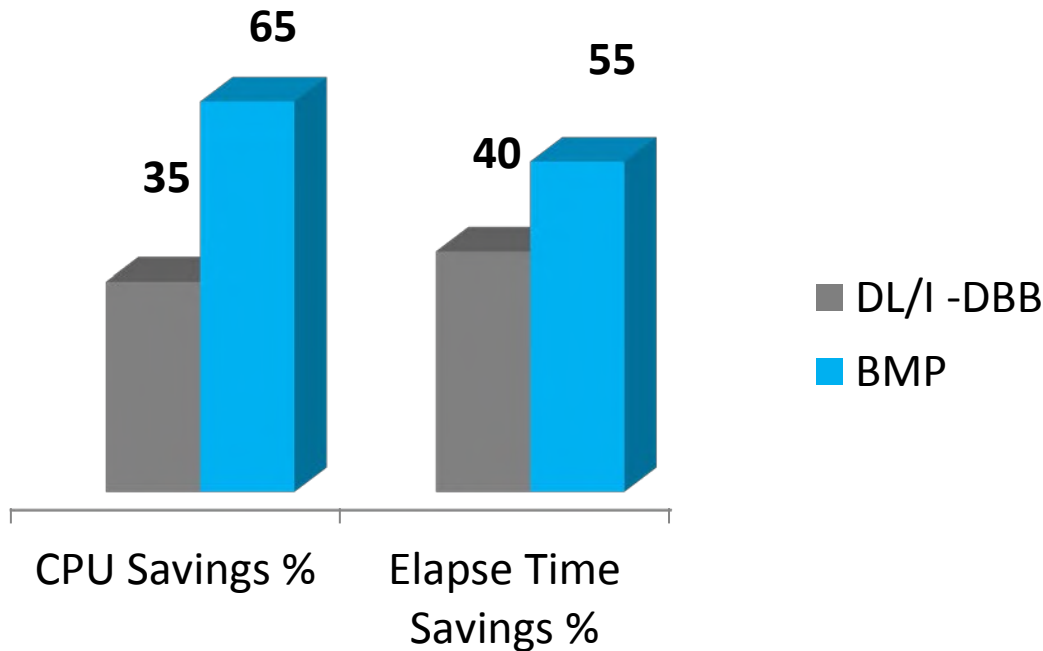
- ▶ **IMS Application Checkpoint Pacing**
 - IMS and DB2 checkpoint/commit processing
 - Required but a necessary evil
 - Extremely expensive – 100% overhead

- ▶ **BMC Application Restart control**
 - Policy Driven – No JCL changes
 - Reduce checkpoint frequency to match hardware speed
 - Checkpoints at database record boundaries
 - Reduce CPU and Elapsed time consumption

BMC Application Accelerator for IMS

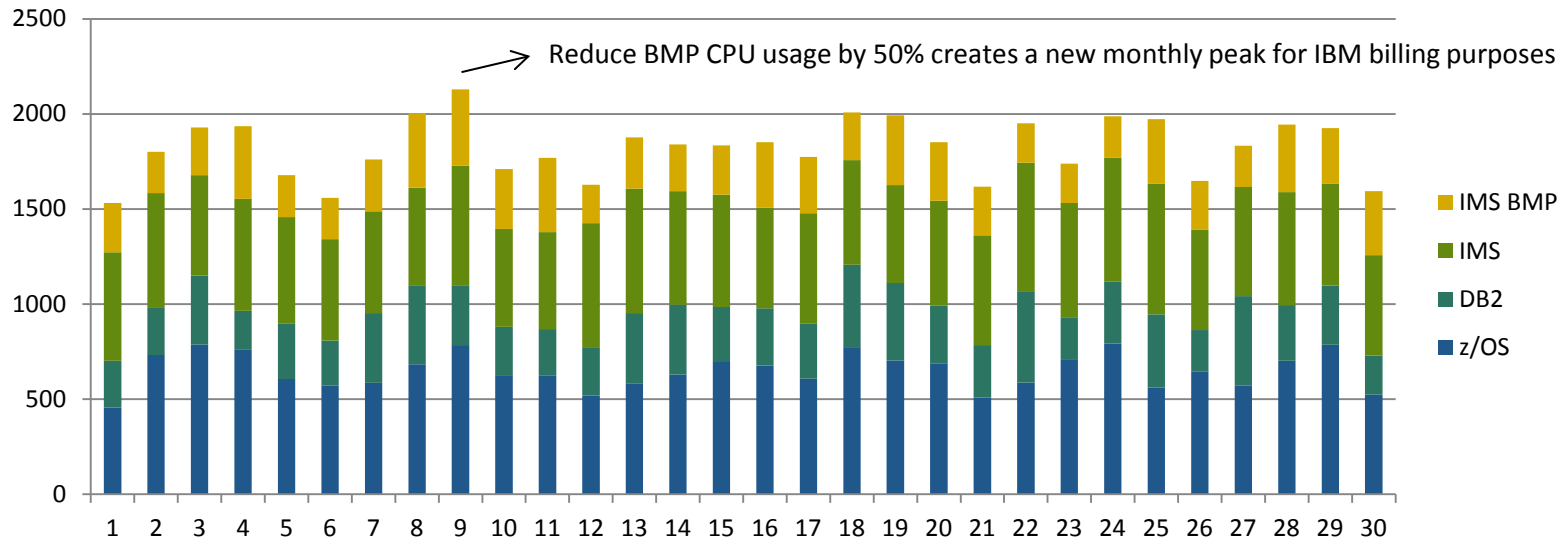


- ▶ What the product does
 - Reduces the CPU used by IMS batch workloads
 - Opportunity to reduce IBM MLC fees with monthly peak reduction
 - Reduces the elapsed times of IMS batch workloads
- ▶ Observed Savings



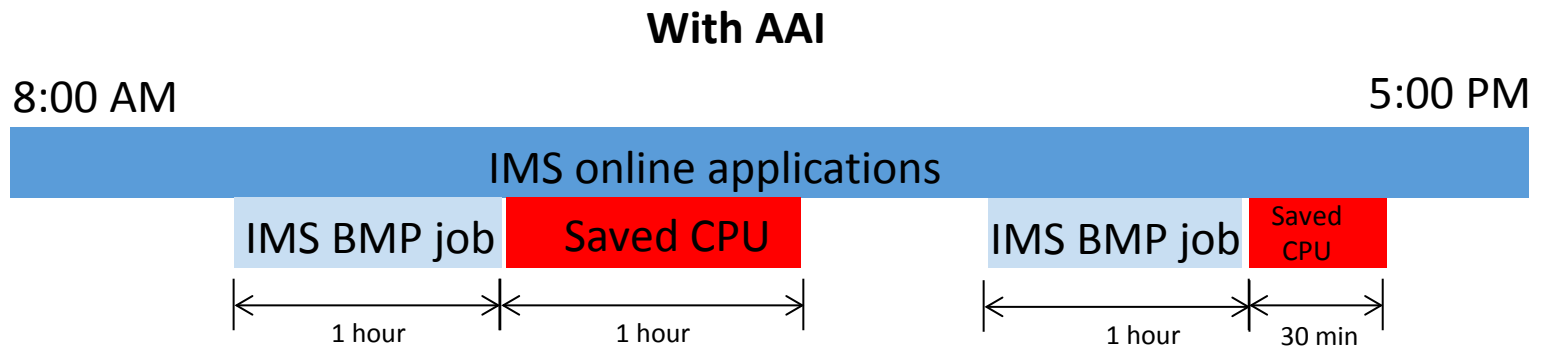
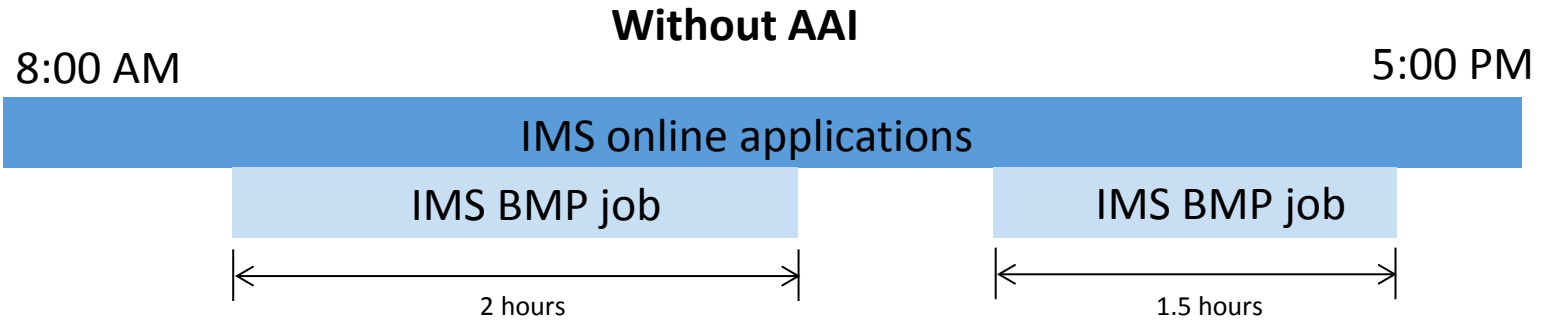
Note: improvement numbers can vary based on the number and type of DL/I calls performed by the application

Using AAI to lower MLC fees



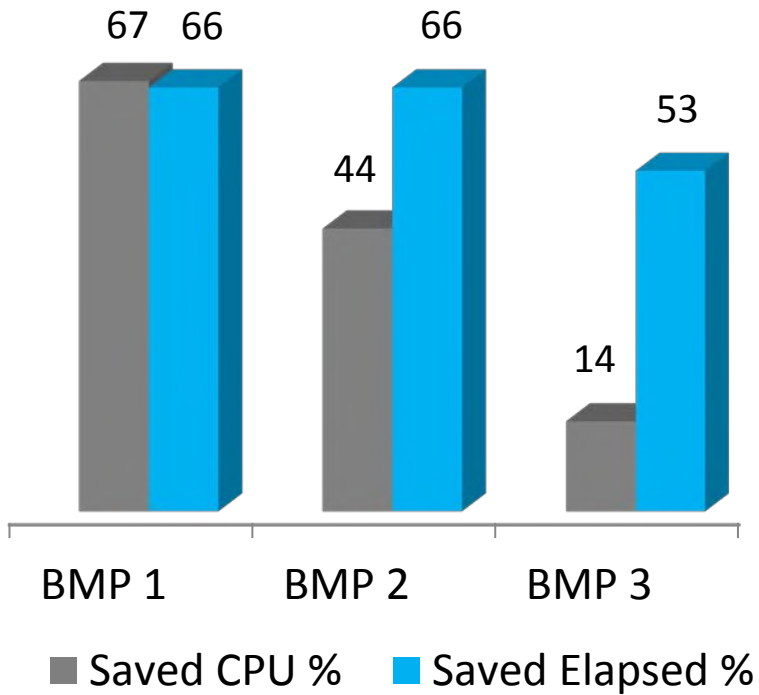
	Cost/MSU	Old Peak	Monthly Cost	New Peak	Monthly Cost	Monthly Savings
z/OS	\$49	2,129	\$104,321	2,004	\$98,196	
DB2	\$54	2,129	\$114,966	2,004	\$108,216	
IMS	\$122	2,129	\$259,738	2,004	\$244,488	
IMS BMP	\$122	2,129	\$259,738	2,004	\$244,488	
			\$738,763		\$695,388	\$43,375

NOTE: This data is for illustration purposes only

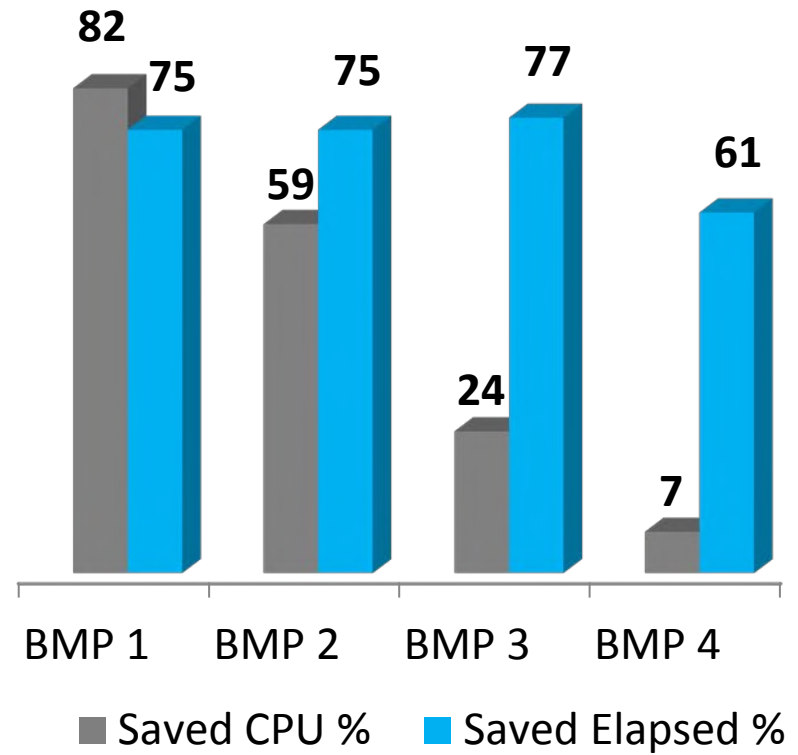


NOTE: This data is for illustration purposes only

IT Services company



Financial services company



- ▶ How does it do it
 - Monitors / analyzes IMS batch applications
 - Dynamically implements optimal resource settings

- ▶ Key features
 - Policy Driven - No JCL or Application Changes
 - Simple GUI - Integrates with existing BMC IMS GUI
 - Resource savings - Shows CPU and elapsed time savings
 - Trial Utility - Add AAI to specific jobs to quickly validate ROI

- ▶ Supports IMS applications accessing Full Function databases
 - Including HALDBs

- ▶ Supports the following types of applications
 - DL/I
 - DBB
 - BMP (Released GA September 27th 2013)

- ▶ Performs the following optimization
 - BMC Enhanced I/O substitution
 - OSAM sequential buffering
 - DFSVSAMP tuning

- ▶ Substitute BMC's I/O engine for certain DL/I calls
- ▶ Dramatically improve buffer management for random access
- ▶ Significant reduction in CPU and Elapsed time
- ▶ Dynamic disengagement and hand over to IMS DL/I if required
 - All database positioning remains intact
- ▶ Supports IMS DL/I batch & DBB applications performing reads
- ▶ Supports IMS BMP applications performing reads without integrity

- ▶ DL/I call Statistics are accumulated for each run
 - Potential OSAM DBPCBs identified
 - IMS DLI Call patterns captured
- ▶ OSAM sequential buffering is activated when appropriate
- ▶ Recommendations change based on call pattern and call volumes
- ▶ Supports IMS DL/I batch, DBB applications

- ▶ Statistics are accumulated for each run
 - VSAM and OSAM buffer pool utilization statistics
 - IMS DLI Call statistics by DBPCB
 - IMS Database dataset statistics
- ▶ Optimal buffers are dynamically allocated for the job step
 - Eliminates excess buffer allocations for unused buffer pools
- ▶ Recommendations change based on call pattern and volumes
- ▶ Supports IMS DL/I batch, DBB applications

AAI - Graphical Interface

The screenshot displays the BMC Database Management console interface. On the left, a navigation tree shows the hierarchy: Enterprise Data > Connections > IBO-A > IMS Applications. A blue callout bubble points to 'IMS Applications' with the text 'Single Console for BMC IMS products'. The main area shows a 'Details' window with the following information:

Name	Value
Connection	IBO-A
User logged on	agw
A license exists for:	
	MAXM Database Advisor for IMS
	Backup and Recovery Solution for IMS
	BMC Application Accelerator for IMS

At the bottom, a 'Messages' log shows the following entries:

Severity	When	Message	Source
OK	Wed, Feb 20 01:33:31 PM	BMCDNA274000I: Connected to: IBO-A	System
OK	Wed, Feb 20 01:33:22 PM	BMCDNA274009I: Server side tracing has been turned off.	System
OK	Wed, Feb 20 01:33:12 PM	BMCIBO310500I: BMC Application Accelerator for IMS version 1.00.00 0902B build 0	BMC Application Accelerator for IMS
OK	Wed, Feb 20 01:33:12 PM	BMCMXA340519I: MAXM Database Advisor for IMS 2.04.00 build 101 is started.	IMS DB Advisor
OK	Wed, Feb 20 01:33:12 PM	BMCBRI310500I: Backup and Recovery Solution for IMS has been initialized, version 4.05.00 build 147	IMS Rec Advisor
OK	Wed, Feb 20 01:33:11 PM	BMCDNA274425I: The Pub/Sub service is listening on port 3683	System
OK	Wed, Feb 20 01:33:07 PM	Welcome to BMC Database Management Console	System

Configure JCL Parameters

Configure Defaults

Configure Defaults for IMS Application Accelerator

Default Settings

Primary filter	JOB Name ▾
Process DL/I	<input checked="" type="radio"/> Yes <input type="radio"/> No
Process DBB	<input checked="" type="radio"/> Yes <input type="radio"/> No
Process BMP	<input checked="" type="radio"/> Yes <input type="radio"/> No
Turn off Application Accelerator	<input type="radio"/> Yes <input checked="" type="radio"/> No
Turn off dynamic screening	<input type="radio"/> Yes <input checked="" type="radio"/> No
Use Custom I/O for Update Procopts	<input checked="" type="radio"/> Yes <input type="radio"/> No
Number of monitor runs	<input type="text" value="3"/>
Min DL/I Calls for capturing statistics	<input type="text" value="1000"/>
Unit for Temporary Dataset Allocations	<input type="text" value="SYSALLDA"/>
Management class (MGMTCLAS)	<input type="text"/>
Storage class (STORCLAS)	<input type="text"/>
Data Class (DATACLAS)	<input type="text"/>

Manage Defaults window

Use the Manage Defaults window to specify default values for the parameters that control how BMC Application Accelerator for IMS operates in your environment and interacts with your applications. The parameters in this window are identical to the parameters on the Configure Defaults page of the Application Accelerator [Setup Wizard](#).

The window displays the following parameters:

- [Primary filter](#)
- [Process DL/I](#)
- [Process DBB](#)
- [Turn off Application Accelerator](#)
- [Use custom I/O for Update Procopts](#)
- [Turn off dynamic screening](#)
- [Number of monitor runs](#)
- [Minimum DL/I calls for capturing statistics](#)
- [Unit for Temporary Data Set Allocations](#)
- [Management Class \(MGMTCLAS\)](#)

< Back Next > Finish Cancel

Policy **Exclude**

Users control scope with simple policies

Policy Display Filter

MVSID	IMSID	PSB Name	PGM Name	JOB Name
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

[+ Add Like](#)

[↶ Clear](#)

Policies

MVSID	IMSID	PSB Name	PGM Name	JOB Name	Action
IMSA	BMC1	CORPDBG	DBREAD	IBOD0010	Optimize
SYSP	IMSA	PSB1	PGM1	JOB1	Optimize
*	*	*	*	AGW*	Optimize
*	*	*	*	IBOIBI	Ignore
*	*	*	*	IBOT*	Optimize
*	*	*	*	IBOD*	Optimize
*	*	*	*	IBOE*	Optimize
*	IMSA	PSB*	*	PRODIMS*	Monitor
*	*	*	*	IBOB*	Optimize
*	*	*	*	IBOV*	Optimize

[↑ Move Up](#)
[↓ Move Down](#)
[✕ Delete](#)
[✎ Edit](#)
[+ Add](#)
[? Recommend Jobs](#)

- **Jobs are selected based on policies**
- **The first policy that matches wins**

Recommended Jobs: Based on Best Resource Savings

Monitor runs required before optimizing JOBSTEP: 5

Jobs are recommended for optimization

Select Recommended Jobs for Optimization. Choose one or more rows.
Rows are ordered from top to bottom for best Return on Investment.

MVSID	IMSID	PSB Name	PGM Name	JOB Name	Monitor Runs	Step	ProcStep	Type
IMSA	IMSG	XIU0GON	DBREAD	AGWXDBFF	1	DBREAD1	DLIUPROG	DLI
IMSA	MXOA	F9P1GO	DBREAD	AGW43JOB	3	DBREAD1	DLIUPROG	DLI
IMSA	MXOA	CORPDB2	DBRDU2	AGWJOB10	2	STEPRD	DLIUPROG	DLI
IMSA	BMC1	CORPDBG	DBREAD	IBOD0010	5	DBREAD1	DLIUPROG	DLI
IMSA	REAL	XIU0GON	DBREADCK	AGWXDBFF	3	REPORT94	DLIUPROG	DLI

Optimize policies can be created from the list

Help Create Optimize Policy Cancel

AAI – Resource Savings Report

Resource Savings imsa:14101

Help Export

Export job step history

Summary of savings

Total Optimized Job Steps: 1,860
 Total CPU Service Units: 2,825,977 K
 Total Elapsed Time in Seconds: 474,308

MVSID	IMSID	PSB Name	PGM Name	JOB Name	Step Name	Procstep Name	Type	Saved CPU Service Units	Saved Elapsed Seconds
MSA	MXOA	K9EXG2	F9RDRG	IBOB1125	DBREAD1	DLIUPROG	DLI	471 K	252
MSA	MXOA	HDMEXS	DBREAD	IBOC0010	DBREAD1	BMPUPROG	BMP	13,945 K	2,428
MSA	MXOA	HDMEXS	HDMRDRG	IBOC0015	DBREAD1	BMPUPROG	BMP	8,617 K	3,089
MSA	MXOA	HDMEXS	DBREAD	IBOC0020	DBREAD1	BMPUPROG	BMP	10,697 K	825
MSA	MXOA	HDMEXS	HDMRDRG	IBOC0025	DBREAD1	BMPUPROG	BMP	6,964 K	751
MSA	MXOA	IG01BCG	DBREAD	IBOC0050	DBREAD1	BMPUPROG	BMP	588 K	64
MSA	MXOA	IGEXG2	IGRDRG	IBOC0055	DBREAD1	BMPUPROG	BMP	643 K	62
MSA	MXOA	F9P1GO	DBREAD	IBOC0070	DBREAD1	BMPUPROG	BMP	5,408 K	1
MSA	MXOA	F9EXG2	F9RDRG	IBOC0075	DBREAD1	BMPUPROG	BMP	10,456 K	888
MSA	MXOA	F9P1GO	DBREAD	IBOC0080	DBREAD1	BMPUPROG	BMP	6,020 K	210
MSA	MXOA	F9EXG2	F9RDRG	IBOC0085	DBREAD1	BMPUPROG	BMP	7,838 K	1
MSA	MXOA	J9P1GO	DBREAD	IBOC0090	DBREAD1	BMPUPROG	BMP	21,092 K	4,180
MSA	MXOA	J9EXG2	F9RDRG	IBOC0095	DBREAD1	BMPUPROG	BMP	17,747 K	2,321
MSA	MXOA	J9P1GO	DBREAD	IBOC0100	DBREAD1	BMPUPROG	BMP	8,850 K	840
MSA	MXOA	J9EXG2	F9RDRG	IBOC0105	DBREAD1	BMPUPROG	BMP	9,994 K	2,099
MSA	MXOA	K9R1GO	DBREAD	IBOC0110	DBREAD1	BMPUPROG	BMP	11,126 K	1

Resource Savings imsa:14101 Resource Savings imsa:11334

Message Source

▶ “Set it and forget it”

- Define the policies and let it run
- Comes with DBA Toolkit – not required for product operation

▶ Deployment modes

- Monitor – will analyze jobs and provide list of jobs for optimization
- Optimize – will analyze for first 3 (default) runs then optimize

- ▶ Number of DL/I calls - AAI ignores jobs with low count of calls
 - Less than 1000 calls – No data capture; no optimization
 - Less than 25000 calls – No OSAM sequential buffering recommendation
 - Less than 100,000 calls – No Enhanced I/O recommendation

- ▶ Type of DL/I calls – Processing options (PROCOPTs)

- ▶ Database disorganization

- ▶ Time of day (profile of workload) in environment

- ▶ LPAR status in environment

- ▶ **September, 2013**
 - Update to V1.0.00 adding support for BMP jobs

- ▶ **December, 2013**
 - V1.1.00
 - IMS V13.1 support
 - Enhanced reporting
 - Job history
 - Optimization exceptions

- ▶ **2014**
 - Increase scope of AAI BMP support

