# BPA4DB2™
IMPROVE PERFORMANCE AND LOWER COSTS

Efficient buffer pool tuning improves performance and saves on expensive mainframe resources. However, buffer pool tuning usually proves to be challenging. In many cases, it is so daunting and labor intensive that it tends to be done as a project and only when "needed". Seldom is it implemented as an ongoing task. This lack of monitoring leads to I/O problems, avoidable CPU consumption, inefficient storage usage, and might in succession tempt to premature CPU upgrades and memory expansion. BPA4DB2 offers a better and cost effective alternative. Designed to be easy to use, it offers Expert System Problem Detection, Problem Resolution Guidance and Automated Audit with Pro-Active Notification for impending problems.
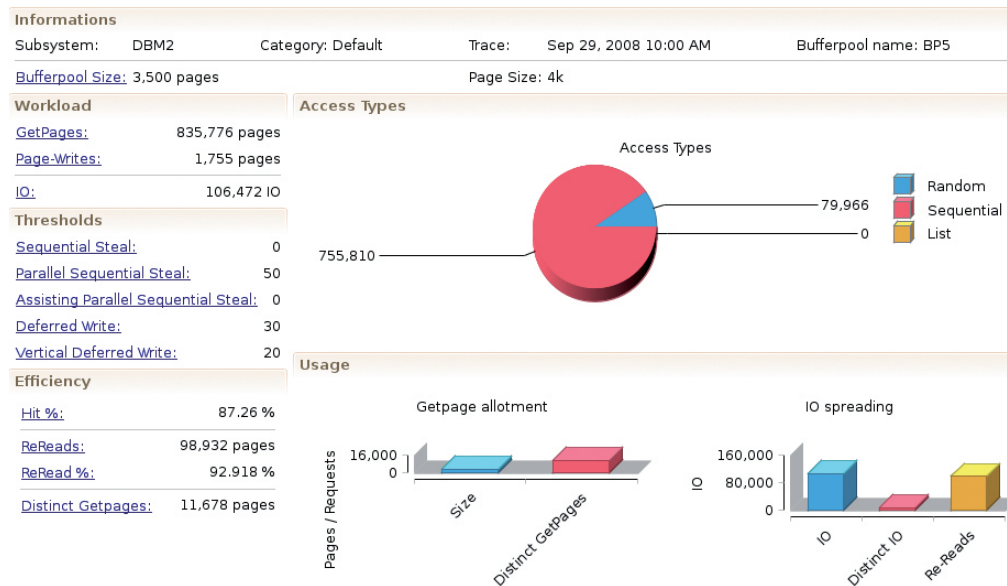
Automatic Problem Detection

The question is: "Are there problems with the bufferpools or is the bufferpool setup optimal?" In other words, is there tuning potential or not? Can changes to the bufferpool setup improve overall performance or will the changes prove unneeded? How much improvement can be expected? Is it possible to save CPU time? Can access times be shortened, bottlenecks eliminated and related problems avoided?

Revealing problems and tuning opportunities need to be complemented with a metrics system that quantifies the expected improvements. This is particularly important to those responsible for maintaining multiple DB2 subsystems. BPA4DB2 has been designed to provide precise metrics for those who need them.

ReReads and the ReRead Percentage are unique indicators of good or bad buffer pool behavior. Distinct GetPage describes the memory capacity requirements. ReReads identify avoidable I/Os while Distinct GetPage stand for the size a buffer pool requires. BPA4DB2's assessment rule is simple:

No ReReads –
leave bufferpools alone and use time more wisely

ReRead Percentage > 10% –
there is an opportunity to enhance performance

Informations

Subsystem: DBM2	Category: Default	Trace: Sep 29, 2008 10:00 AM		Bufferpool name: BP5
Bufferpool Size: 3,500 pages		Page Size: 4k		

Workload

GetPages:	835,776 pages
Page-Writes:	1,755 pages
IO:	106,472 IO

Thresholds

Sequential Steal:	0
Parallel Sequential Steal:	50
Assisting Parallel Sequential Steal:	0
Deferred Write:	30
Vertical Deferred Write:	20

Efficiency

Hit %:	87.26 %
ReReads:	98,932 pages
ReRead %:	92.918 %
Distinct Getpages:	11,678 pages

Access Types

Access Types

Value	Type
79,966	Random
	Sequential
0	List
755,810	

Usage

Getpage allotment — Size, Distinct GetPages (16,000 / 0) — Pages / Requests

IO spreading — IO, Distinct IO, Re-Reads (160,000 / 80,000 / 0) — IO

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Benefits

- *Unnecessary and expensive I/O avoided*
- *Memory wastage avoided*
- *Bottlenecks prevented*
- *Overall performance of DB2 subsystems improved*
- *Availability increased*
- *Efficient use of IT resources*
- *Costs reduced*
- *User satisfaction improved*
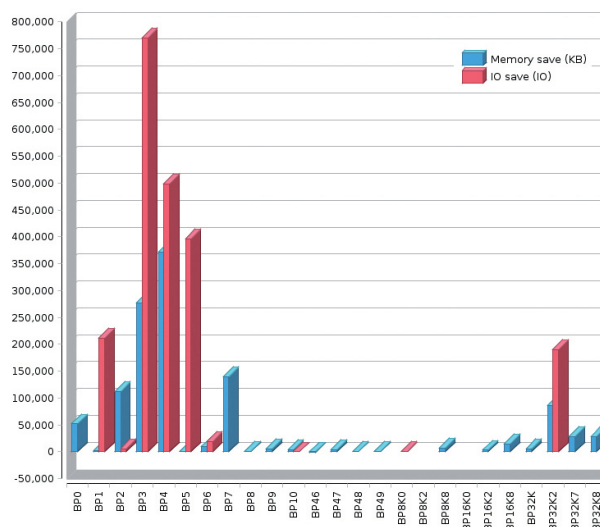
Problem Resolution Guidance

BPA4DB2 indicates tuning potential and bufferpool related problems. It describes the problem and its causes. Whether the issue resides with group bufferpools, local bufferpools or a particular object, BPA4DB2 provides the information required to resolve the situation. When it uncovers and describes all feasible solutions to a problem or tuning issue, it does so in plain English phrases: enlarge or decrease the pool size of Bpxx to..., change this threshold to..., Re-assign (shift) these objects from BP0x to BP0y.

Valuable DBA time can now be spent on analysis and "what if" reasoning instead of plowing through volumes of raw data. BPA4DB2 generates ALTER statements, offers re-design strategies for the pools and suggests object grouping enhancements. BPA4DB2 justifies the suggested tuning measures and provides information (rich colored charts) to facilitate a visual analysis. It offers a wealth of bufferpool related details, Re-Reads, Distinct GetPages, DASD-IO, Average-IO, etc. Its greatest value lies in providing detailed guidance for problem resolution and tuning.

Automated Audit

BPA4DB2 makes bufferpool tuning easy. It analyzes measurements, identifies tuning opportunities and provides guidelines and precise instructions for solving problems and tuning the pools. However, maintaining a number of DB2 subsystems under constant observation can occupy the time of one or more DBAs. BPA4DB2 maintains a permanent automated audit. This facility consists of two parts, a Host Component and a Workstation. The workstation is used to visualize the analysis results, to explain the findings and to present the recommendations for tuning and problem resolution. The Host Component gathers the metrics for the DB2 subsystems, creates a metrics file and invokes the Host Examination Component (HEC). HEC processes the metrics file and reviews issues including the ReRead percentage (performance indicator), the sequential prefetch threshold (SPTH), the data management threshold (DMTH), the z/OS system paging rate, as well as issues related to data sharing groups like cross invalidation (XMIDIR), SCA fill level, and Write failures in Group Bufferpool. Whenever HEC determines that the DB2 system is not adhering to prescribed quality criteria an email alert is sent to the database administration team along with the metrics file. This file gives the DBA access not only to the critical data, but also the ability to use the full analytical power of the local workstation. The tool describes and explains the problem and offers/prepares the best practices counter measures.

The bottom line is BPA4DB2 provides what DBAs require. An interactive webcast demonstration of the product is available to fully explore its many features. Given the tools ease of use, it is possible to use data obtained from your site for an online review that you can relate to.

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Features

- *Automated problem detection*
- *Clear identification of tuning opportunities*
- *Recommends tuning measures*
- *Host Examination and email alerts*
- *Graphical workstation with expert analysis*
- *Visual presentation of metrics analysis*
- *"Alter" statement generation*
- *User guidance and education*
- *Automated auditing of any number of DB2 subsystems at a time*

Comprehensive Approach

Based on the analysis of the metrics collected, BPA4DB2 recommends:

- optimal buffer pool sizes
- appropriate assignment of objects to pools
- optimal bufferpool threshold settings

BPA4DB2 offers guidance for an entire redesign of the current bufferpool setup, if required. It also identifies object related problems as well as difficulties that result from poor SQL. BPA4DB2 fully supports Group Bufferpool Tuning and allows continuous auditing of the Coupling Facility.

Performance and Efficiency

BPA4DB2 is designed to make bufferpool monitoring and bufferpool tuning simple. It helps to turn an occasional project into an efficient ongoing task. A task that helps save money and avoid problems.

Measurements are scheduled once a day or every x hours. The host based routines analyze each measurement file and check for preset quality criteria sending an email alert if appropriate. Database administration is freed from the tedious observation of I/O performance and related issues. It gets all the tools needed for the analysis and assessment of the metrics gathered.

The DB2 High-End Product Line:

BCV4™
Full DB2 Subsystem Clones in minutes versus days

BCV5™
Save 90% CPU & Run Time with each DB2 copy

BCV6™
Log enhanced copies for 24x7 DB2 refresh/migration

BTO™
Platform independent test case creation made easy

BPA4DB2™
Premier advisor for DB2 buffer pool optimization

ULT4DB2™
Easily identify & restore unwanted changes of DB2 data

TUC4DB2™
RTS & Policy driven automation of DB2 data maintenance

XM4DB2™
Pro-active surveillance for a greater DB2 availability

SQLQAM™
Analysis of SQL statements and changes in access paths
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Contact Us For More Information

We offer a free 30-day trial evaluation as well as a private web demo. Learn more about BPA4DB2 and our complete line of DB2 z/OS products at: **www.ubs-hainer.com**

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