Memory Really Matters in 2015 (Part 2)

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1   Introduction

The amount of available mainframe memory continues to increase with every new IBM machine generation as well as the amount of memory supported by the latest z/OS releases.
Up to 10TB memory can be installed in IBM z13 while z/OS 2.2 will support up to 4TB in a single LPAR.

The first benefit of an adequate amount of memory is to eliminate paging activity.
While it's true that z/OS can remain stable and run even when sustaining high paging activity, paging and especially page faults are very disruptive to online applications' performance.
Furthermore you have to consider that CPU cycles are needed to perform paging.

Large amounts of memory also allow the full exploitation of the many available DIM (Data In Memory) techniques.
Maintaining data in memory has two additional advantages:
- it improves performance by avoiding the delay caused by I/O operations
- it eliminates the CPU consumption needed to perform I/O operations.

This is particularly important for DB2 workloads with poorly performing buffer pools requesting many read I/Os to reload the required data.

Finally, if enough memory is available, 1MB and 2GB memory frames can be used to greatly reduce the overhead of virtual address translation.

In this paper we will discuss the most important metrics you can use to measure memory related activities.