

# Exploiting IBM zIIP<sup>®</sup> Processors to Optimize z/OS Costs

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## OVERVIEW

Minimizing the operating expense of your mainframe has never had a higher profile, nor been more important. Through the introduction of specialty processors (zIIPs, zAAPs and IFLs) IBM has provided significantly lower cost hardware and the promise of dramatic savings in operational costs.

The primary reason this is so attractive and cost-effective is not just the cheaper hardware, but also much cheaper software, since typically, processing capacity associated with specialty engines is not "counted" as overall z/OS MIPS/MSUs capacity by IBM or ISVs, and is therefore exempt from many related charges such as license costs, upgrades and maintenance fees.

IBM authorizes customers to use specialty engines to process certain specific types of workloads as designated by IBM. For example, certain workloads that were written to run in non-task enclave SRB mode may be made eligible for redirection to a zIIP.

However, where all the proper steps have been taken to enable redirection of some work to a zIIP, that work may, in fact, not be directed to a zIIP, such as when:

- » No zIIPs are installed and online
- » The zIIPs that are installed and online are busy doing other work
- » The application which has scheduled the work has specified that only a portion of the work should be made eligible for redirection to zIIP

The choice for IT would seem obvious: maximize the use of specialty engines to reduce cost. However, the obstacle to IT achieving these savings is the pre-requisite that only certain types of processing are eligible to execute on these specialized engines. To actually realize such savings, sites must identify and migrate workloads currently running on the mainframe's traditional general purpose (GP) processors to one of the less expensive specialty processor types. But now, BMC Software has a way for IT to take advantage of specialty processor cost benefits with no migration, no effort, and no risk.

## Z/OS MONITORING AND DATABASE MAINTENANCE: NECESSARY EVILS

Monitoring z/OS and maintaining mainframe databases are standard requirements that deliver high value benefits to IT, including:

- » Measurement and presentation of system metrics, and generation of SMF Type 70-79 audit records
- » Real-time monitoring and historical performance management of the entire z/OS system
- » Backup of databases to ensure recovery with integrity
- » Reorganization of databases to improve performance

While an essential part of mainframe operations, z/OS monitoring and database maintenance come at a cost. Most monitoring products consume GP processing capacity that would otherwise be available for production business applications. Database maintenance requires CPU usage and generally some amount of outage.

## **BMC DELIVERS ZIIP ELIGIBILITY**

BMC can reduce the GP capacity consumed by the following monitoring products and database utilities by automatically making appropriate workloads eligible run to zIIP specialty engines:

### » **BMC MainView products**

- BMC MainView for z/OS
- BMC CMF MONITOR

### » **Products for DB2 on z/OS**

- BMC APPTUNE for DB2
- BMC COPY PLUS for DB2
- BMC DASD MANAGER PLUS for DB2
- BMC LOADPLUS for DB2
- BMC Log Master for DB2
- BMC MainView for DB2
- BMC PACLOG for DB2
- BMC RECOVER PLUS for DB2
- BMC RECOVERY MANAGER for DB2
- BMC REORG PLUS for DB2
- BMC SNAPSHOT UPGRADE FEATURE for DB2
- BMC UNLOAD PLUS for DB2
- BMC Database Administration for DB2
- BMC Database Performance for DB2
- BMC Recovery Management for DB2
- BMC SQL Performance for DB2
- BMC System Performance for DB2

### » **IMS products**

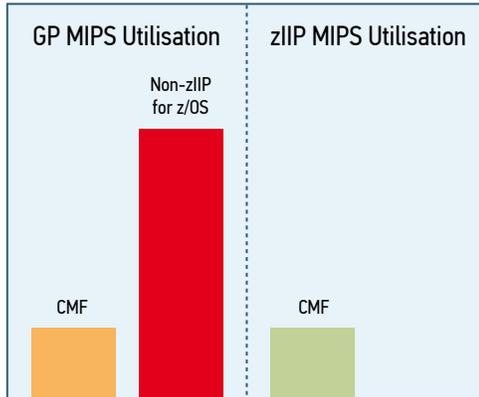
- BMC Backup and Recovery Solution for IMS
- BMC IMAGE COPY PLUS
- BMC CHANGE ACCUMULATION PLUS
- BMC RECOVERY PLUS
- All BMC MAXM Reorg solutions
- BMC POINTER CHECKER PLUS

BMC products are designed to run in the most efficient manner possible. For example, the MainView monitors (do what they do to reduce CPU) and the DB2 utilities run outside of DB2, freeing up valuable shared resources.

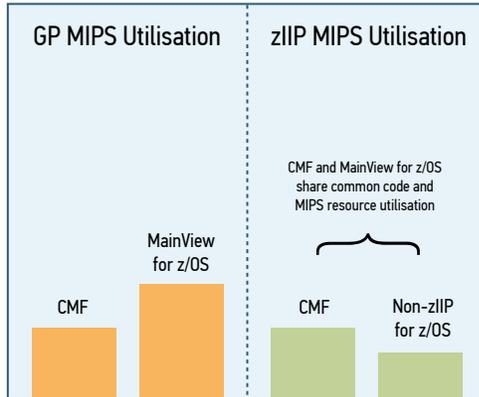
All of these products use fewer general processor resources than other similar products. BMC MainView for z/OS and BMC CMF MONITOR enable zIIP eligibility. Up to 50% of their processing can be transferred to zIIP engines from GP engines. These products also share a significant percentage of their processing through data collectors.

The BMC products for DB2 on z/OS and IMS enable zIIP eligibility for I/O and sort processing. Benchmarks have shown offloads of up to 30%.

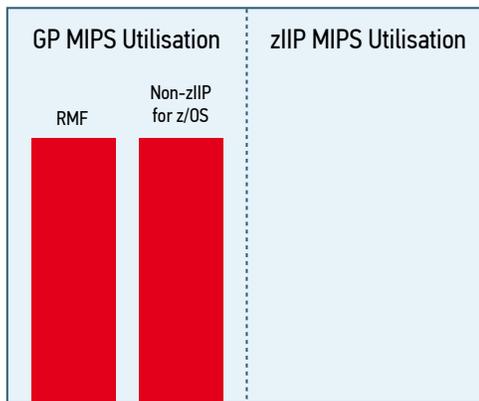
**CMF and non-zIIP Eligible z/OS Monitor**



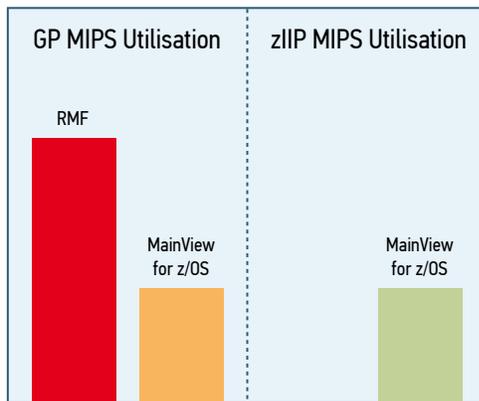
**CMF and MainView for z/OS Monitor**



**RMF and non-zIIP Eligible z/OS Monitor**



**RMF and MainView for z/OS Monitor**



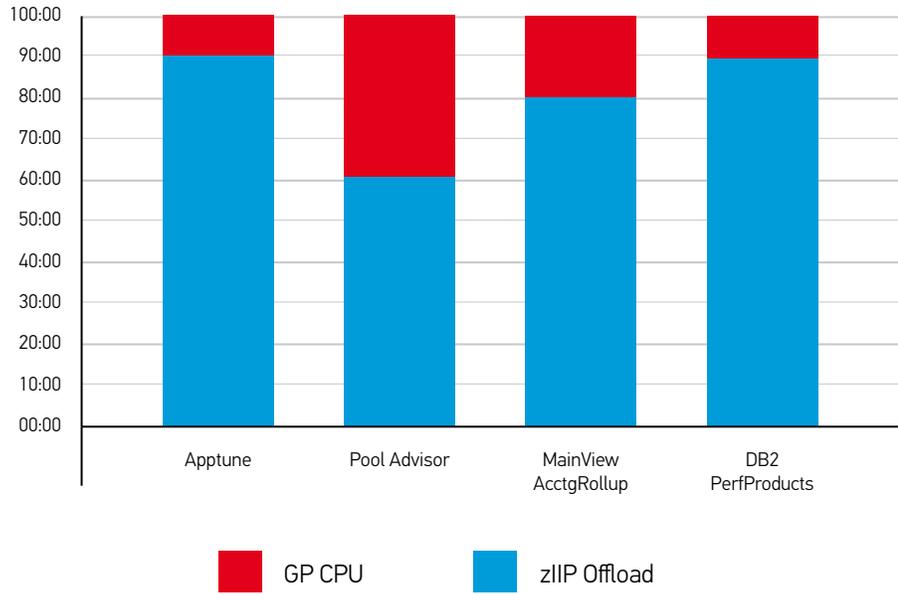
Running RMF and non-zIIP eligible z/OS monitor (lower left quadrant): Running RMF and another vendor z/OS monitor, you are collecting much of the same data twice, resulting in extra overhead. And, they both use expensive GP engine to do their work.

Running BMC CMF MONITOR and non-zIIP eligible z/OS monitor (upper left quadrant): BMC CMF MONITOR, even with another vendor's z/OS monitor, can use fewer resources than RMF and can run about half its work on zIIP engines.

Running RMF and BMC MainView for z/OS (lower right quadrant): BMC MainView for z/OS running with RMF gives you the benefit of BMC MainView efficiency and BMC MainView for z/OS executes up to half of its work on a zIIP.

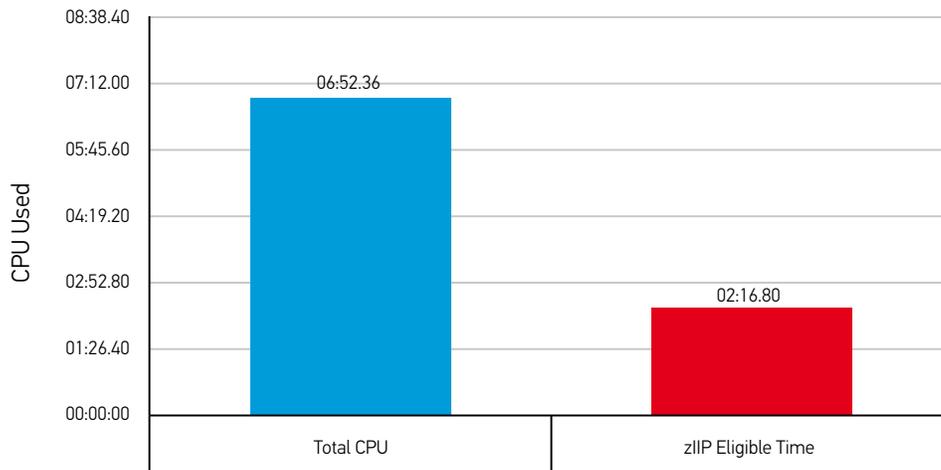
Running BMC CMF MONITOR and MainView for z/OS (upper right quadrant): This provides the ultimate in savings. The BMC products share collectors, so you eliminate the need for additional RMF overhead, they are more efficient than alternative products, and they both run up to half of their work on zIIP engines.

Figure 2 shows zIIP eligibility for BMC performance products for DB2 on z/OS.



Benchmarks show that the BMC performance products for DB2 can offload an average of 88 percent of their work to zIIP engines.

Figure 3 shows the potential cost benefits for BMC products for IMS.



Benchmarks show that BMC CHANGE ACCUMULATION PLUS (part of BMC Backup and Recovery for IMS solution) can process up to 33% of its work on zIIP engines.

## **BUSINESS RUNS ON IT. IT RUNS ON BMC SOFTWARE.**

Business thrives when IT runs smarter, faster and stronger. That's why the most demanding IT organizations in the world rely on BMC Software across distributed, mainframe, virtual and cloud environments. Recognized as the leader in Business Service Management, BMC offers a comprehensive approach and unified platform that helps IT organizations cut cost, reduce risk and drive business profit. For the four fiscal quarters ended June 30, 2011, BMC revenue was approximately \$2.1 billion.

