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IT Cost  
Under Control

# EPV Technologies

## Newsletter

April 2022

### THIS MONTH HIGHLIGHTS

- z16 Capacity Planning - Part 1
- IBM Db2 13 announcement

### **z16 Capacity Planning - Part 1**

On April 5th IBM announced its new generation of the mainframe. The new system is called IBM z16 while the family model is 3931.

Experienced capacity planners know that every new generation of machines provides a major challenge to their skills. They also know that their best friends are the IBM LSPR benchmarks, the IBM zPCR tool, the Measurement Facility counters provided in SMF 113 and an up-to-date performance database.

This is especially true in this case because IBM has made significant changes to the processor cache architecture, which is very different from that of the z13, z14 and z15 machines.

In the first part of this paper, we'll have a look at the most important capacity characteristics of the IBM z16. Starting from the IBM LSPR benchmarks, we'll then estimate the MIPS capacity of each IBM z16 processor model. Finally, we will compare z16 single CP capacity and workload variability with previous machine generations.

In the second part we'll compare z15 and z16 processor cache architecture. Then we'll analyse in more detail the new z16 Measurement Facility basic and extended counters provided in SMF 113, using them to calculate the most important indexes to use in performance analysis and capacity planning.

*If you want to receive the paper you can reply to this e-mail writing "**z16 Capacity Planning - Part 1**" in the subject*

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## **IBM Db2 13 announcement**

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IBM Db2 13 for z/OS (Db2 13) delivers significant innovations and capabilities that can help with:

- Industry-first integrated approach to developing and deploying AI insights within applications
- Infusing AI to improve operational efficiency and reduce costs
- Enhanced resiliency, efficiency, and application stability for unparalleled availability
- Synergy with IBM z16 for enhanced efficiency and differentiating business value
- Simplified database management and upgrades to help accelerate feature adoption and time to value

More details at:

[IBM Db2 13 for z/OS](#)

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## Customer Questions

I would like to understand why I have a significant difference between what the sysout of a JOB using zIIP reports as CPU consumption and the computation that EPV gives us.

In SDSF we see a CPU time of about 914 minutes while EPV reports about 50 seconds of CPU time and about 29967 seconds of zIIP time which corresponds roughly to 498 minutes.

How to explain this?

### ***EPV Technical Support answer***

In the 8562-T02 machine, the zIIP capacity is almost the double of the CPU. It should be around 1,9. The precise ratio can be calculated by using one of the following SMF fields: SMF30SNF and R723NFFS.

e.g. zIIP to CPU = SMF30SNF / 256

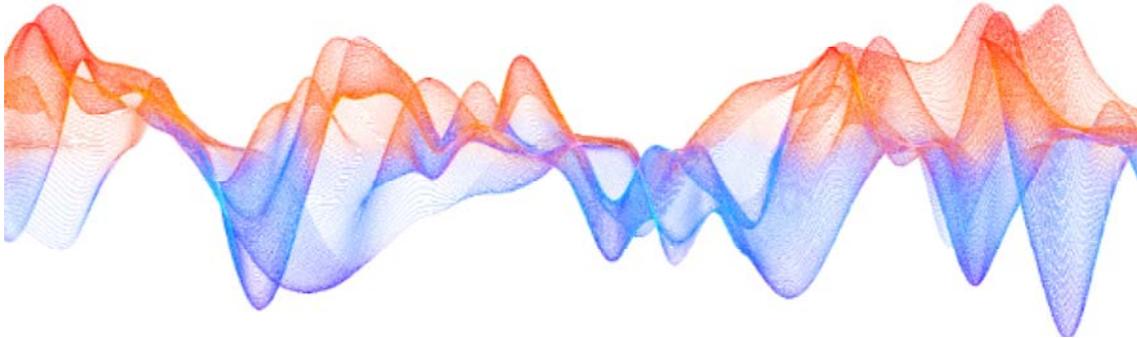
In SDSF the sum of CPU and zIIP time is reported as CPU.

To do that, the zIIP time is normalized to the CPU speed. So, if the zIIP capacity is 1,9 times the CPU capacity, the zIIP time is multiplied by 1,9 and then summed to the CPU.

In EPV we provide the original not normalized zIIP time which of course is much lower.

To normalize the zIIP seconds provided by EPV you only have to multiply them by the correct zIIP to CPU ratio.

# Little known SMF parameters



## NOSMF30COUNT/SMF30COUNT

The NOSMF30COUNT/SMF30COUNT parameter is included in the SMFPRMxx member of the system parmlib.

It specifies if information about number of instructions executed by each address space must be collected in SMF 30 records.

This information is derived from the CPU measurement facility so the Hardware Instrumentation Services (HIS) component must be active and collecting the basic counter set, otherwise all the instruction based fields will be zero.

The idea is that instruction counts should be more consistent than other metrics heavily influenced by factors such as:

- Impacts of hardware caching effectiveness
- LPAR configuration
- Software levels
- Workload contention

Unfortunately, IBM alerts that instruction counts in SMF 30 may include instructions from z/OS events that are not attributable to the address space.

The default is NOSMF30COUNT.

Even if address space instruction counts should be handled with care, they could be useful in some cases such as to track:

- instructions used by different executions of the same batch job
- STC instructions / elapsed second
- STC CPU seconds / instructions

They can also be used to estimate the address space CPI (Cycles Per Instruction) which may allow to identify the responsible of SIIS (Store Into the Instruction Stream) issues.

Setting SMF30COUNT is therefore suggested.

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## Quotes



*"The happiness of your life depends upon the quality of your thoughts"*

**Marcus Aurelius**



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