EPV Technologies

Newsletter

June 2025

THIS MONTH HIGHLIGHTS

- **z17 Capacity Planning – Part 2**
- **IBM z17 Configuration Setup**

z17 Capacity Planning – Part 2

On April 8th IBM announced its new generation of the mainframe. The new system is called IBM z17 while the family model is 9175.

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.

Even if the z17 processor cache architecture is similar to z16, there are significant changes and new components that must be carefully analyzed.

In the first part of this paper, we will have a look at the most important capacity characteristics of the IBM z17.
Starting from the IBM LSPR benchmarks, we will then estimate the MIPS capacity of each IBM z17 processor model.
Finally, we will compare z17 single CP capacity and workload variability with previous machine generations.

In the second part we will compare z16 and z17 processor cache architecture. Then we will analyse in more detail the new z17 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 this paper, you can reply to this e-mail writing **"z17 Capacity Planning – Part 2"** *in the subject.*

IBM z17 Configuration Setup

This IBM Redbooks publication helps you install, configure, and maintain IBM z17 (machine types 9175) systems. IBM z17 offers new functions that require a comprehensive understanding of the available configuration options. This book presents configuration setup scenarios and describes implementation examples in detail.

Download at: https://www.redbooks.ibm.com/abstracts/sg248581.html

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Customer question

I faced something strange: in all places where SMF 30 fields SMF30AIC and SMF30AIS appear, I see that SMF30AIS = SMF30AIC*1000. It looks like some mistake.

Can you please check?

EPV Technical Support answer

This is not a mistake. IBM does not actually measure the DASD I/O connect time in SMF 30 which is estimated by assuming that the connect time of each DASD I/O start subchannel is 1 millisecond.

In EPV we provide SMF30AIC in seconds; if you multiply it by 1.000 you get the DASD I/O connect time in milliseconds which is therefore equal to SMF30AIS.

From the SMF manual:
“Note: The system adjusts the connect time for FICON DASD to be 1 millisecond per request. This value differs from the channel-reported connect time.”

CPENABLE

CPENABLE is an OPT parameter which determines how many Vertical High and Vertical Medium CPUs will be enabled to handle I/O interrupts.
For many years, the default CPENABLE setting has been (0, 0) causing all CPUs to be enabled.

IBM's recommendation, up to z13, has been to use (10,30) which means that when the percentage of I/O interrupts handled using TPI (Test Pending Interrupt) is higher than second value, the system enables an additional CPU for I/O interrupts and when the percentage is lower than first value the system disables one of the CPUs already handling I/O interrupts.

Recently, IBM changed this recommendation to CPENABLE = (5,15) for all z/OS LPARs running on z14 and later machines.

It can seem strange that IBM recommends settings and keeps a different default value for so many years but in this case there is an explanation for that:

- the goal of CPENABLE=(0,0) is to provide the best possible performance; with all CPUs enabled to manage I/O interrupts they will be served quicker;
- the goal of CPENABLE=(10,30) or CPENABLE=(5,15) is to reduce CPU overhead; based on IBM studies, up to 5% CPU can be saved.

z/OS 3.1 introduced a new SYSTEM option for CPENABLE.

It tells z/OS to use the IBM-recommended CPENABLE values for the machine where the system is running.

Please note that it simply eliminates the need for the system programmer to update CPENABLE parameter when the machine changes.
If you want to privilege performance, you should still set CPENABLE=(0,0) or omit the parameter to use this default.

z/OS 3.1 also decreased the interval for WLM to decide if it has too few, too many, or just the right number of CPUs enabled for I/O interrupts, from 20 seconds to 2 seconds.
This is important because it reduces the probability of performance issues due to long waits for an I/O interrupt to be processed.

It also increased the minimum number of CPs that are enabled for I/O interrupts from one to two.

Quotes

"It always seems impossible until it’s done.”
Nelson Mandela

We care about your Privacy. EPV Technologies is GDPR-compliant.

You may have heard about the new General Data Protection Regulation ("GDPR"), that comes into effect May 25, 2018.
It was introduced to unify all EU countries to a unique data regulation, ensuring that all data protection laws are applied identically within the EU.
It also protects EU citizens from organisations using their data irresponsibly and puts them in charge of "what", "where" and "how" information is shared.

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