

POWER9 Current Info (Jan 2018)

IBM's planned mid 2017 announce of P9 was delayed a few times until early December 2017, with the announcement of the AC922 (8335-GTG) as a cutting edge AI dedicated system targeted at Data Research Science (DRS).

This led Forbes to run with the headline...

"Why IBM Launched An AI Platform Instead Of A POWER9 Chip" (*psst, Forbes, it is a Power9 Chip!*)

Their point was that a lot of IBM's Power Systems users are not focused on AI or DRS.

Mainstream users (manufacturing, payroll, air-lines, hotels, geo science etc.) need to allocate budgets and resources months in advance for stable upgrades - and IBM's mute response throughout 2017, coupled with a mostly unexpected announcement, seemed to ignore the base.

Forbes approached this from a revenue centric, general sales, point of view, rather than IBM's 're-establish IBM as a High Performance Computing leader' goal.

Having said that, Google's close involvement with POWER9 (P9 will be the basis for Google's Zaius Server) does indicate to some observers that the P9 announcement was hurried along for the benefit of non mainstream clients. (this may explain some of the specification discrepancies being bandied about).

If we cut through the haze, what we really have is a follow on the 8335-GTB S822LC, which was always targeted as a High Performance Computing System.

The 8335-GTG is essentially a similar chassis, geared to ultra fast image processing using high end NVIDIA GPUs (just like the 8335-GTB) but with more direct communication between the POWER9 CPUs and NVIDIA V100 GPUs.

In addition, the AC922 offers PCIe-4 Bus and enhancements to the CAPI interface, underscored by IBM's strong commitment to the Mellanox ConnectX-5 InfiniBand protocols. (Curious to know why Mellanox ConnectX-5 when ConnectX-6 has been around for nearly a year).

The 8335-GTC is an air-cooled system supporting up to four GPUs. A water cooled unit (8335-GTW) supporting up to six GPUs is expected to be announced soon.

Certainly, this is a specialist system and most mainstream users will likely prefer to wait for the normal upgrade announcements, probably in March 2018.

RISC Analysis POWER9 Data

We have noted some discrepancies and gaps in IBM's published data thus far, (which is normal) and we are awaiting replies from IBM.

Therefore, while we are actively collating P9 info and data, we will not be updating RISC to include P9 until after the main announcement.

By which time, we hope to resolve some of the contradictory data. (Although, as always, clients with specific questions are welcome to contact us).

In the mean-time, the following is a quick overview of the 8335-GTG.

8335-GTG AC922

2x Proc, 2U System. The name AC922 is derived from
Advanced Computing (AC) + POWER9 + 2x Proc + 2U Chassis

Processors:

Min 2x identical Procs, either:

#EP0K 2.6GHz (3.09GHz Turbo) 16-Core POWER9 Processor, or
#EP0M 2.0GHz (2.87GHz Turbo) 20-Core POWER9 Processor

** All Cores are Factory Activated (no Activation FCs)

IBM marketing suggest 16-Core or 20-Core available. Bloggers/Reporters often repeat this, but it is wrong. The AC922 is only available as either a 32-Core or 40-Core System.

Memory:

16x DIMM Slots - all of which must be populated with identical capacity DIMMs

FC	Description	Sys Max
#EM61	16GB DDR4 2666MHz RDIMM Memory	256GB
#EM63	32GB DDR4 2666MHz RDIMM Memory	512GB
#EM64	64GB DDR4 2666MHz RDIMM Memory	1.0TB

I/O Bus Slots:

4x PCIe4 Slots

1x x4 Slot - Physically an x8 Slot
1x x8 Slot - Physically an x16 Slot
2x x16 Slots

Regardless of contradictory IBM and 3rd party Bus Slot info, the above is correct.

Drive Bays:

2x Slots for 2.5-inch SSF-4 SATA Drives (HDD or SSD)

#ELD0 1.0TB (512 Byte) 7200 RPM SATA HDD
#ES6A 2.0TB (512 Byte) 7200 RPM SATA HDD
#ELU4 960GB SATA SSD
#ELU5 1.92TB SATA SSD
#ELU6 3.84TB SATA SSD

#ELD0 AND #ES6A were previously announced for 8335-GTB

For #ELUx, we assume 512 Byte Block format, Read Intensive (1 DWPD) as with prior 8335 systems. However, IBM's published data is appallingly lacking. FCs, FRUs, and price points are different, so we await confirmation.

DVD/Media:

No Internal DVD Drive (External Only)

Graphics:

2x or 4x #EC4J NVIDIA Tesla V100 NVLINK GPUs

Power Supplies:

2x #EB2X 2200W 227V AC Power Supply (Rong Feng)

P/S Units use Rong Feng HV Connectors (240V) and must be connected to PDUs

O/S: Red Hat Enterprise Linux 7.4 for Power LE (POWER9)

Min Config: approx \$ 47,000 at list price *

Max Config: approx \$ 110,000 at list price *

**Excluding Rack, PCIe Adapters, misc cables, etc.*

8335-GTW: Water Cooled Version:

Not yet announced, and no published FCs, but we do know...

#EP0L 2.98GHz (3.26GHz Turbo) 18-Core P9 Processor (Water Cooled) or

#EP0N 2.78GHz (3.07GHz Turbo) 22-Core P9 Processor (Water Cooled)

(Same rules as 8335-GTG - all Cores Activated)

Up to 2.0TB using 16x #EM65 128GB DDR4 2666MHz RDIMM Memory

(Same rules as 8335-GTG - all Slots Populated)

Same Drives, Adapters etc. as 8335-GTG

4x or 6x #EC50 Water Cooled NVIDIA V100 GPUs

(System Board is specific to 4x or 6x GPUs)

On the QT...

Possible Scale-Out Server MT MDs:

9008-22L, 9009-22A, 9009-41A, 9009-42A, 9223-22H, 9223-42H

Enterprise MT-MDs still unknown but, we assume 9119/9080 Systems will continue with MHx/MMx designations (MHF/MMF ?)

Other things to mention.

IBM have re-branded/renamed SSDs and have introduced some upgraded HDDs:

Read-Intensive SSDs are now 'Mainstream SSDs' (these are the 1x DWPD SSDs)
Non RI SSDs are now 'Enterprise SSD' (high integrity 10x DWPD)
New Cached 15K RPM 2.5-inch SFF HDDs (4K Byte Block) w/256MB Cache

For the 'Mainstream' SSDs, we have FCs, CCINs, FRUs.
For the 'Enterprise' SSDs, we are still checking SFF-2/SFF-3 specifics
For Cached HDDs, we are still checking SFF-2/SFF-3 specifics

If anyone comes across these drives, we need jpegs, please, specifically for the following:

15K RPM SAS HDD 4K Block w/256MB Cache

PN	Description	Applicable FCs
01LU579	300GB 15K RPM SAS HDD 4K 256MB Cache	ESNK, ESRL, ESNJ for SFF-3
01LU587		ESNM, ESRM, ESNL for SFF-2
01LU580	600GB 15K RPM SAS HDD 4K 256MB Cache	ESNP, ESRP, ESNN for SFF-3
01LU588		ESNR, ESRR, ESNQ for SFF-2

SAS SSD Enterprise Drives 10 DWPD

PN	Description	Applicable FCs
00LY577	387GB SAS SSD 5xx (Enterprise)	ESG9, ELG9, ESGA for SFF-3
00LY589		ESG5, ELG5, ESG6 for SFF-2
00LY603	387GB SAS SSD 4K (Enterprise)	ESGD, ELGD, ESGE for SFF-3
00LY621		ESGB, ELGB, ESGC for SFF-2
00LY578	775GB SAS SSD 5xx (Enterprise)	ESGH, ELGH, ESGJ for SFF-3
01LU623		ESGF, ELGF, ESGG for SFF-2
00LY604	775GB SAS SSD 4K (Enterprise)	ESGM, ELGM, ESGN for SFF-3
00LY622		ESGK, ELGK, ESGL for SFF-2
00LY623	1.5TB SAS SSD 4K (Enterprise)	ESGR, ELGR, ESGS for SFF-3
00LY605		ESGP, ELGP, ESGQ for SFF-2