Inside the new IBM z16

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 Ambassador Captain
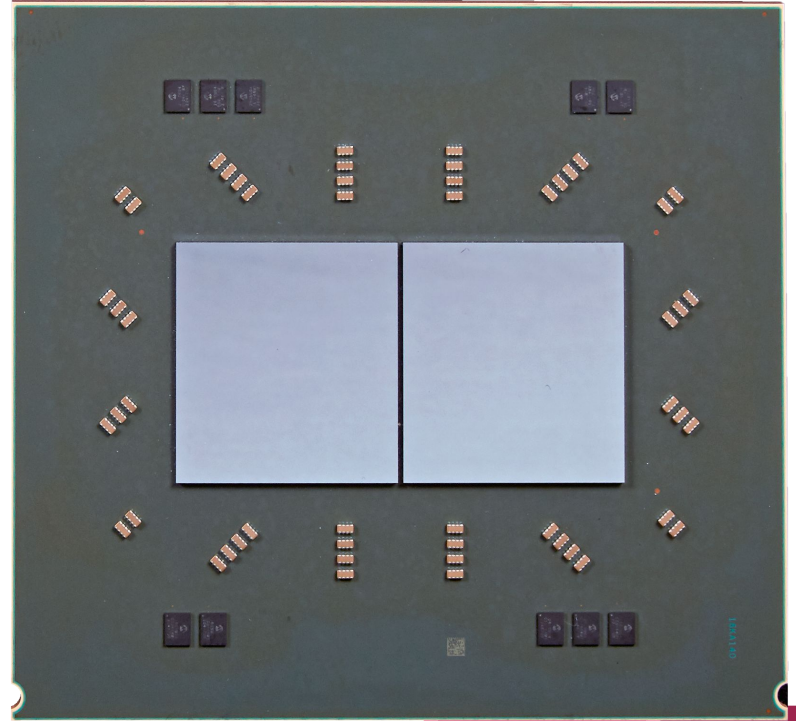
IBM Telum Processor

7 nm microprocessor contains 8 processor cores, with a speed clocked at 5.2 GHz

Redesigned cache

An "integrated AI accelerator delivers more than 6 TFLOPs per chip and over 200 TFLOPs in the 32-chip system."

What is an AI Accelerator?

Not all workloads look the same to a processor. By identifying patterns of use by particular workloads, it's possible to engineer hardware specifically designed to deliver value for specific types of workloads.

Enter the AI Accelerator in the IBM Telum processor.

Joining specialized accelerators for cryptography, and compression and decompression, this new accelerator is optimized for inference (using a trained model to make a prediction).

Real world Fraud detection

Credit card fraud is the most common type of fraud among consumers. Consumers believe that banks and payment networks should be most responsible for preventing fraud. But running deep-learning models at scale in real-time has not been possible due to latency issues, meaning fraud detections models are only run on less than 10% of high-volume transactions – a significant amount of fraud is going undetected. For the first time, banks can analyze for fraud during transactions on a massive scale with AI inferencing.
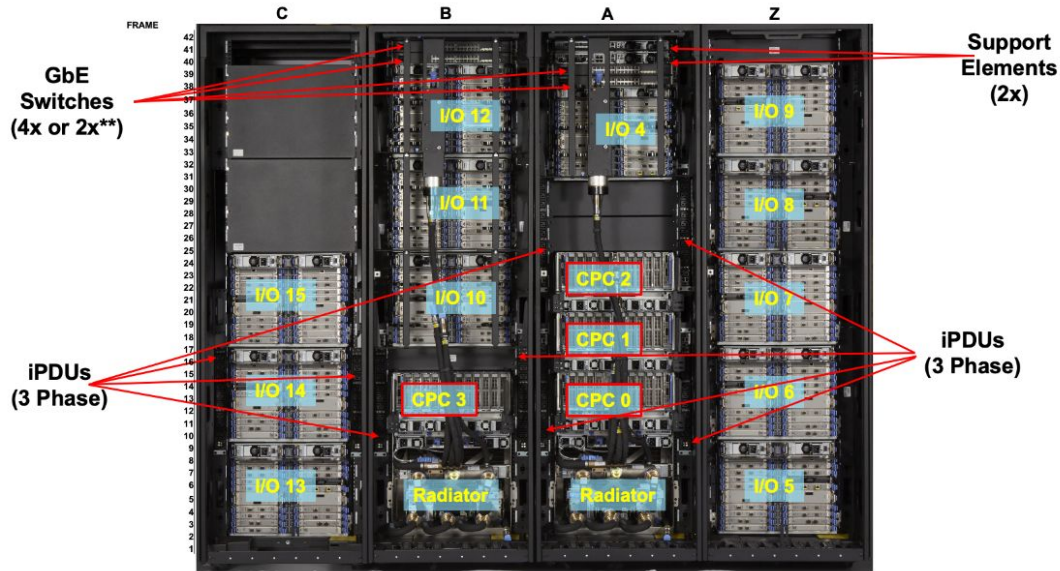
IBM z16 can process 300 billion inference requests per day with just one millisecond of latency. For consumers, this could mean reducing the time and energy required to handle fraudulent transactions on their credit card. For both merchants and card issuers, this could mean a reduction in revenue loss as consumers could avoid frustration associated with false declines where they might turn to other cards for future transactions.

Learn more about the IBM Telum processor

- [Previewing IBM Telum Processor](#) Hotchips video, August 2021 & associated articles: [IBM Telum Processor: the next-gen microprocessor for IBM Z and IBM LinuxONE](#) and [Did IBM Just Preview The Future of Caches?](#)
- Terminal Talk: [Christian Jacobi tells us all about Telum](#) podcast, October 2021
- [I am a Mainframer: Tina Tarquinio](#), podcast where she talks about the Telum release and naming
- IBM z16 Day presentation: "IBM Telum Processor - Designed for AI" register at [ibm.biz/ibmz16day-se](#) to watch the replay in the Optimized track
- [Announcing IBM z16: Real-time AI for Transaction Processing at Scale and Industry's First Quantum-Safe System](#) (article)
- [Operationalizing Fraud Prevention on IBM z16](#) (paper, registration required)

Fully-loaded IBM z16 specifications

12 I/O drawers in a Power Distribution Unit (PDU, for air-cooling) system

4 Central Processor Complex (CPC) drawers

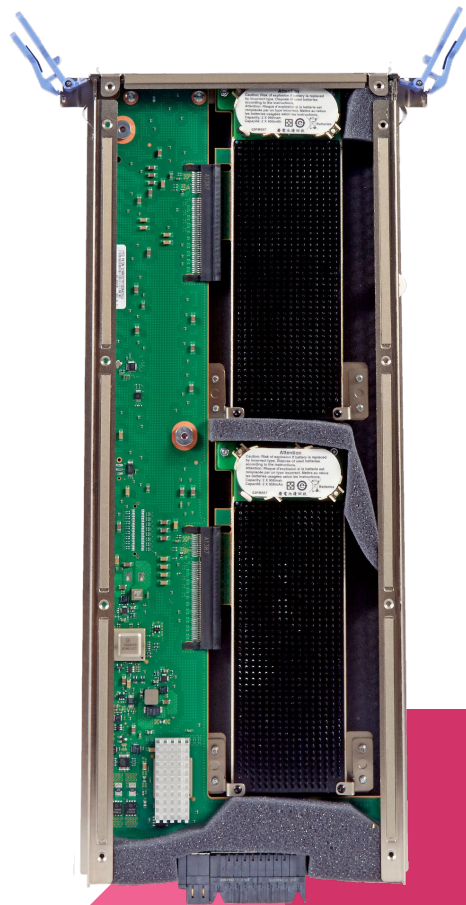200 IBM Telum processors

40TB of memory

Quantum-Safe

Tools like [ADDI](#) can help detect weaker keys and algorithms on your system so they can be addressed.

The IBM Telum processor also has the CP Assist for Cryptographic Function (CPACF) we've come to expect on IBM zSystems to handle cryptography on the processor itself.

New Crypto Express8S

The IBM z16 has the new Crypto Express 8S hardware security module (HSM) ➡️

This helps support the stronger, more quantum-resistant and quantum-safe **key lengths** and **algorithms**.

Learn more about the overall IBM z16 hardware

- [IBM z16 Redbooks](#), including the [Technical Introduction](#) and the [Technical Guide](#)
- IBM Developer article: [A tour inside the IBM z16](#)
- And for a bit of fun… [Linus Tech Tips - I Tried to Break a Million Dollar Computer - IBM Z16 Facility Tour!](#) on YouTube
- IBM z16 Day presentation: "Innovation Inside: Interactive Tour of IBM z16" register at [ibm.biz/ibmz16day-se](#) to watch the replay in the Optimized track
- [A Synopsis of z Systems Crypto Hardware](#) (not yet updated for the IBM z16, but overall the information is the same)
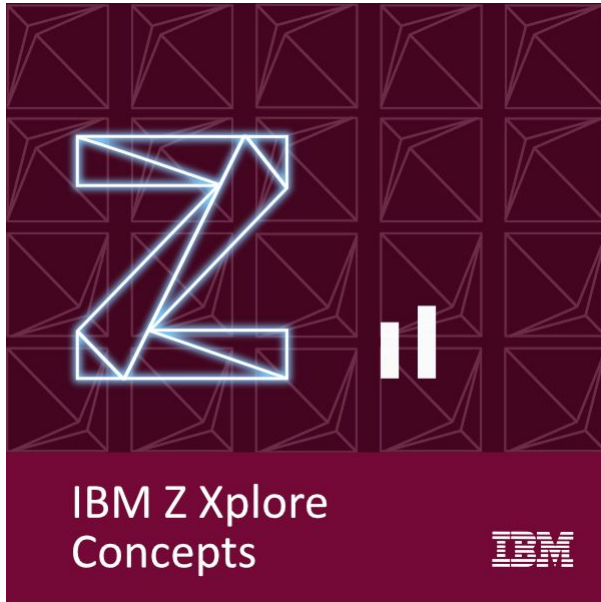
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