

Is chiplet the answer to Moore's law?

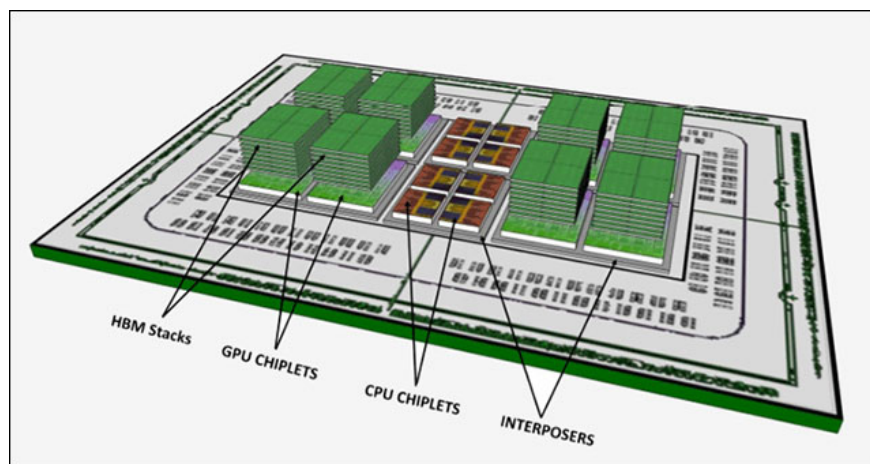
AMD, Intel and the Pentagon all invested heavily in this new process.

Moore's Law still says that the number of transistors will be halved each year. After that, every two years, there will be a change, but by 2016 Moore's law will slow down and new inventions are needed. Maybe chiplet is the answer.

Moore's Law has been the guiding principle for many years. But transistors cannot be smaller. The end has been seen in the near future and chip makers have to struggle to find new ways because that is what helped them sell chips for decades.

'Moore's Law is slowing down,' AMD's CRO Mark Papermaster told Wired. 'It is still possible to do a denser density but it will cost more and take more time.' So chip makers have to find a way to sell, creating more healthy chips to hit the market. After all, what do you buy a new device with a new processor if it isn't stronger than the old one?

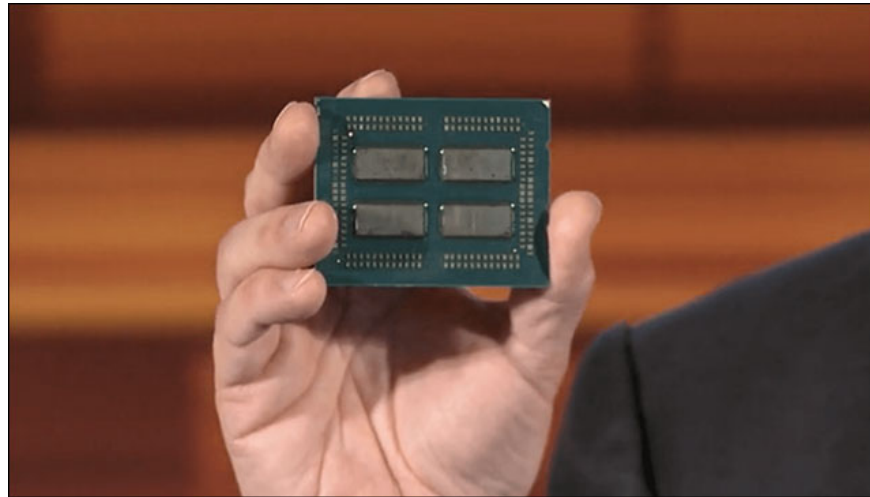
A recent idea named chiplet is becoming hopeful. Understanding chiplet is the pieces of silicon that are stacked together like logo blocks. Instead of making a circuit board on a chip, the chiplets are 'jigsaw' in many different forms for multi-die multi-die processors for different tasks like machine learning or cloud computing. .



Constructing microprocessors in chiplet style

Both AMD and Intel believe the industry will go this way because it helps them quickly create more powerful processors. 'This is an evolution of Moore's law,' said Ramune Nagisetty, senior engineer at Intel. The current process of producing transistors and small chips is very complicated and expensive. The chiplet will provide a way to create a more powerful processor with less cost and less errors.

Chiplet is not something far away but has been tested by AMD when producing Epyc server processor. Epyc includes 4 chiplets and AMD engineers estimate that if they try to make it into a single big chip, at least the production cost will be double. Epyc's success was clear when earlier this week, AMD announced it would produce the second generation Epyc made from 8 chiplets (64 cores), doubling its power.



AMD's first generation Epyc server processor includes 4 chiplets

Intel is also working on the idea of ??modular design, creating processors for laptops that incorporate Intel CPUs with 'AMD-designed graphics modules'. This marks the first time Intel uses cores from other manufacturers to create its main processor.

'Chiplet-style matching helps parties work more closely than separate graphics processors,' Nagisetty said. The chip is currently used on HP and Dell products. Future chip generations are also ready.

The Pentagon is also interested in the new process, pledging to invest \$ 1.5 billion through DARPA's Electronic Resurgence Initiative to study in this area. Universities, chip makers, contractors will receive funding through this program to develop chiplet technology. DARPA is also trying to create a new standard for modules from different vendors to work together. Intel has agreed to create a "free link technology" for its chiplet.

As this modular approach continues to evolve, we will wait and see how other components in the technology world will embrace the new architecture, and whether it can be an extended version of the Moore's law in the coming years.

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