ENTERPRISE IT/SERVER

New transistor era as IBM reveals nanotube breakthrough

Server CBR Staff Writer 08:39, October 5 2015

News: Could revolutionise super computing.

IBM Research is trying to change the way in which computers are made by replacing silicon with carbon nanotubes for creating transistors.

The researchers managed to shrink transistor contacts without reducing performance of carbon nanotube devices that are faster, smaller and more powerful.

Apart from improving the capabilities of high performance computers, the carbon nanaotube can improve battery life of mobile devices and the ones belonging to the Internet of Things, enabling Big Data to be analysed faster, and facilitating efficient and economic delivery of services in cloud data centers.

Silicon transistors are tiny switches that carry information on a chip. However, due to physical limitations the transistors cannot be made smaller after a point.

However, the company introduced carbon nanotubes that can act as switches at channel dimensions of less than 10 nanometers. The contact approach has helped IBM to incorporate carbon nanotubes into semiconductor devices which could result in the creation of smaller chips with greater performance and lower power consumption.

Carbon nanotubes are a rolled-up form of graphene, and it represents a new class of semiconductor materials.

It also forms the core of a transistor device having superior electrical properties and promises several generations of technology scaling beyond the physical limits of silicon.

IBM Research Science & Technology vice president Dario Gil said: "Our novel approach is to make the contact from the end of the carbon nanotube, which we show does not degrade device performance.

"This brings us a step closer to the goal of a carbon nanotube technology within the decade."

Previously, IBM teamed up with GLOBALFOUNDRIES and Samsung at SUNY Polytechnic Institute's Colleges of Nanoscale to unveil a 7 nanometer node silicon test chip with functioning transistors which allowed placement of more than 20 billion tiny switches -- transistors on the fingernail-sized chips.

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