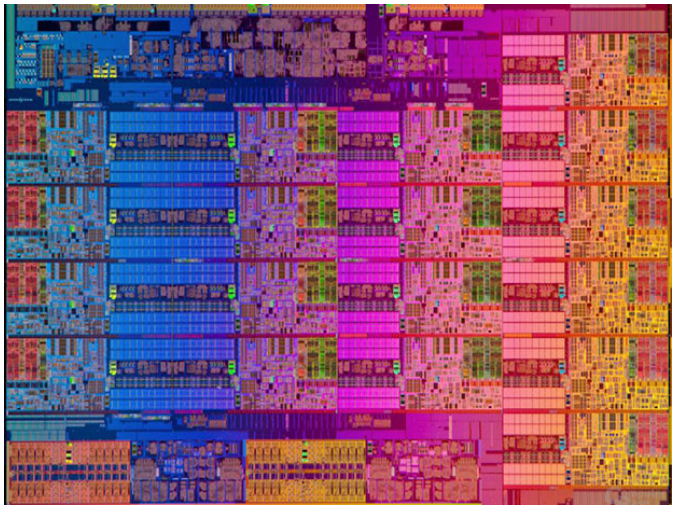
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Intel and North Carolina State University researchers claim to have a solution to one of the more persistent problems hitting modern CPUs-- the communications between multiple processor cores.



How is this a problem, when all, dual- and quad-core chips have shown great improvements over single-core options? Scaling beyond 8, 10, 16 or more cores actually shows diminishing returns, and the issue gets even worse with poorly optimised software.

A possible solution lies in what the researchers call the Queue Management Device (QMD), a dedicated set of logic circuits handling the software queue. This turns three multistep software-queue operations into three simple instructions-- add data to the queue, take data from the queue and put data close to where it is needed next.

The researchers say simulations show the integration of QMD with the on-chip network can double core-to-core communication speeds, and in some case boost it even further. For example, a 16-core CPU got a 20x speed boost through the addition of QMD. The technology might even have more tricks up its sleeves, such as turning more software into hardware through the addition of more logic. This can speed up several other core-communications-dependent functions, such as Google's MapReduce technology.

It is uncertain whether Intel will put QMD in future processors, but Chipzilla is actively researching the topic, meaning such an addition of the technology wouldn't be too surprising. In the meantime researchers are looking into other types of hardware accelerators able to boost

performance by improving energy efficiency.

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