Beyond Performance: Some (Other) Challenges for Systems Design

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Abstract

Traditionally we have focused on higher performance semiconductor technology, higher performance processors, higher performance memory systems, higher performance interconnect, higher performance software, etc., that is until we began focusing on lower power semiconductor technology, more power efficient processors, less power hungry interconnect etc., at the same time we have tried to reduce the cost of each of these components. The point is, that despite the ever-expanding nature of our system approach, historically we have taken essentially a componentized view. This appears to be changing, as evidenced by recent additions to our technical vocabulary: "systems on a chip," "hardware-software codesign," "autonomic computing." All of these point to the possibility of a more holistic approach. We will examine this phenomenon to see if there really is something new here, what is driving it, and what are the consequences and challenges.