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Early HPC uses cases for RISC V

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The current main uses cases of RISC V center on embedded uses and small configurations. However, RISC V seems to be also a useful platform to do High Performance Computing and may be able to deliver custom solutions that can go well beyond what the traditional processor vendors can offer. There are already efforts underway to use ARM for that purpose but those approaches are constrained by limits placed on that platform through licensing. It is natural to expect a move to RISC V there as well.

This talk is looking at use cases in HPC such as to create custom compute solutions replacing GPUs and numerous vector processing extensions of typical processors. HPC users often feel constrained by the limits on the implementations provided to them and are hopeful that RISC V will offer a heretofore unavailable flexibility for them.

Other further use cases may be customizing access to newer forms of memory (such as HBM, Persistent memory, DDR5/6 and other approaches) as well as providing implementations of fast packed processing for High Speed Networks (such as Infiniband, NVlink and Ethernet). The problem of line rate processing at 100Gbps and higher may actually require the development of custom processors to have a reasonable way to process data at these speeds.

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