Subject: Re: Custom vs. commodity networks
Posted by Patrick R. Haspel on Thu, 10 Jun 2004 14:07:14 GMT
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I can pretty much agree to most of the mentioned points.

We could roughly sum up all of them by stating, that if there is a cost reasonable commodity network that fulfills all requirements, it makes no sense to reinvent the wheel by designing a custom network.
But if we have special requirements unlikely implemented in commodity hardware we need to consider a custom solution.

So the key issues needed to be figured out are the communication requirements.

Just some words about the cost of a custom network, just to rebut the common view. Cost effectiveness tremendously depends on the needed quantity:

Mask cost for 180nm CMOS ASIC are about 300kUSD, cost per 200mm waver are about 2kUSD. A sophisticated NIC design takes about 32qmm. With a pessimistic yield of 75% you will get about 750 dies out of a waver. The part cost would then be:

@ 750 chips: 400 USD per chip
@ 1000 chips: 304 USD per chip
@ 5000 chips: 62 USD per chip
@ 10000 chips: 32 USD per chip
@100000 chips: 5 USD per chip

Compared to costs of a sophisticated FPGA of between 1,5 and 2,5kUSD one must take quantities into account for any ASIC/FPGA implementation. Of course there are applications where flexibility is key and therefore FPGAs are the only solution.

Best regards,
Patrick

{some markup added by moderator}