

# Topic 13: High-Performance Networks and Communication (Introduction)

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Topic Committee

Networks have always been a central component in the realization of parallel processing. Having multiple processors working concurrently to solve a problem inherently means that there has to be a reliable and well-performing network over which the processors can communicate. Ever since the first parallel machines we have therefore seen research on topics like topologies, switches, links, routing, device drivers, traffic control, fault tolerance, and congestion control specialized for parallel machines.

In over the last decade or so, parallel processing has moved out of the dedicated supercomputers and into main stream computing. This means that the study of high performance networks and communication as vehicles for parallelism has become a much broader field. It now ranges from communication solutions between components on the same chip, via traditional interconnection networks in clusters and supercomputers, to datacenter networks in cloud facilities, and finally to nation and continent spanning internet-based protocols.

The submission to this years track on "high performance networks and communication" mirror this development by covering a broad set of topics. We also think that the papers selected for presentation represents a good view of the breadth that this area has grown into. We have one paper on switch design that studies buffer usage, and another on a technology to combine multiple InfiniBand networks together through routers. There is a contribution on optical switching and another on protocol tuning for data-transfers over longer distances.

There are two groups of people that deserves special thanks for their effort to this track. The first are the authors of the submitted papers. There was unfortunately not enough room for all of them in the program, but we have read through a lot of interesting work that we expect to see published elsewhere in the near future. The second group are the reviewers. Countless hours of work from field experts have gone into identifying ways in which the submitted papers could be improved, and selecting the papers that finally went into the program. We are grateful for the efforts from all of them.