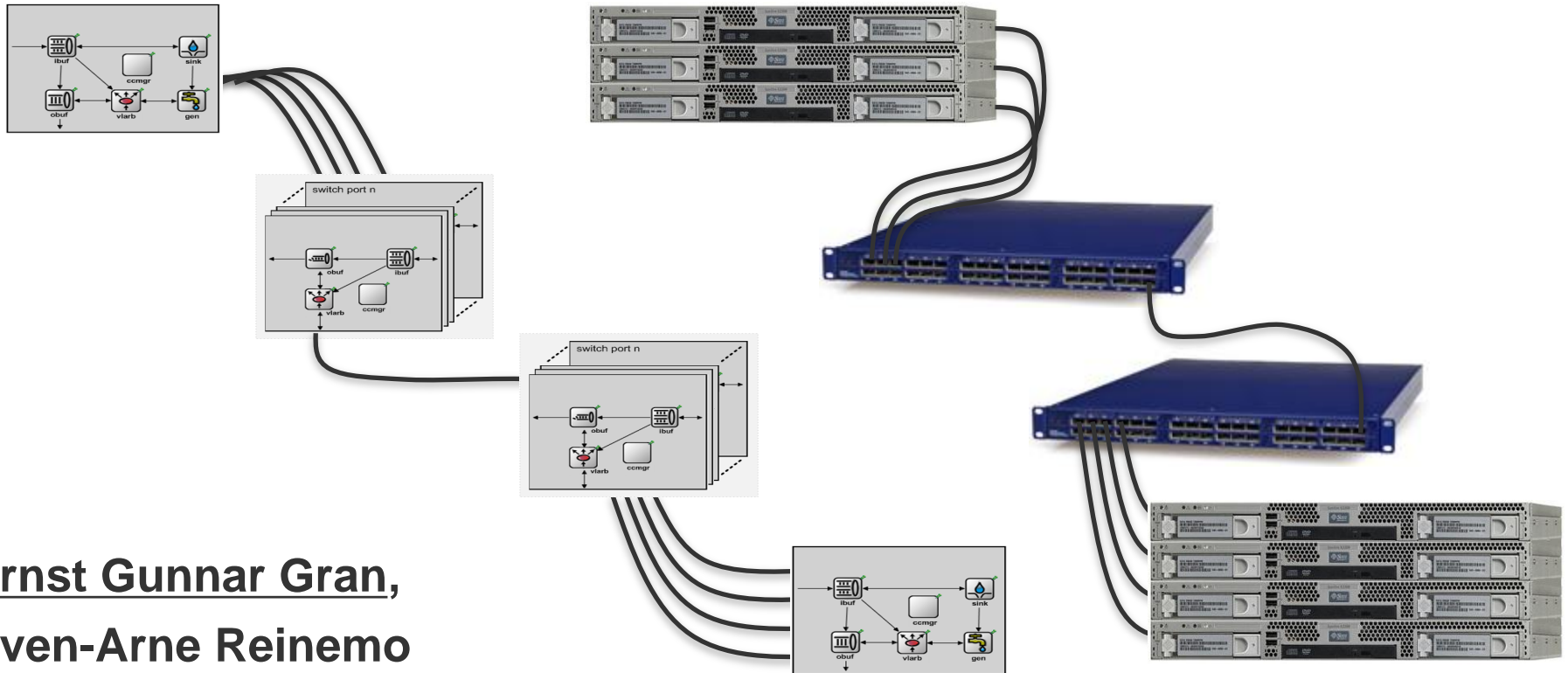


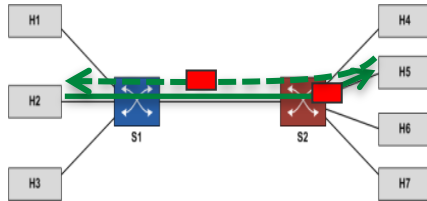
Simulating InfiniBand Congestion Control using OMNeT++



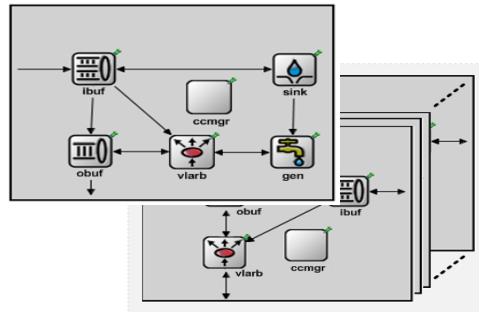
Ernst Gunnar Gran,
Sven-Arne Reinemo

Simula Research Laboratory

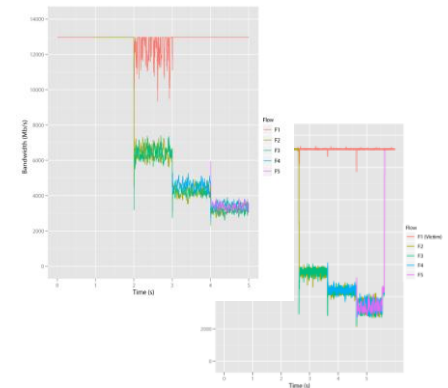
Presentation Outline



**Congestion and
Congestion Control**

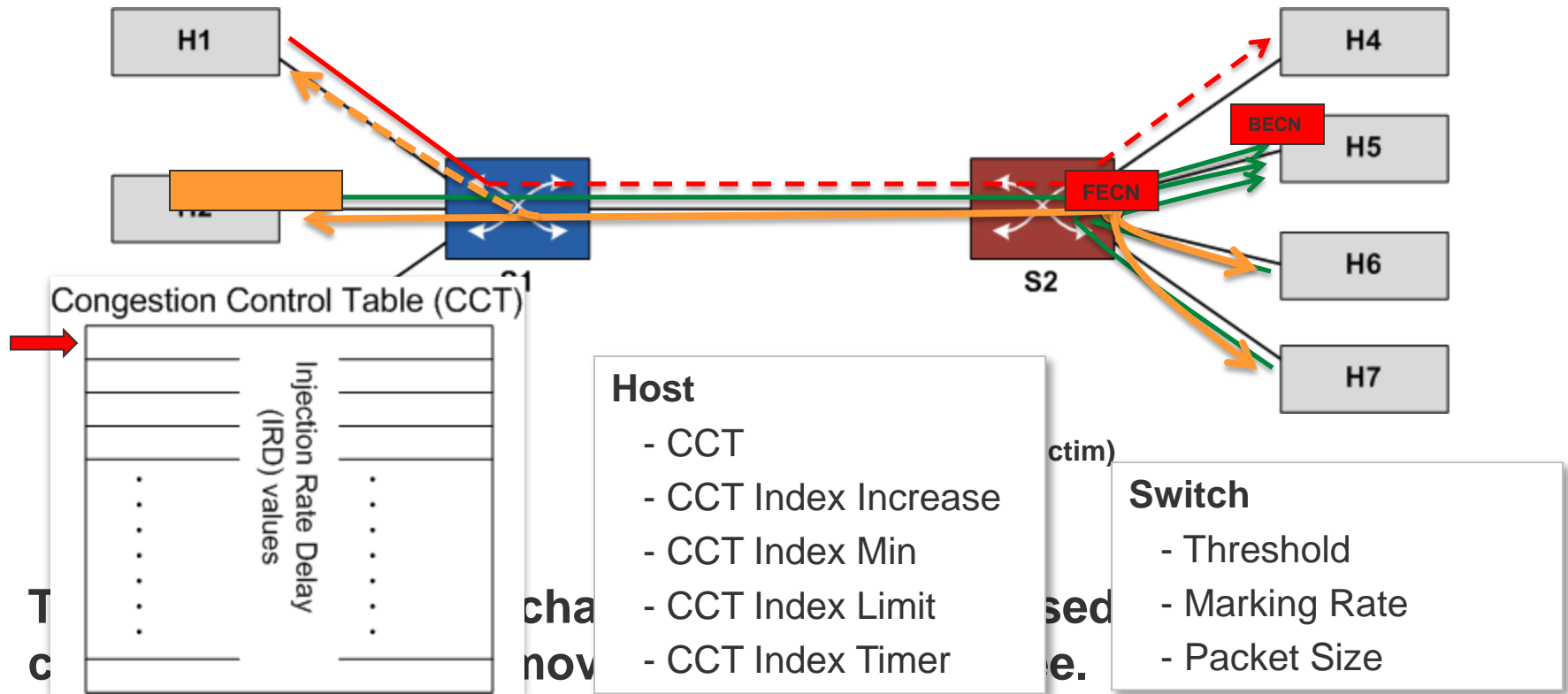


The IB CC Model

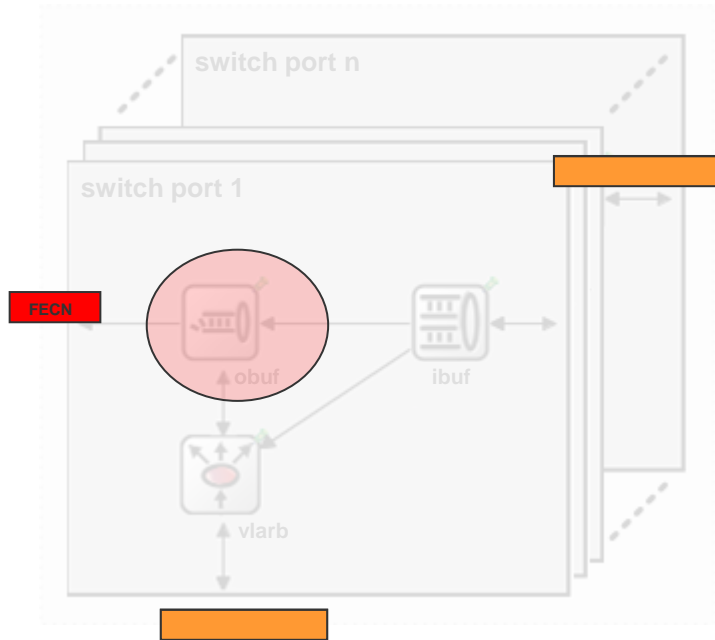


Validation

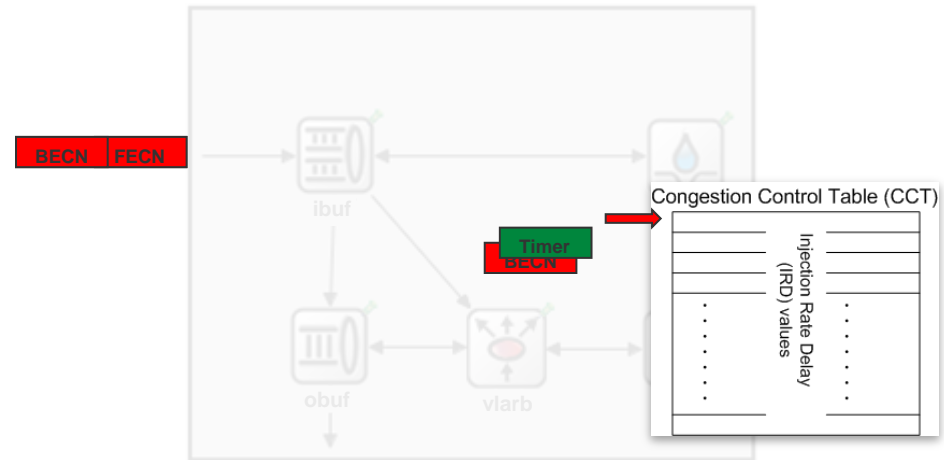
Shared network resources could lead to network congestion and head-of-line (HOL) blocking.



A network is constructed from the compound modules 'Switch' and 'HCA'.

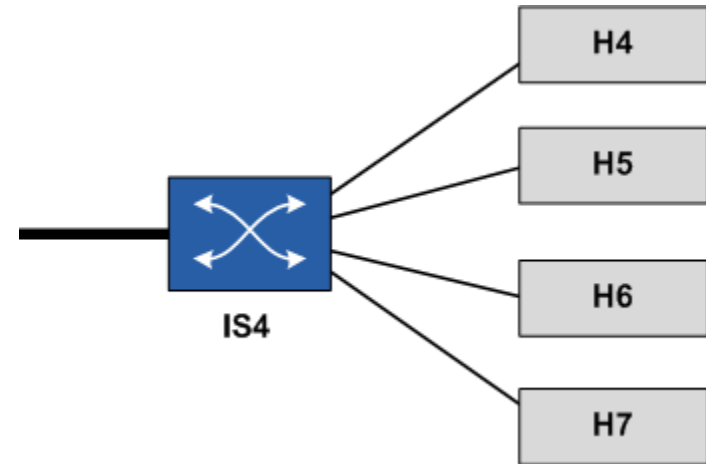
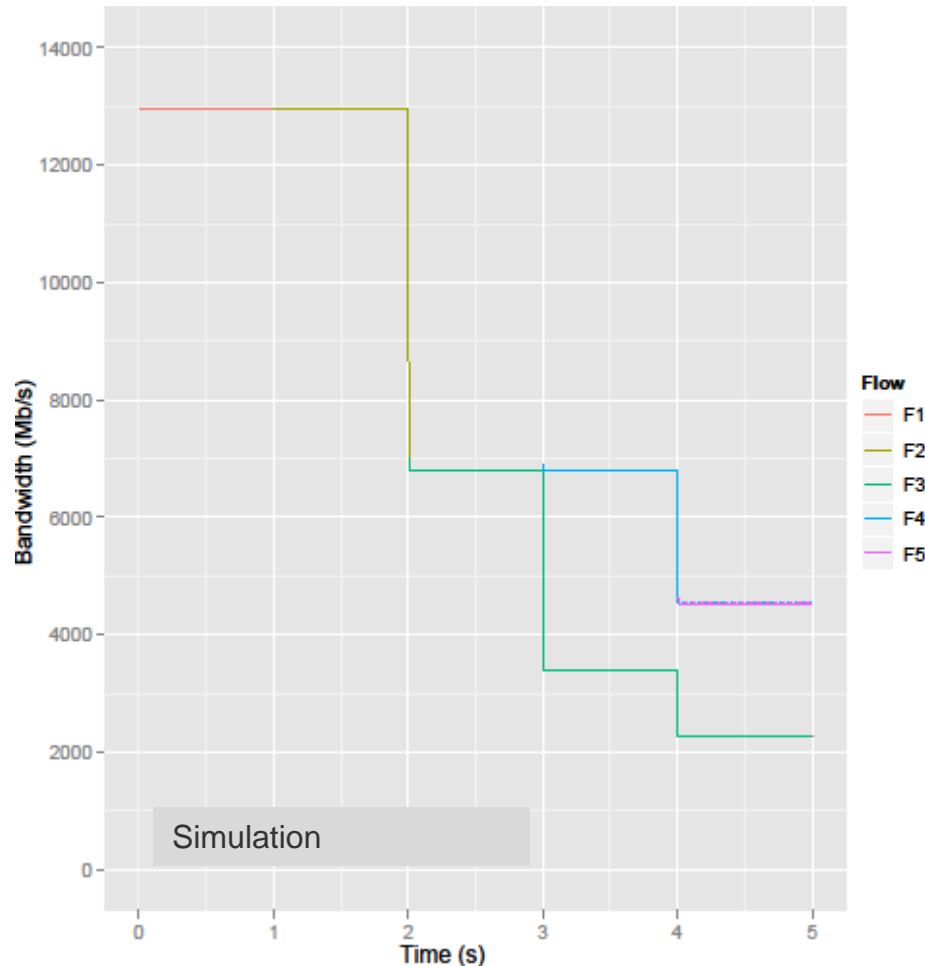


Switch (forwarding node)

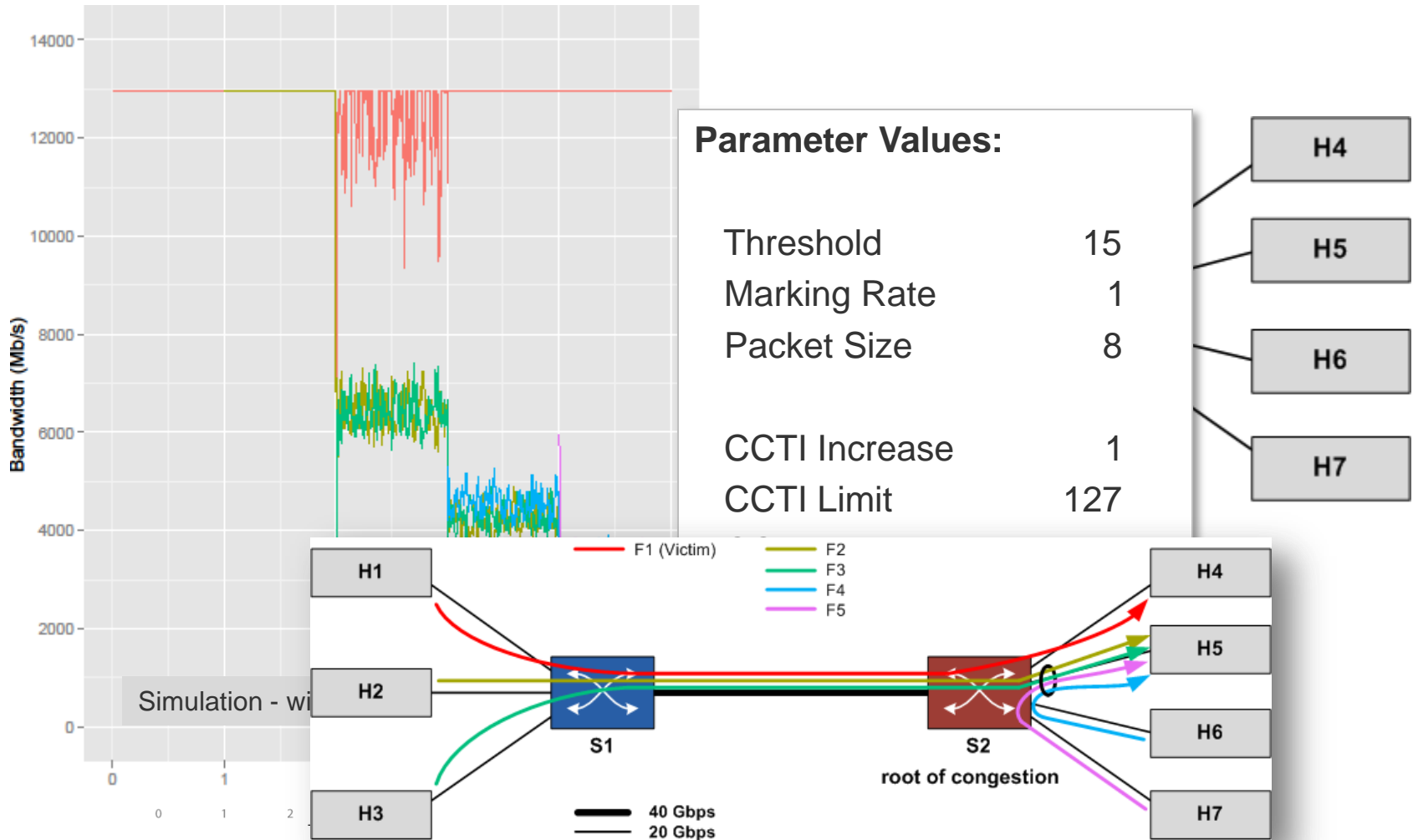


HCA (host channel adapter)

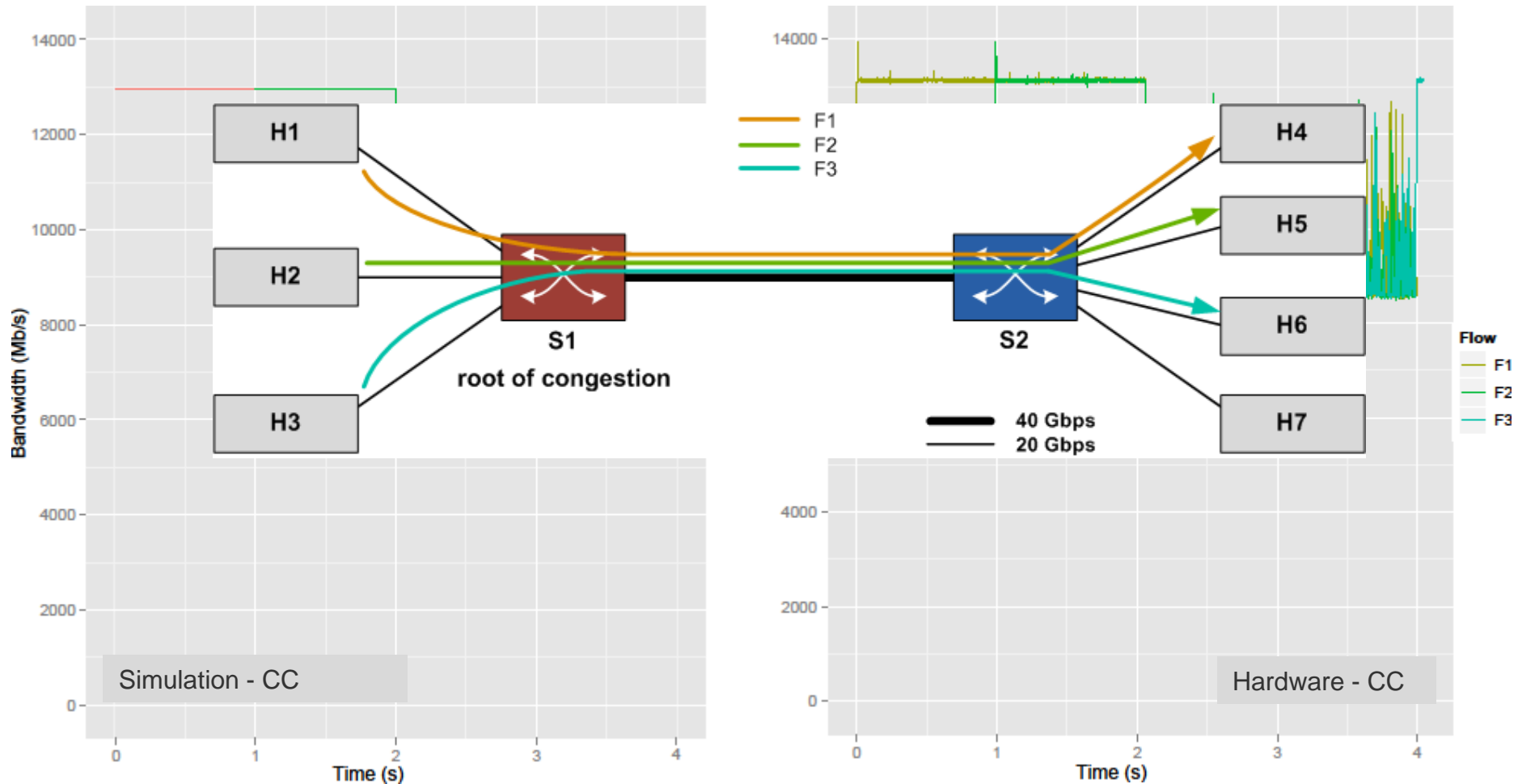
Experiments show that the HOL blocking leads to performance degradation when CC is not activated.



The InfiniBand CC mechanism is able to remove both the HOL blocking and the parking lot problem.



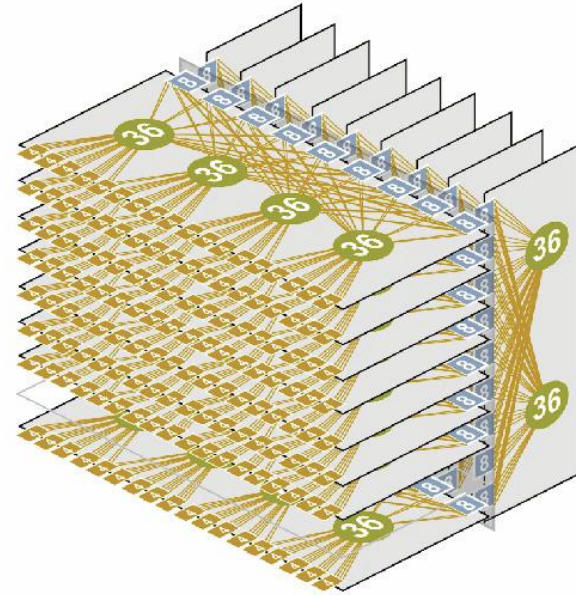
Three contributors to congestion creates a congestion tree with a root at S1.



Ongoing Research: InfiniBand Congestion Control in M9

(SUN™ DATACENTER INFINIBAND SWITCH 648)

- IBTA Specification 1.2 compliant
- 648 QDR/DDR/SDR 4x InfiniBand ports
- Three-stage internal full Clos network (non-blocking)



Want to give the IB CC model back to the OMNeT++ community,
but first....:

- Clean up
- Improve doc
- Parallelization

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