

R2D2: Bufferless, Switchless Data Center Networks Using Commodity Ethernet Hardware

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Statistical multiplexing uses queueing, which causes unpredictable long latency tails



Explicit network scheduling allows us to deterministically multiplex without long tails



Time = Fixed (0.8μ s to $<3.5\mu$ s)

Latency CDF: NetFPGA 10G PCP at varying packet sizes.

Uncontended latency vs packet size, measured through several PCP prototypes.

80

The Resilient Realtime Data Distributor (R2D2) network architecture





Gateway

Ideally implemented in hardware. Our prototype achieves good results in software only.

Come talk to us about **bandwidth**, scheduling policies and applications for R2D2!



Approved for Public Release

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