Data Centre Network Latency Control
Dagstuhl Seminar, Jul 2016

3-minute introduction
Bob Briscoe*

describes joint work with
Koen De Schepper†
Olga Bondarenko*
Inton Tsang†
Andreas Petlund*
Carsten Griwodz*

* [simula . research laboratory]

† NOKIA Bell Labs

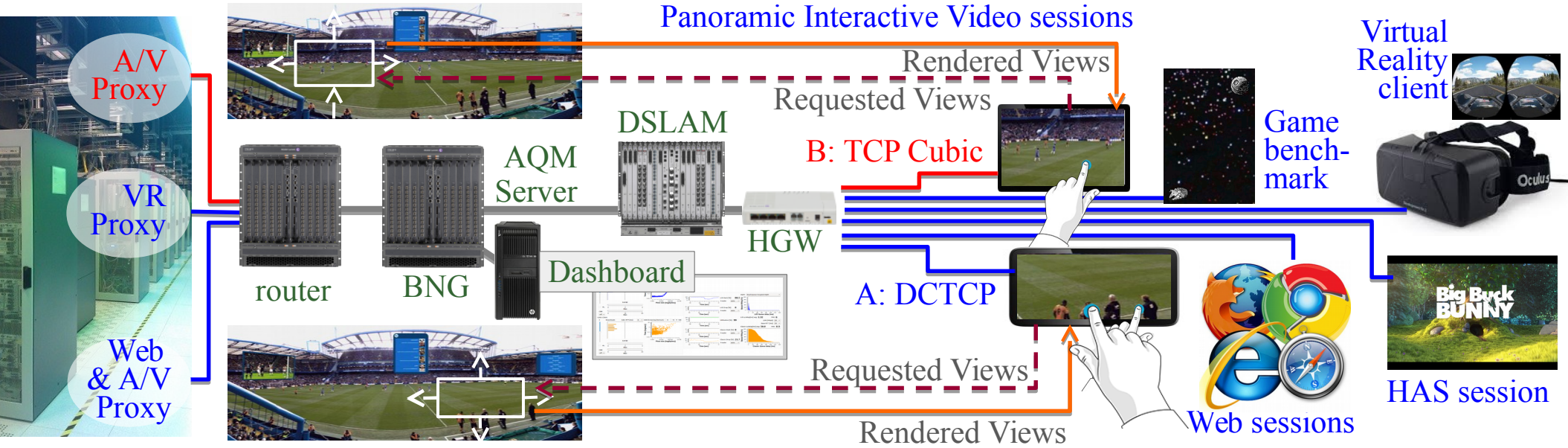
R/TE
Reducing Internet Transport Latency

The authors' contributions are part-funded by the European Community under its Seventh Framework Programme through the Reducing Internet Transport Latency (RITE) project (ICT-317700). The views expressed here are solely those of the authors.

Data centres: just a part of the whole

- Data centres are boring
  - Close to the ideal world that suits researchers
  - But only a small part of the messy world around us
- Growth in DC research is 'cos it's easier
  - where's the challenge in that?
- My interest in DCs is as a part of the whole
  - a source of inspiration
  - a proving ground
  - a part of the larger comms system

“Data Centre to the Home” DCttH

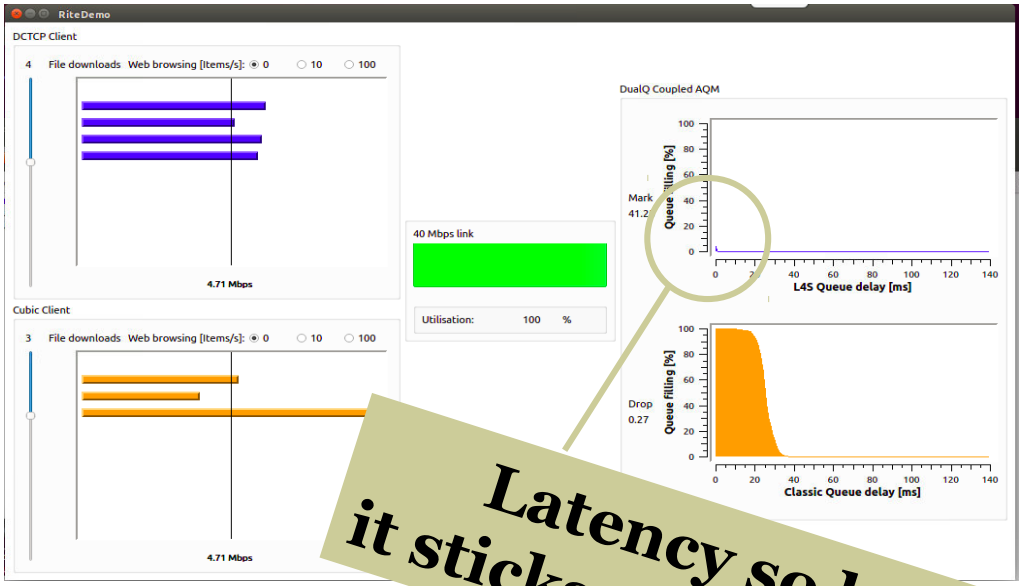


- Ultra-Low Delay for **all** apps
  - *Not* Diffserv; not low delay for some at the expense of others

- heavy load of multiple latency-sensitive apps: **all** packets <1ms queuing delay
  - incl. finger gestures & oculus rift interaction generating video on-the-fly in a DC
  - accessed over real public broadband (7ms base delay)

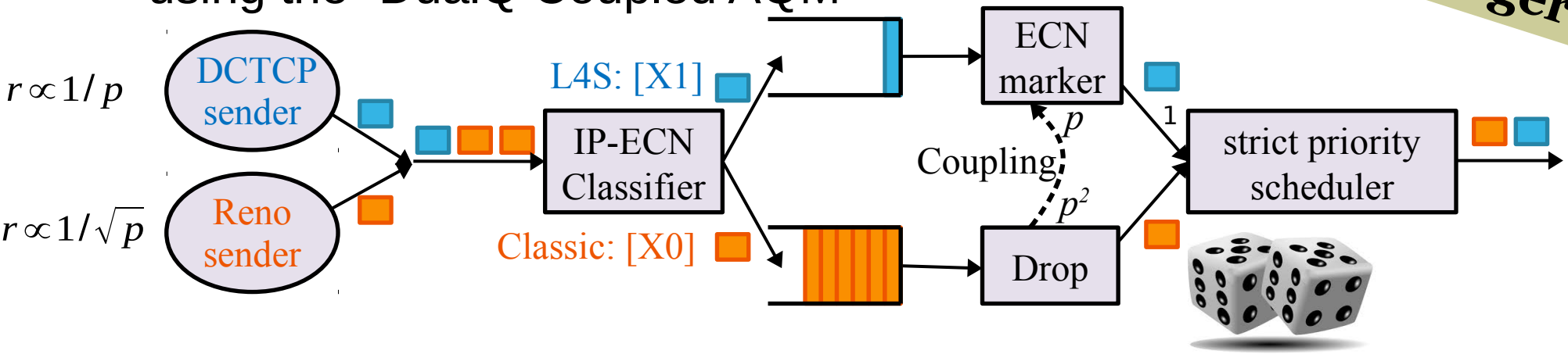
- Aim: to be worth the deployment hassle – much better than today; new app enabler
- L4S: Low Latency, Low Loss, Scalable throughput (L4S)
  - A new service for **all** Internet traffic to transition to

Coexistence



Latency so low it sticks to your finger

- DCTCP coexists with Reno/Cubic throughput equivalence without flow inspection
  - using the “DualQ Coupled AQM”



- Other deployment scenarios: multi-tenant DC, DC-DC interconnect

an incrementally deployable clean-slate

- DCTCP serves us as an existence proof
  - L4S should work with any good 1/p congestion control

- can redesign everything together
  - new AQM
  - new flow-start
  - new steady-state congestion control
- brief time window to solve all those old cc problems properly

- search “dctth” for videos, papers, etc
  or https://riteproject.eu/dctth/