

L4S in 5G (on one page)

❑ Objective : Evaluate L4S for VR/gaming scenario with rate adaptive video in a 5G deployment

❑ 5G system simulator study

https://kth.diva-portal.org/smash/record.jsf?dswid=-6303&pid=diva2%3A1484466&c=1&searchType=SIMPLE&language=en&query=brunello&af=%5B%5D&aq=%5B%5B%5D%5D&aq2=%5B%5B%5D%5D&aqe=%5B%5D&noOfRows=50&sortOrder=author_sort_asc&sortOrder2=title_sort_asc&onlyFullText=false&sf=all

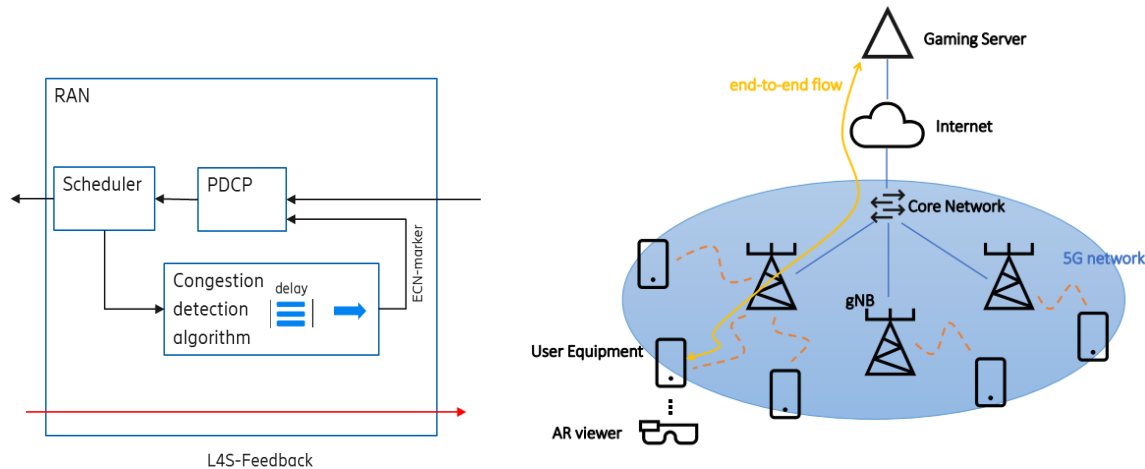


Figure 4.4: Simplified Simulated Scenario.

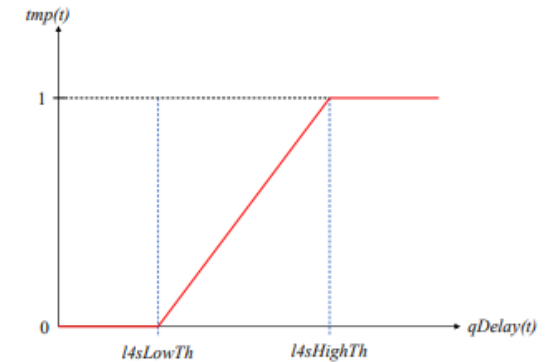


Figure 4.3: Instantaneous marking probability.

❑ 21 cells 3GPP case 1

❑ BW: 10MHz

❑ SCReAM congestion control (RFC8298)

❑ 2-70Mbps (1080p→4K)

❑ Monitor queue on RLC and mark packets on PDCP (feedbackward)

❑ Variable load 2-50 video users

❑ 10 times as many background (web) users

❑ Various scheduling algorithms

❑ RR Round Robin

❑ DBS Delay based scheduler

L4S in 5G



Davide Brunello

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Outline

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- ❑ 5G system simulator study

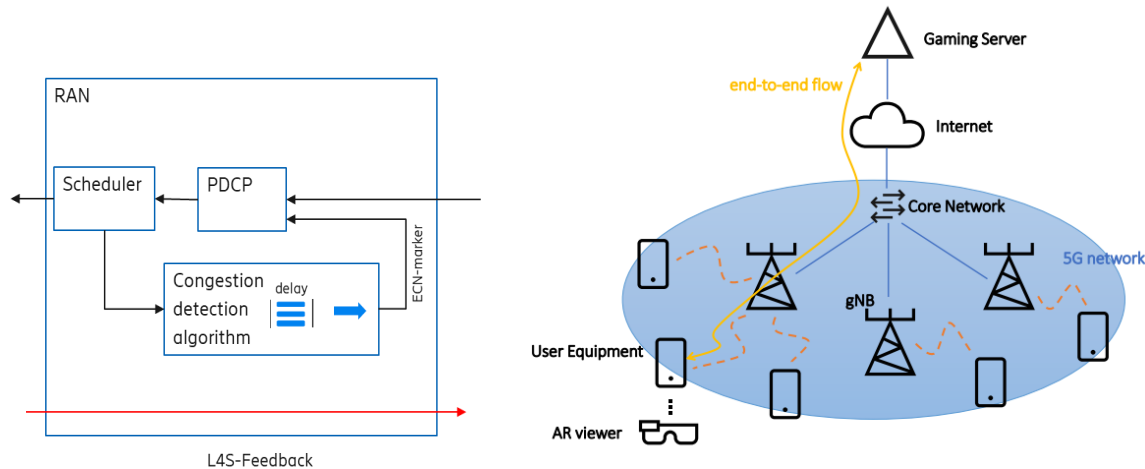


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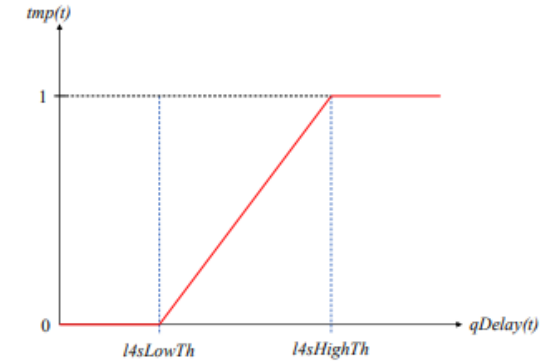
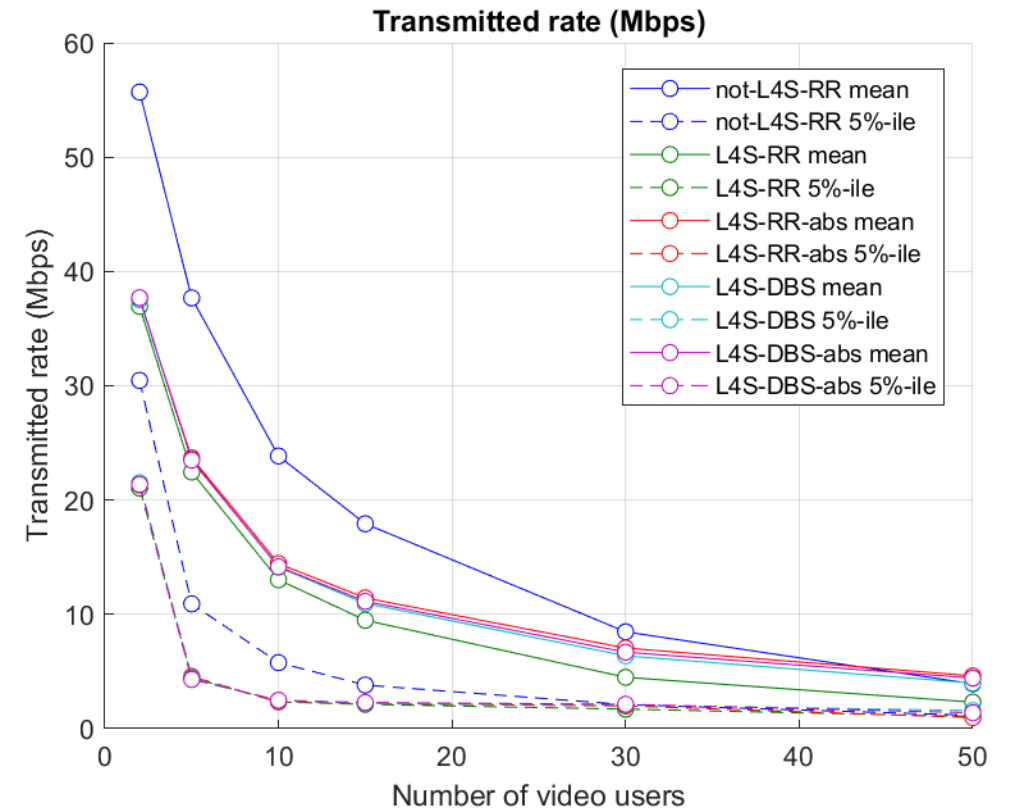
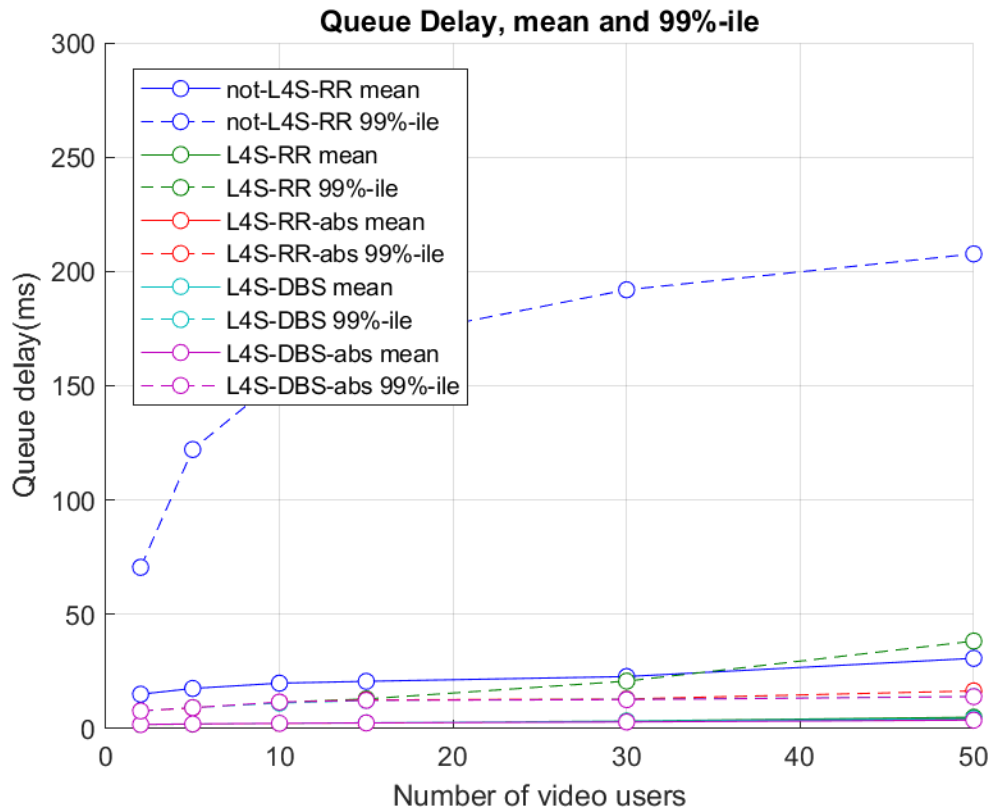
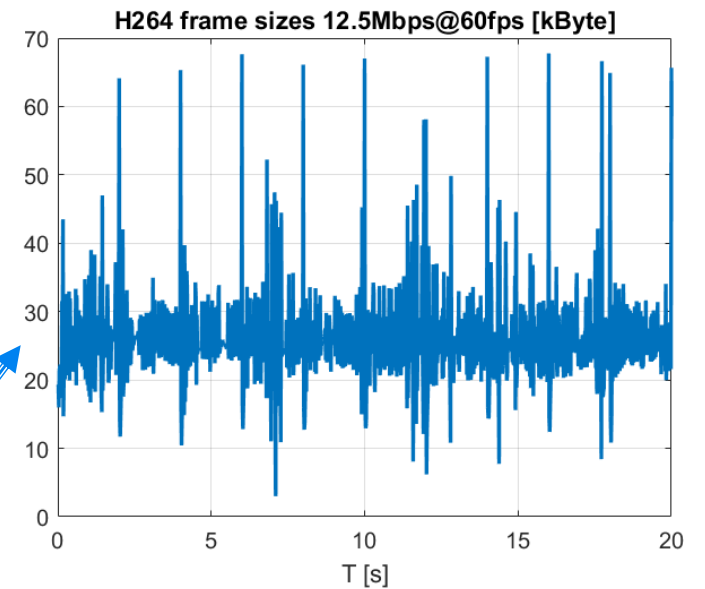


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Bitrate and network queue delay

- ❑ L4S gives considerably less network queue delay
- ❑ L4S gives a lower transmitted bitrate
 - ❑ Throughput – latency tradeoff, adaptation to source characteristics



Video frame delay



- ❑ L4S gives a reduced video frame delay.. up to a point
 - ❑ DBS schedulers (QoS) gives better results
- ❑ Users with link throughput below 2Mbps gives a strong impact on KPI, video bitrate cannot go below 2Mbps
 - ❑ 99%-ile graph show only users with average bitrate > 2Mbps

