Slow-Start vs. Quick-Start

Benefit Illustration

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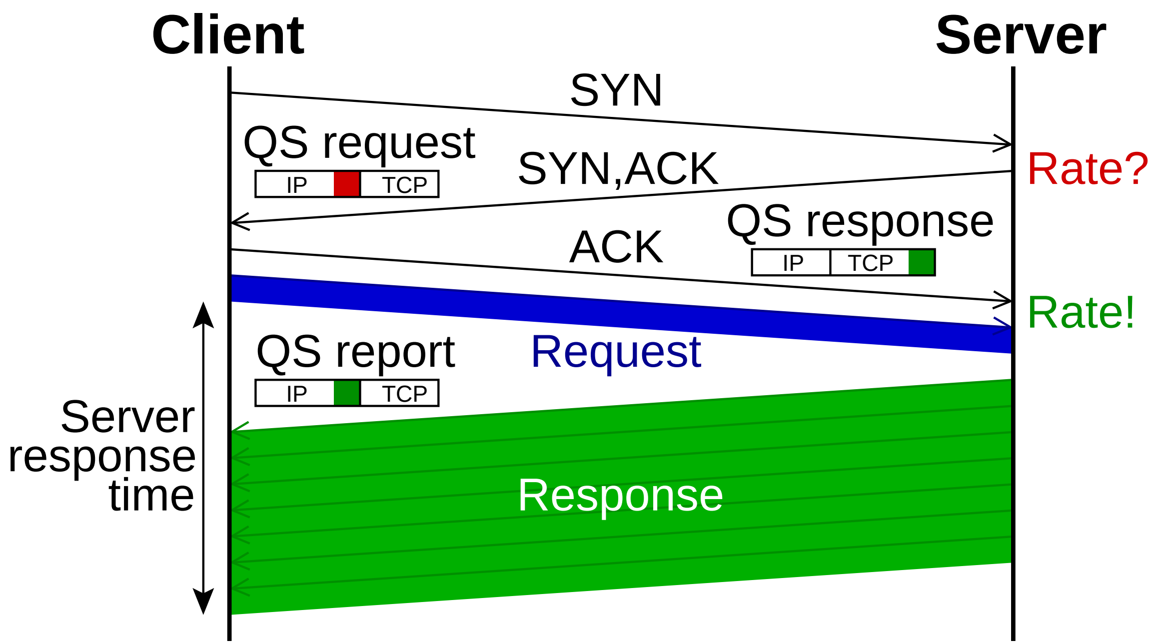
Scenario

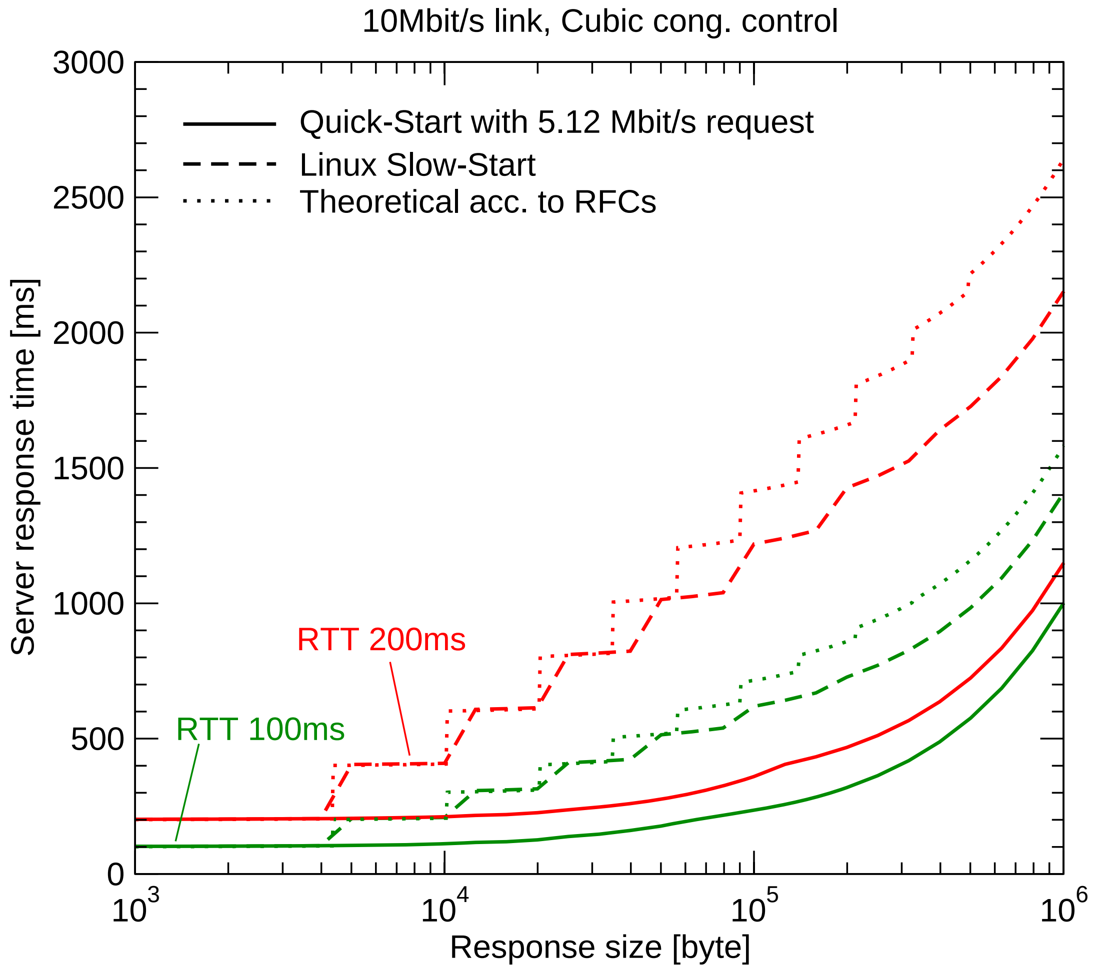
A Very Simple Client-Server Application



- Two Linux PCs, connected by an (Fast) Ethernet link, additional delay by "netem"
- HTTP/1.0-like request over a new TCP connection
  - Request size: 100 byte
  - Response size: variable
- (Optional) Quick-Start request in SYN,ACK with maximum possible rate request
- Performance metric: Time between request and complete reception of response

Results

Test 1: Ethernet Link

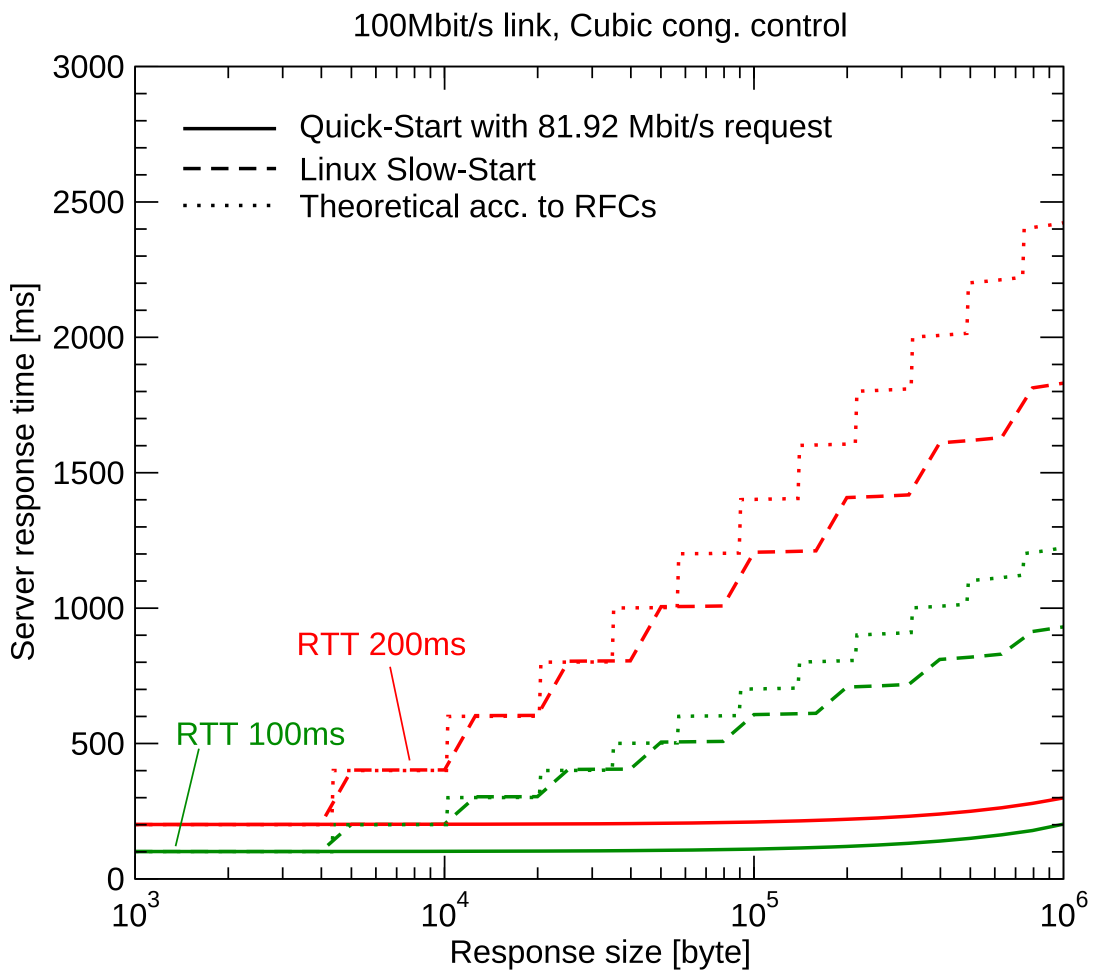


→ Additional Slow-Start delay of one second (or more) for transfers of the order of 100kB

→ Linux TCP speeds up the Slow-Start (by not using delayed ACKs)

Results

Test 2: Fast Ethernet Link



→ Slow-Start can hardly benefit from the increased link capacity

→ Quick-Start transfers the data in almost one RTT only