Multipath Connectivity in the Future Internet

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23rd October 2015

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Design Issue: Fairness

➢ Does the End-User Really have benefits from using Multipath Transport?

  ▪ Seek to maximize throughput over all available paths

    (While remaining fair to other transport flows)

➢ Fairness goal:

  ▪ Fair allocation of resources among participants

➢ However multiple confusions and contradictions

  ▪ For singlepath: Participant – flow; Resource - bottleneck

  ▪ With multipath: Participant?; Resource?

    - Resource pooling [4]: Resource – Network capacity as single pooled resource

➢ Is it possible to reach this goal?

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Fairness for Multipath Transport

- ➢ Resources
  - ▪ Bottleneck (also applicable to legacy TCP)
  - ▪ Network (multiple bottlenecks)

- ➢ Participants
  - ▪ Subflow (also applicable to legacy TCP flows)
  - ▪ (MPTCP) Flow
  - ▪ Subscription
  - ▪ End device
  - ▪ User

Focus
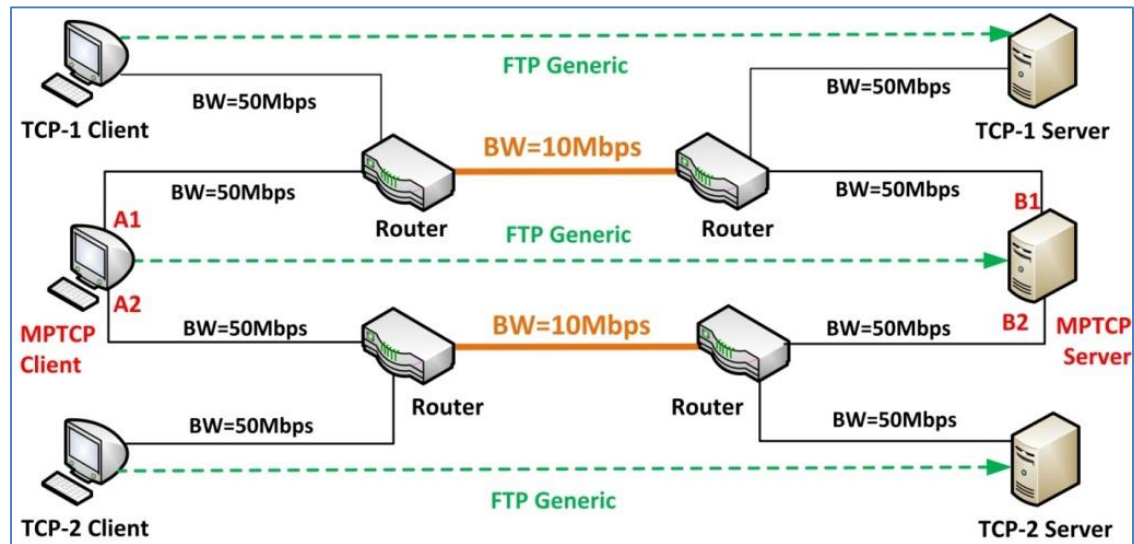
➢ Design Goals and Requirements

➢ Multipath Connectivity Architecture

➢ Fairness Aspects

  ▪ Congestion Control Variants

  ▪ Schedulers for Multipath Transfer

➢ Theoretical Analysis

  ▪ Analytical model

  ▪ Algorithms and Linear Programming based solutions

THANK YOU FOR YOUR ATTENTION!!!

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