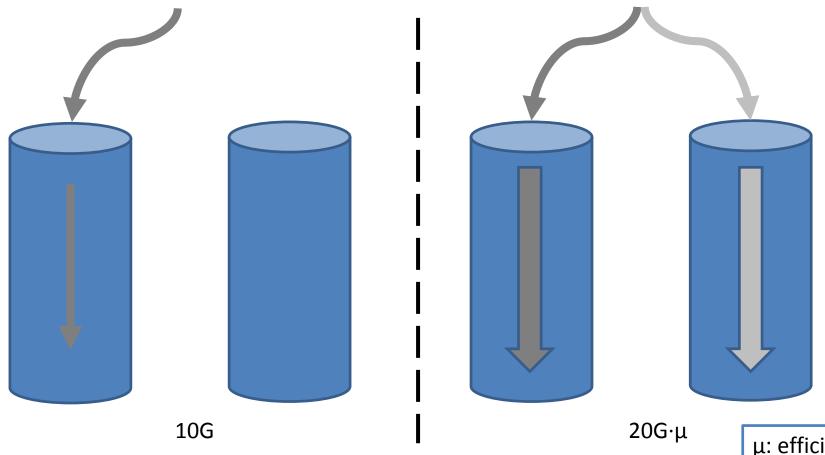
# Failures Handling for Multi-path TCP in Data Centers

## **Static Data Centers**



#### Single-path:

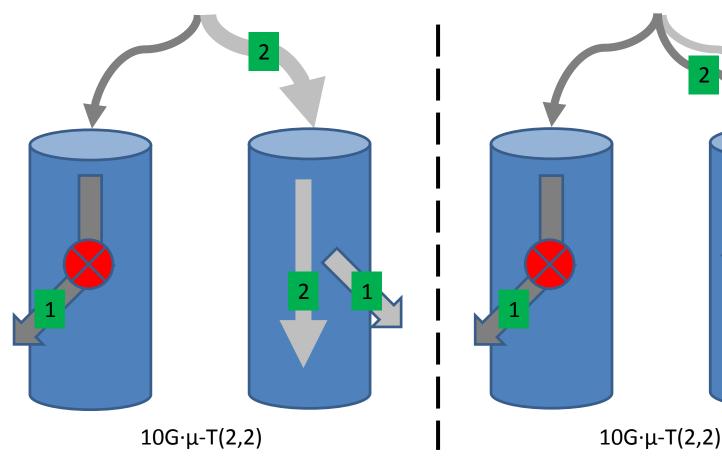
- low utilization
- high reliability

#### Multi-path:

- high utilization
- low reliability

μ: efficient throughput considering ACK, coding.

## **Static Data Centers**



Multi-path failures:

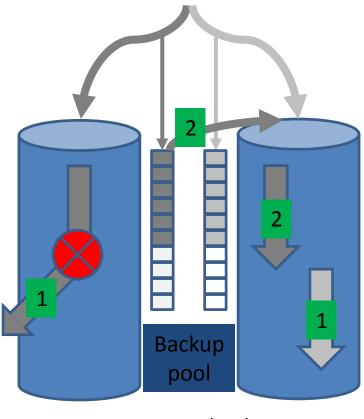
- Drop two subflows;
- 2. Retransmit initial flow.

Multi-path failures:

- 1. Drop two subflows;
- 2. Retransmit two subflows;
- 3. Decoding after transmit.

T(d,r): extra overhead of drops and retransmit.

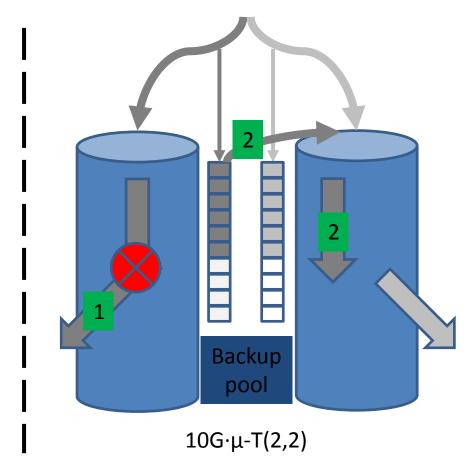
## **Static Data Centers**



 $10G \cdot \mu - T(1,1)$ 

Multi-path failures by backup:

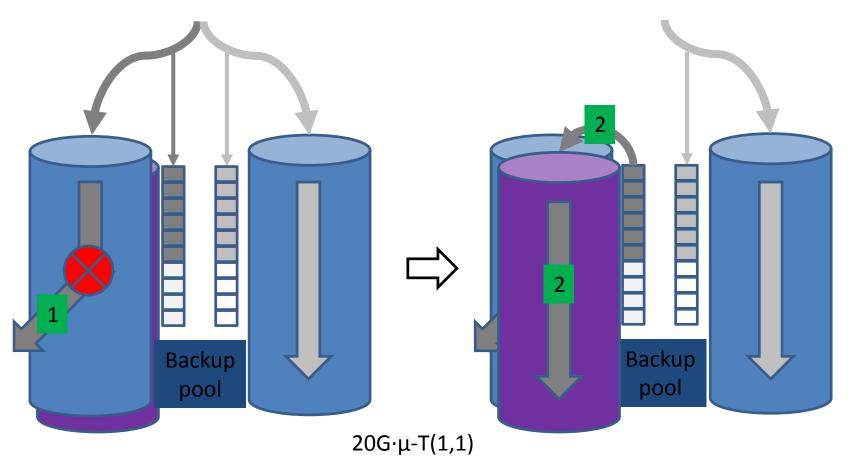
- 1. Drop one subflow;
- 2. Retransmit one subflow;
- 3. Decoding after transmit.



Multi-path failures:

- Drop two subflows;
- 2. Retransmit one subflow.

## Flexible Data Centers



Multi-path failures by backup:

- 1. Drop one subflow;
- 2. Retransmit one subflow;
- 3. Decoding as transmitting.