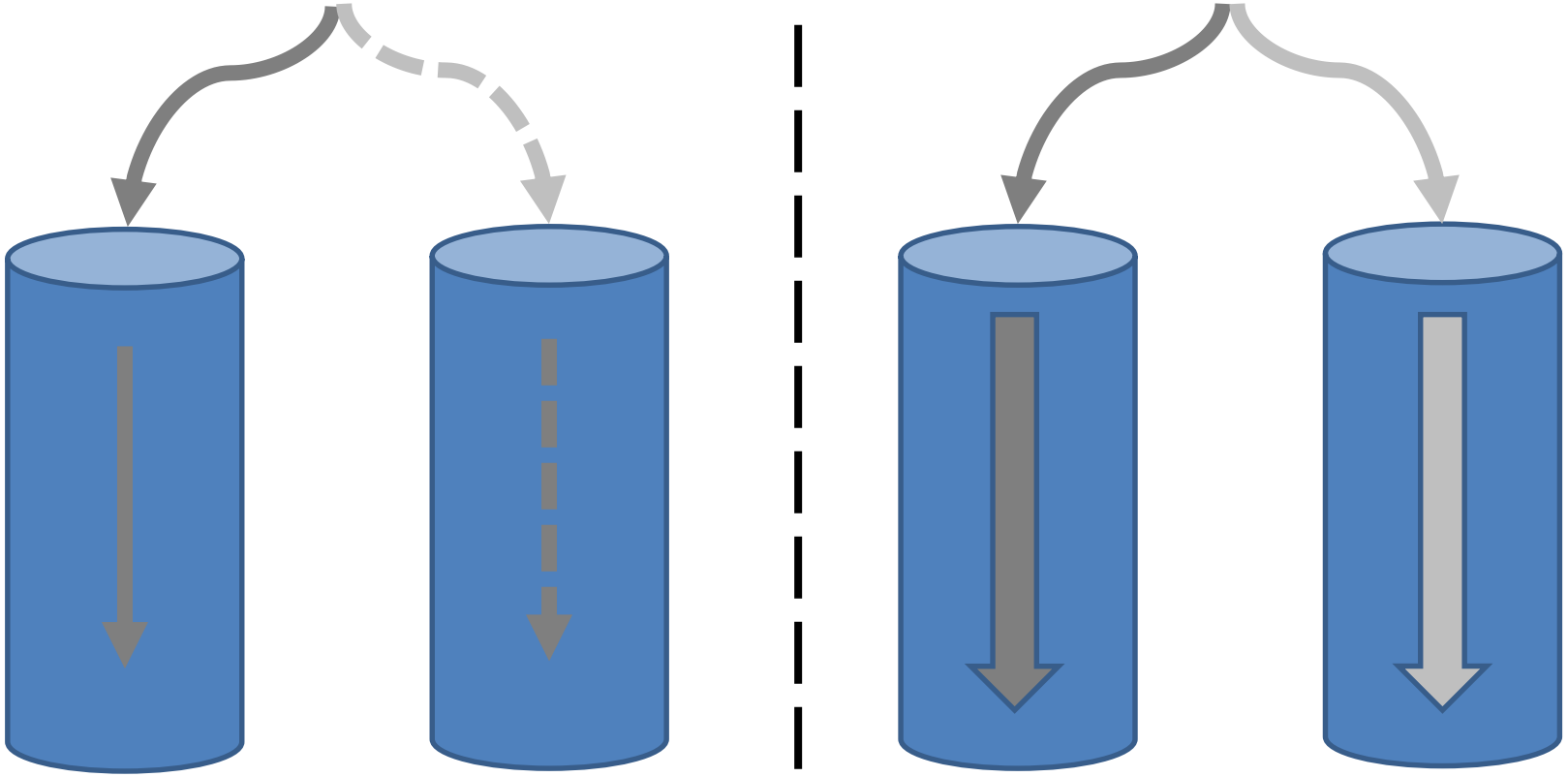
Failures Handling for Multi-path TCP in Data Centers

Static Data Centers



10G

20G·μ

Single-path:

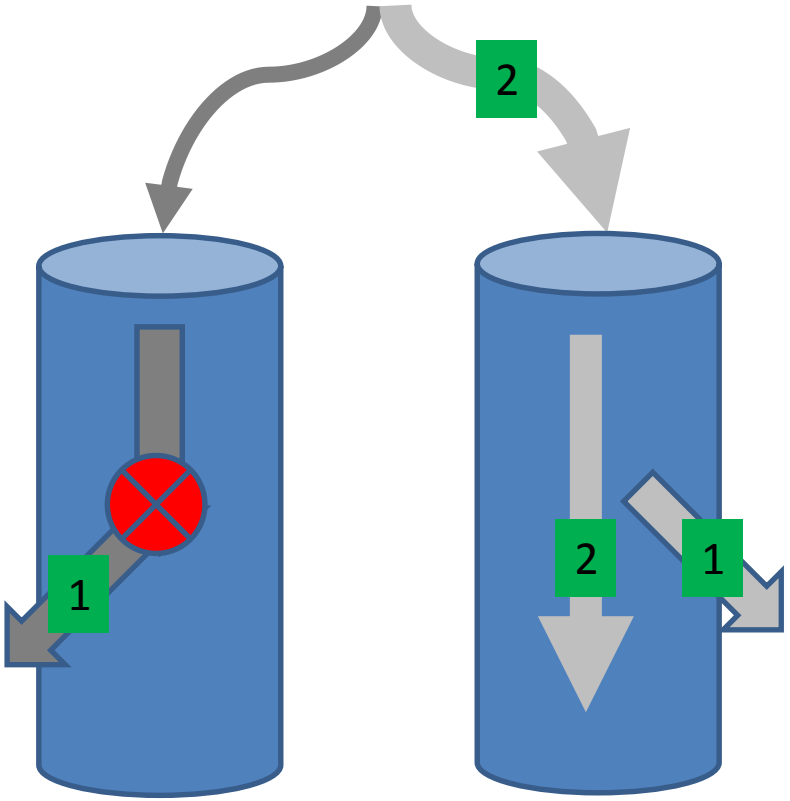
- **low utilization**
- high reliability

Multi-path:

- high utilization
- **low reliability**

μ: efficient throughput considering ACK, coding.

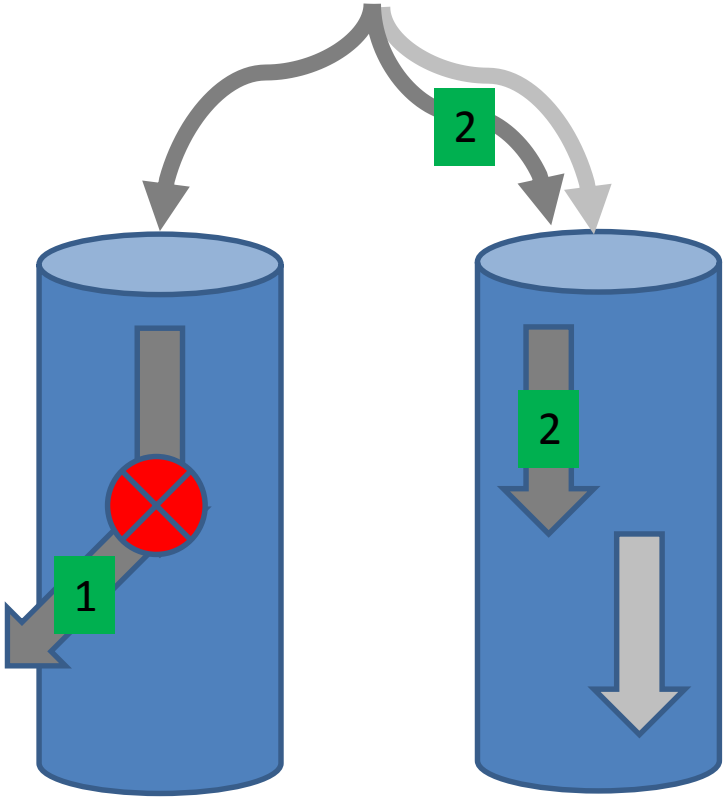
Static Data Centers



10G·μ-T(2,2)

Multi-path failures:

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



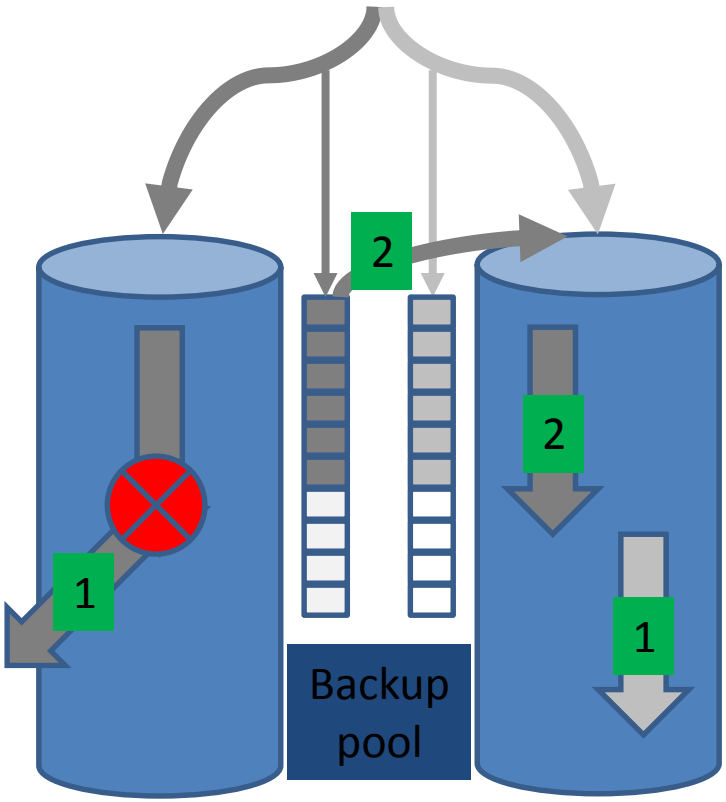
10G·μ-T(2,2)

Multi-path failures:

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

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

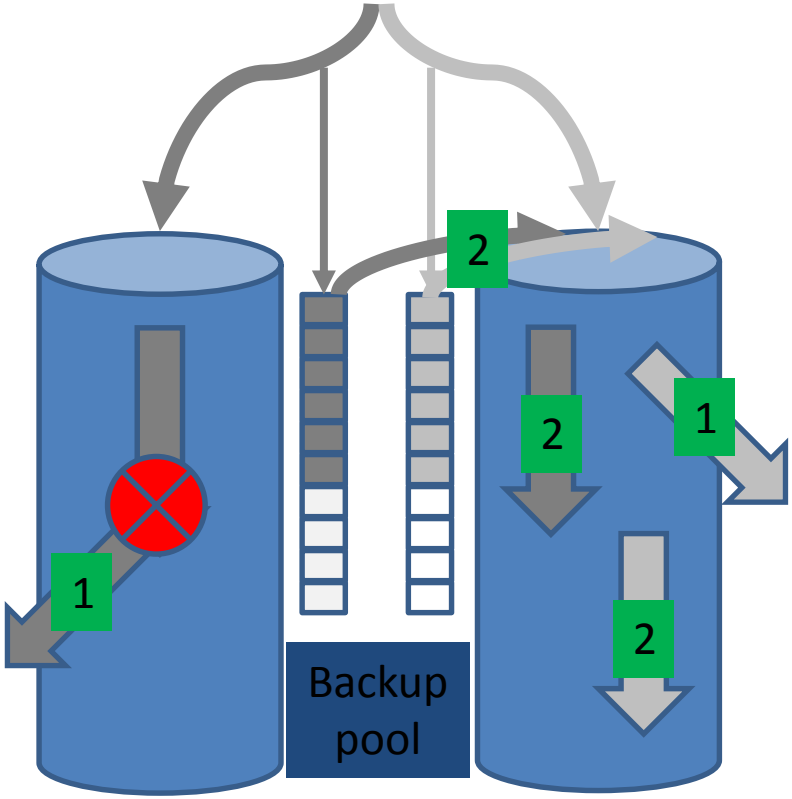
Static Data Centers



10G·μ-T(1,1)

Multi-path failures by backup:

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

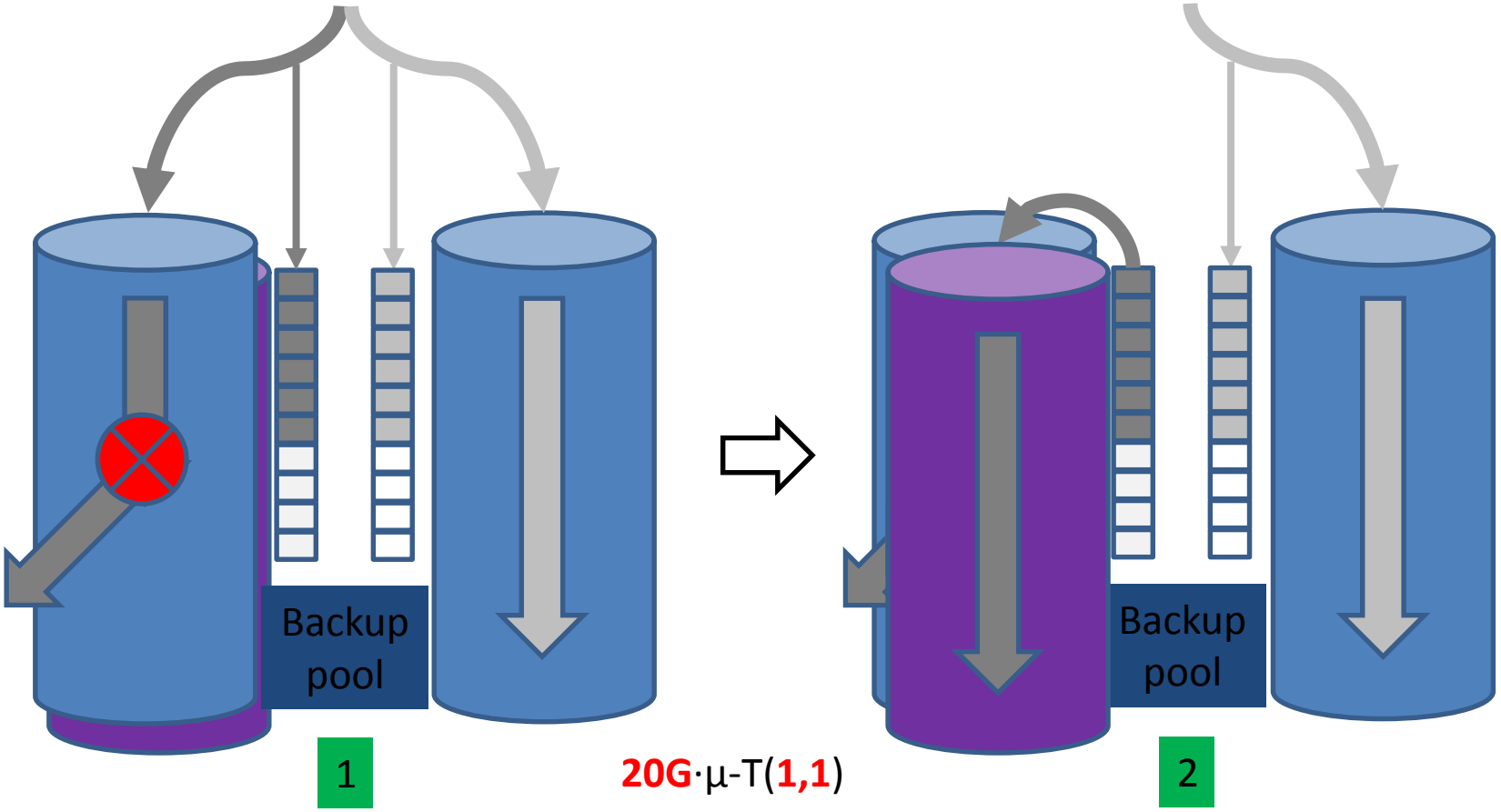


10G·μ-T(2,2)

Multi-path failures by backup:

1. Drop two subflows;
2. Retransmit two subflows;
3. Decoding **as transmitting**.

Flexible Data Centers



20G·μ-T(**1,1**)

Multi-path failures by backup:

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