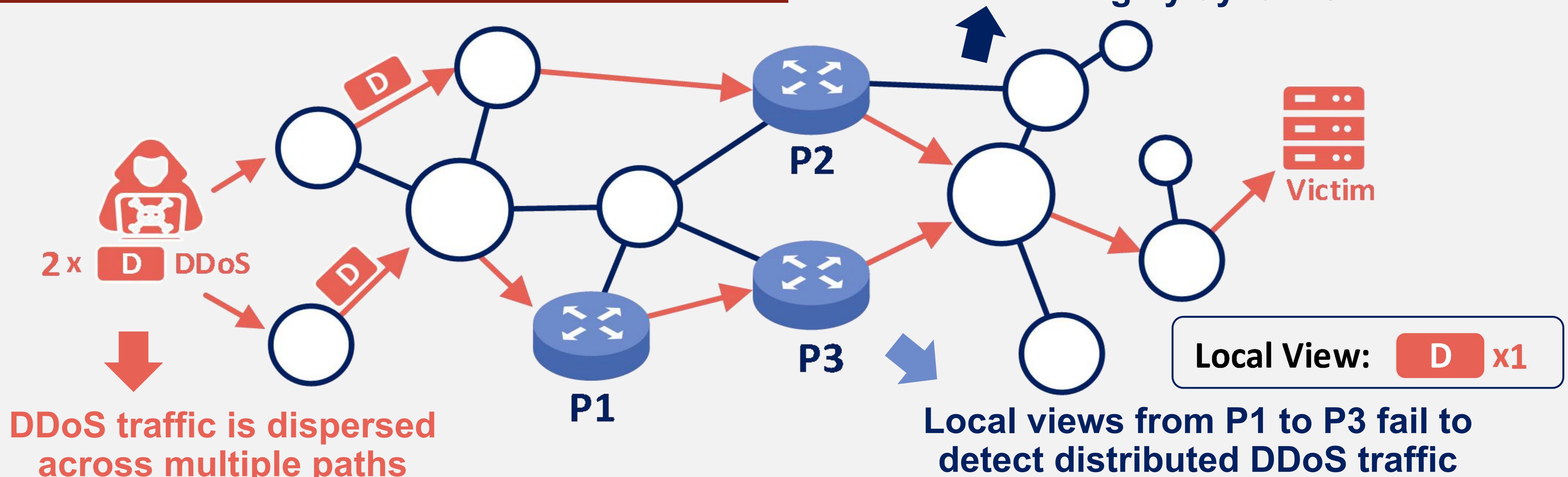
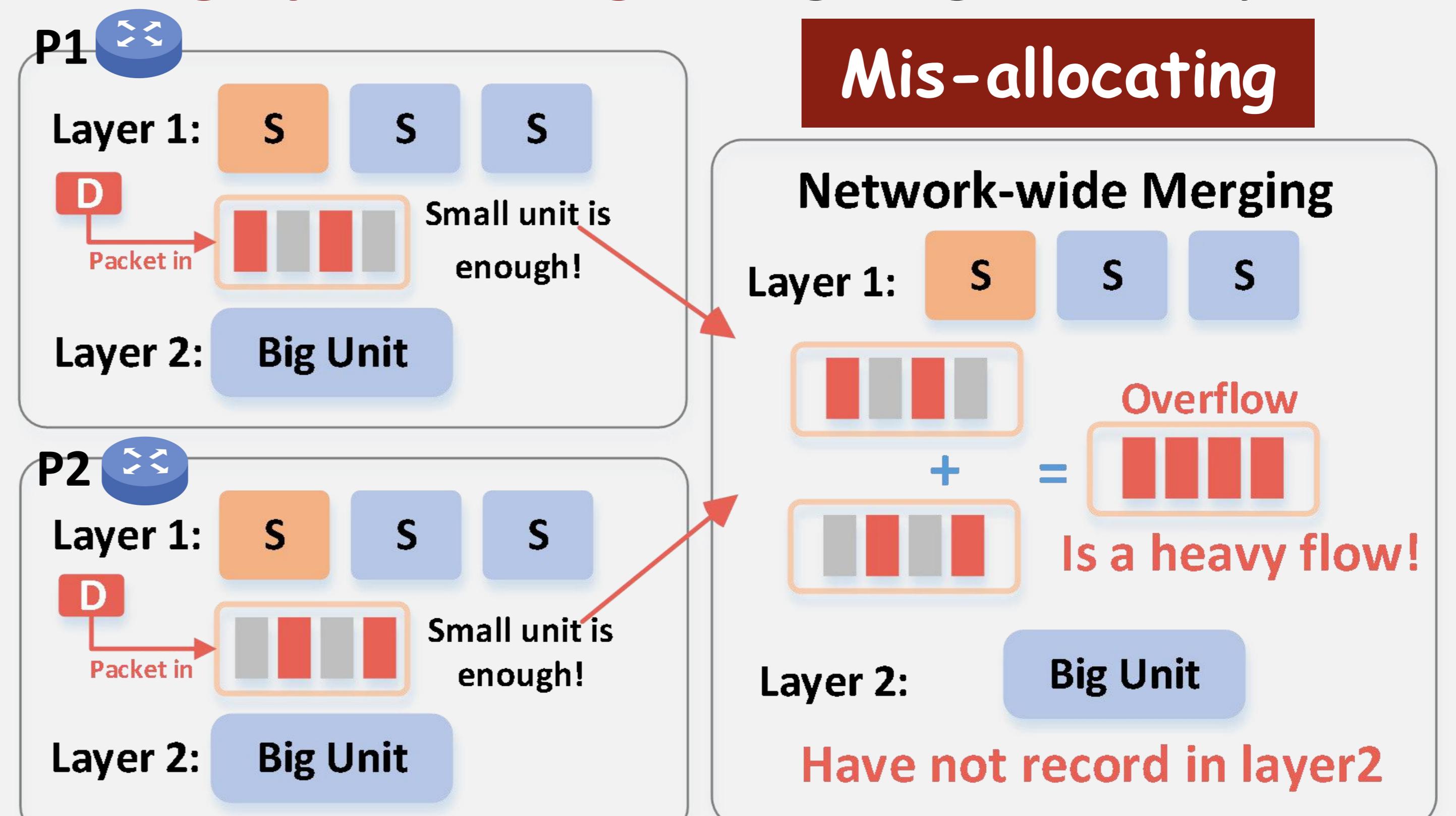
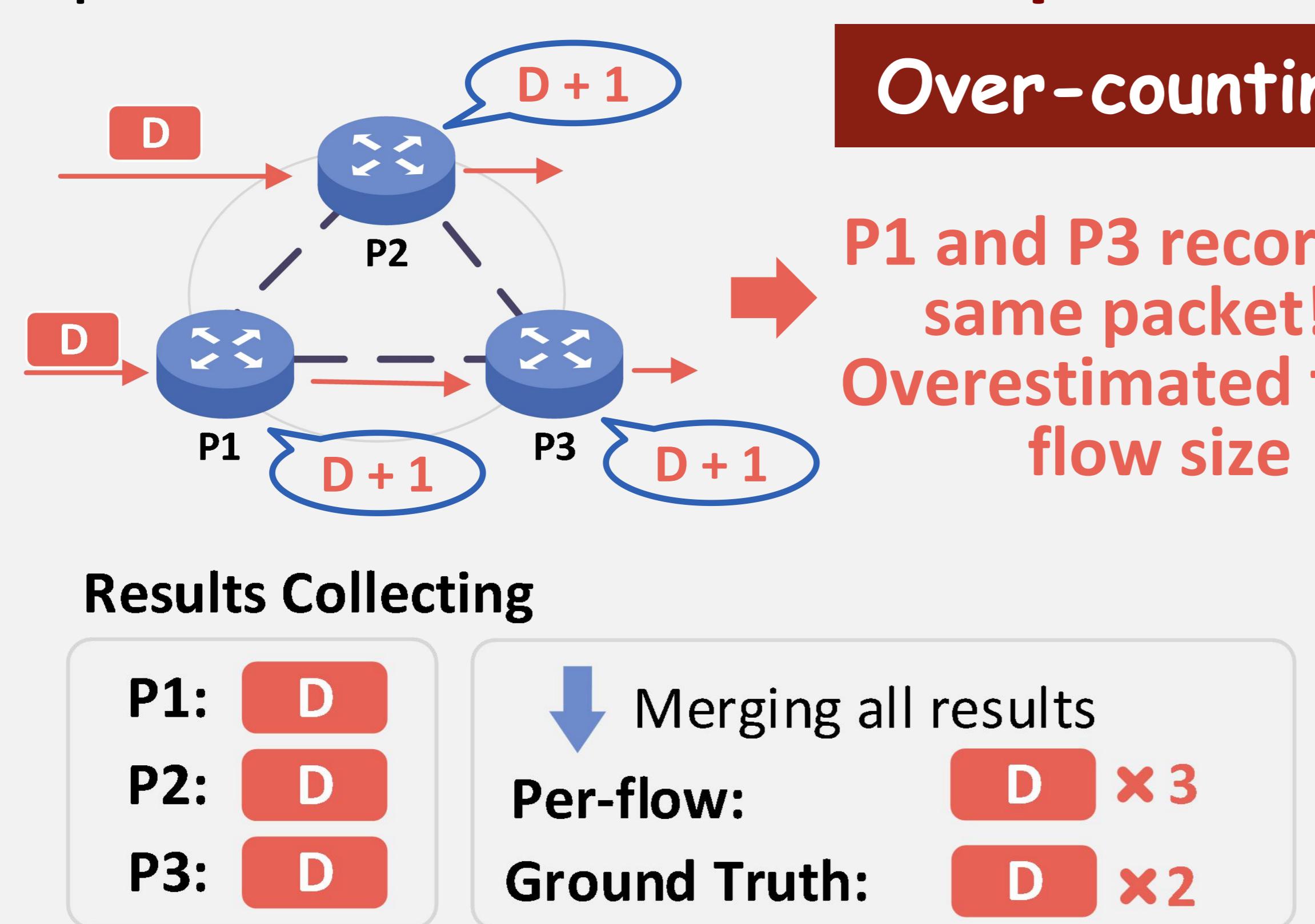


## Network-Wide DDoS Detection with Routing-Oblivious Per-Flow Measurement

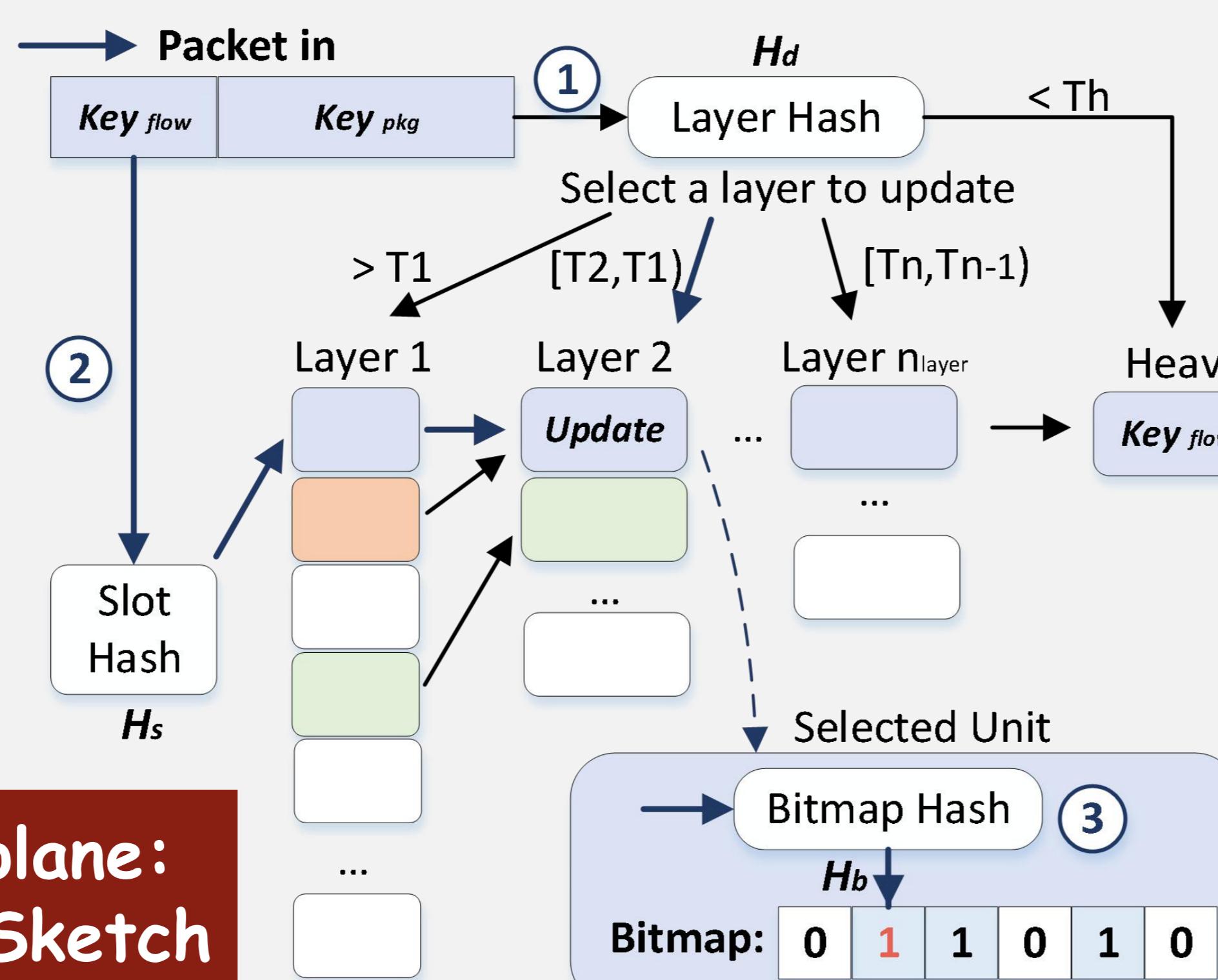
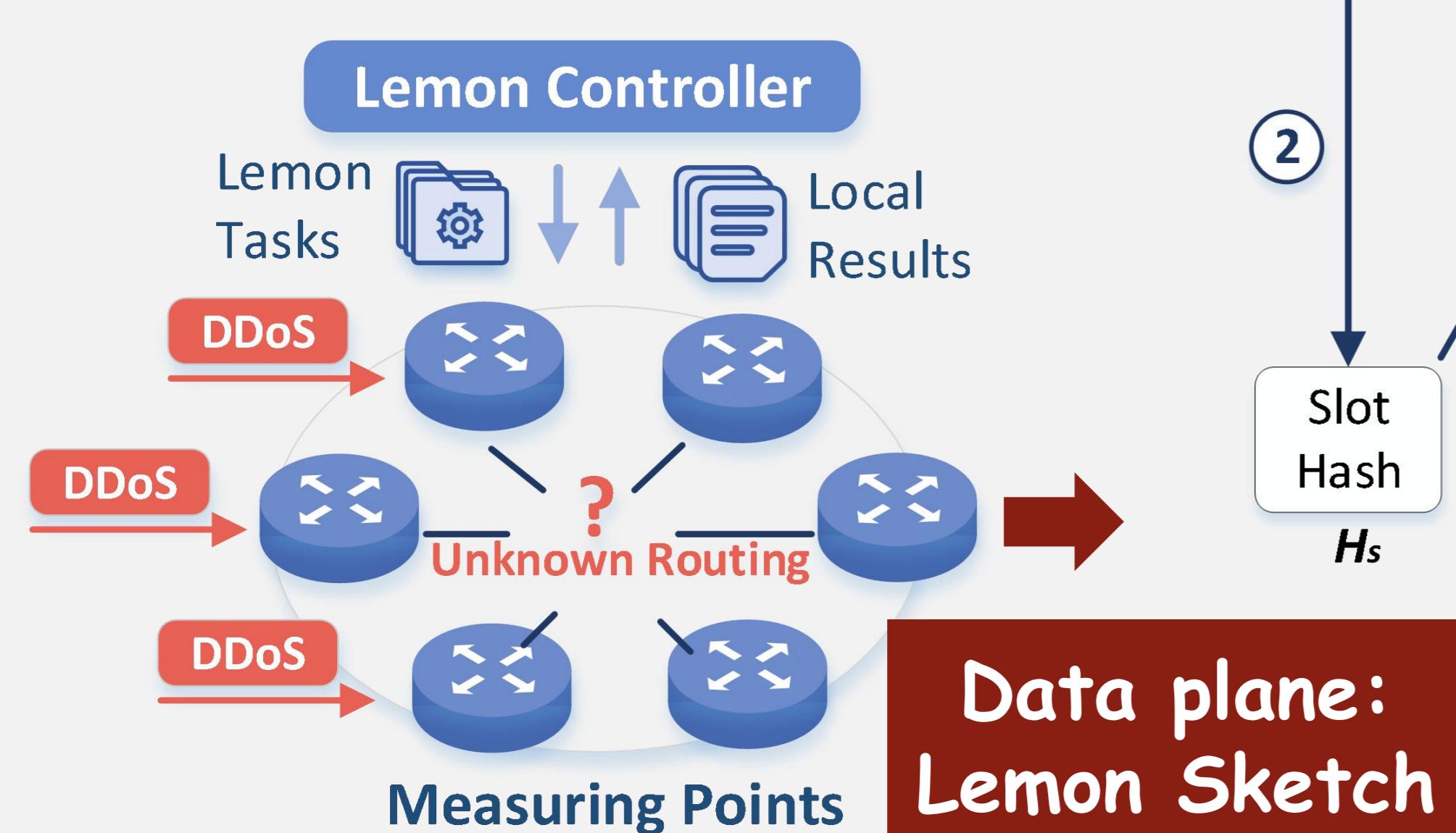
### Network-wide measurement



- Packets traversing multiple measurement points are **recorded multiple times**
- Current sketches **save space via multi-stage processing**, assigning flows by size.



### Lemon Overview



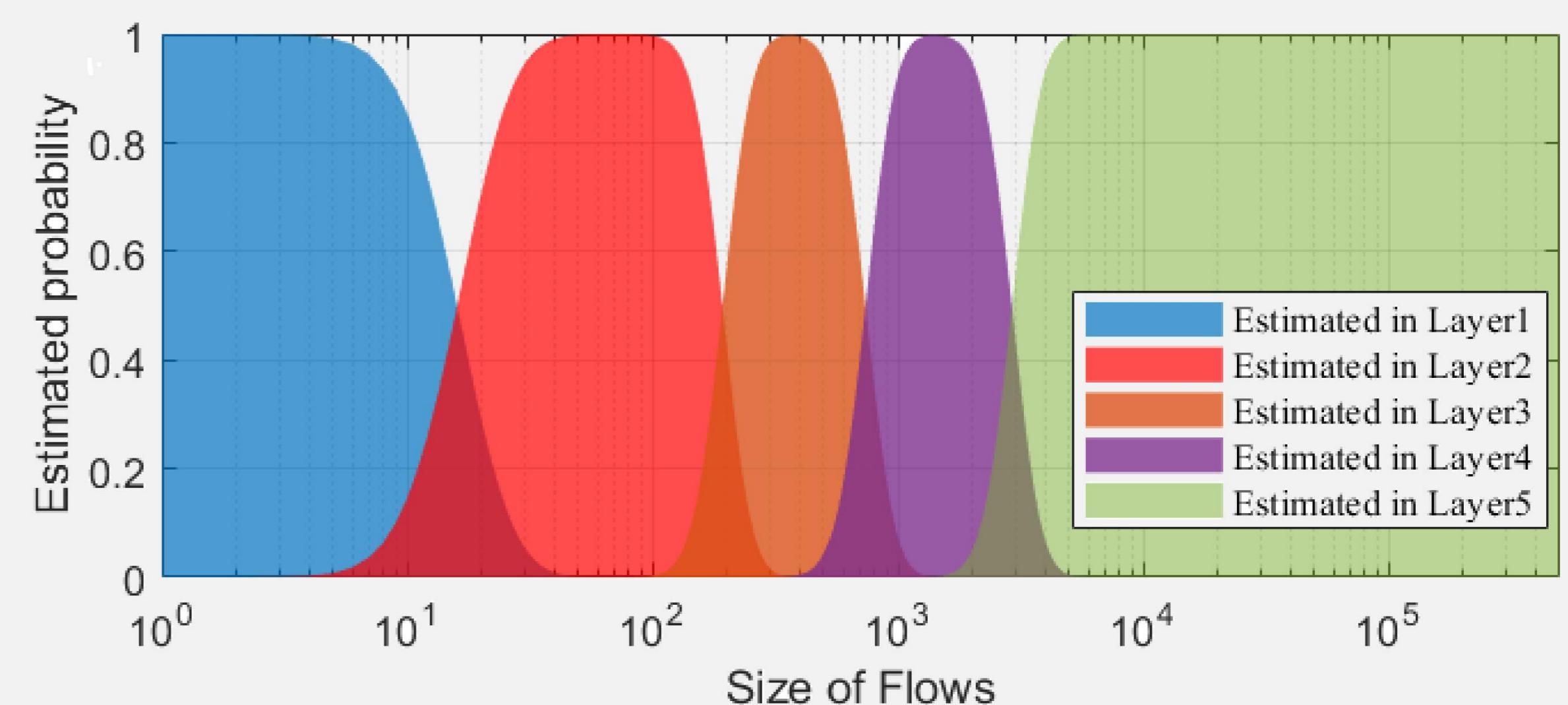
### Over-counting-free

Each packet is uniquely identified by  $Key_{pkg}$ , reframing the packet counting as per-flow cardinality estimation

### Mis-allocating-free

Assigns flows to units fully depends on the hash results of  $Key_{pkg}$  and  $Key_{flow}$ , ensures globally consistent updates

- Lemon segregates flows with different sizes into different layers



- Accurate network-wide measurement results support DDoS detection

