

# Requirement for aggregation of links with different rates

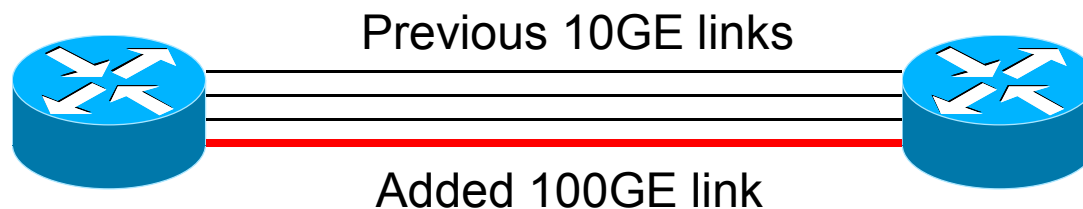
802.1 AX-REV, 201307 IEEE 802 plenary

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# Use cases

- **Backbone network**

- In China Mobile's backbone network, most of links are 10G links now
- Currently, we are planning to deploy 100GE links in backbone, but facing the problem of how to use 100GE and 10GE in the same direction
  - Option 1: 10\*10GE aggregation, then ECMP with 100GE
  - Option 2: divide one 100GE to 10, 5 or 2 sub-interfaces with VLANs, then ECMP with 10GE links, 2\*10GE aggregation or 5\*10GE aggregation
  - Option 3: remove the old 10GE links when using 100GE
  - **Option 4: aggregate 10GE and 100GE links directly (preferable)**
- Option 1/2/3 are limited in some scenarios and relatively complicated to maintain



Currently a few vendors have supported aggregation of links with different rates in their private ways

# Possible solution

- **For traditional aggregation**
  - Assume there are 3 links in the LAG
  - For each traffic flow, use IP or MAC information to calculate a random value based on hash algorithm, then the random value divided by 3 to get the remainder
  - If remainder = 0, choose 1st link; remainder=1, 2nd link ; remainder=2, 3rd link
- **For aggregation of links with different rates between two single device**
  - Assume there are 3 links in the LAG, separately 10GE, 40GE and 100GE
  - Introduce weight parameters for links with different rates
    - 10GE: 1, 40GE: 4, 100GE: 10
  - For each traffic flow, use IP or MAC information to calculate a random value based on hash algorithm, then the random value divided by 15 to get the remainder
  - If remainder = 0, choose 10GE link; remainder=1~4, 40GE link ; remainder=5~14, 100GE link
- **For aggregation of links with different rates between two portals(DRNI)**
  - Similar to the above solution
  - Should use tag(C-VLAN/S-VLAN/B-VLAN/I-SID) information to calculate hash value
  - Should spread weight parameters for links with different rates to every node

# Proposal

- **In 802.1AX-REV**
  - Permit aggregation of links with different rates
  - Standardize this feature in case of aggregation between two single devices
  - If possible, extend this feature to DRNI (between two portals)

Thank you  
Q&A