Centralized and Distributed Mobility Traffic Analysis

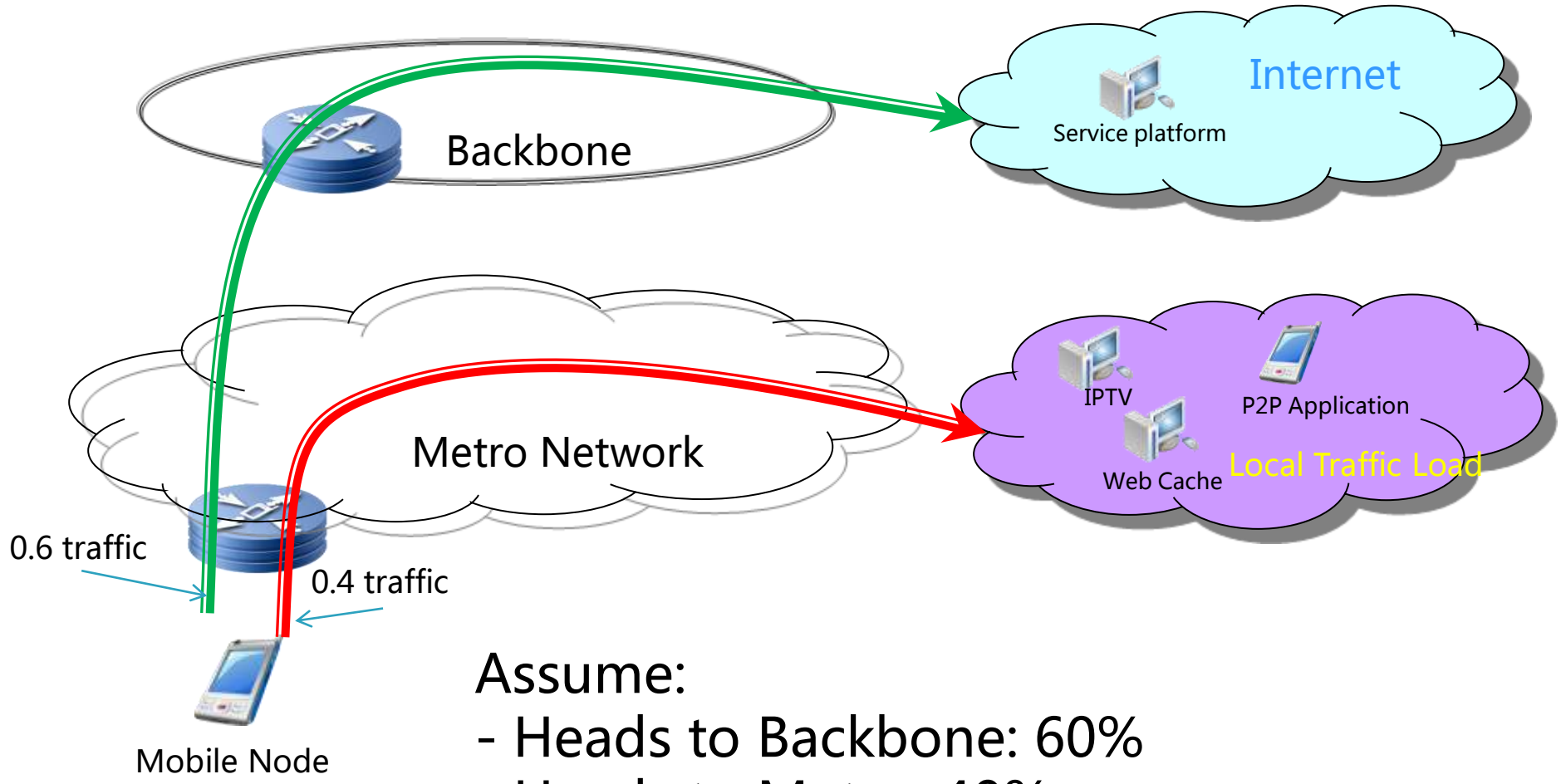
Dapeng Liu (China Mobile)
Jun Song (ZTE)
Wen Luo (ZTE)

Mar. 2011

Purpose

- Compare the Centralized Anchor Deployment Model with the Distributed Anchor Deployment Model
- Measurements
  - Traffic Load
  - Traffic Delay
  - Traffic Congestion Possibility

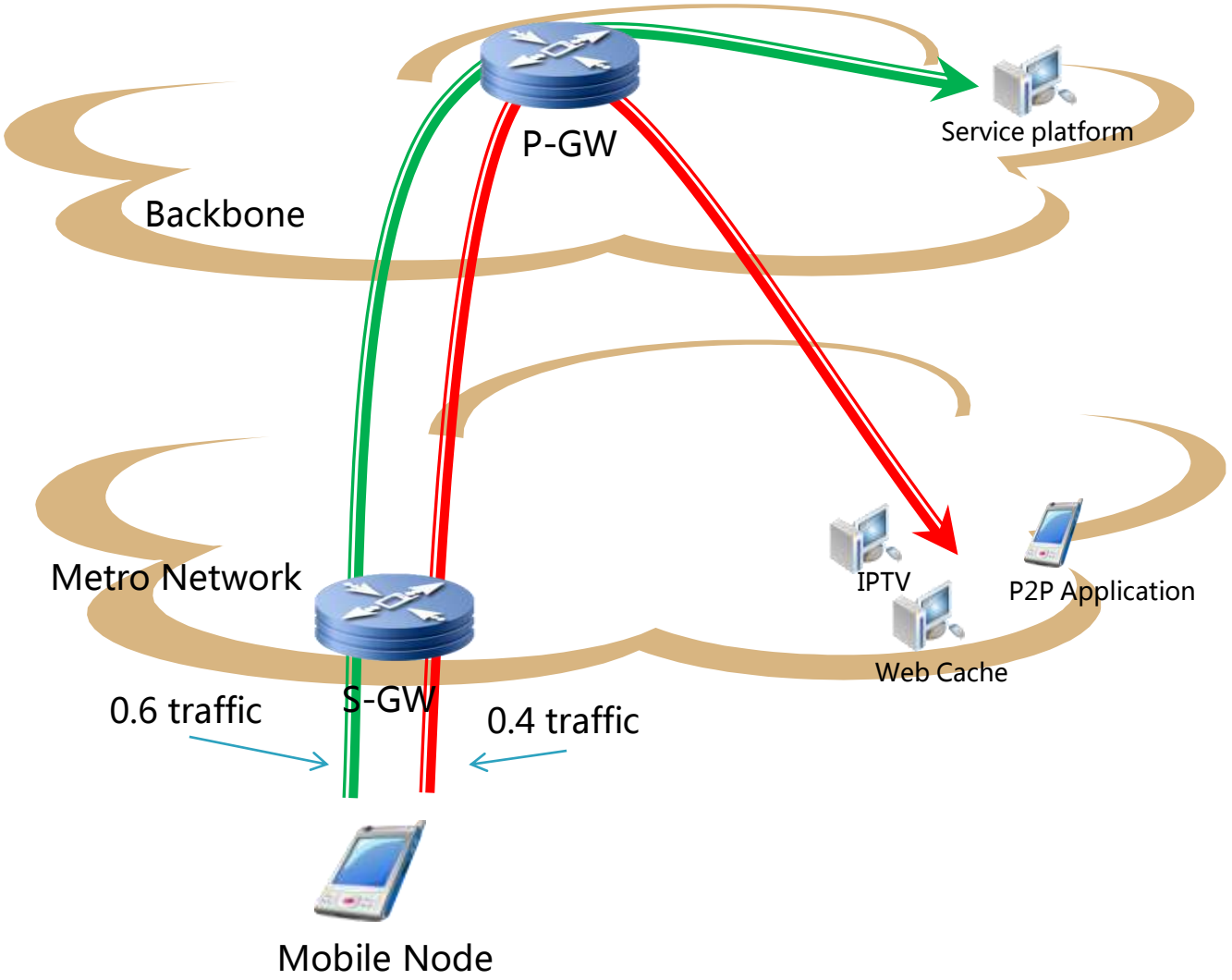
Traffic Model



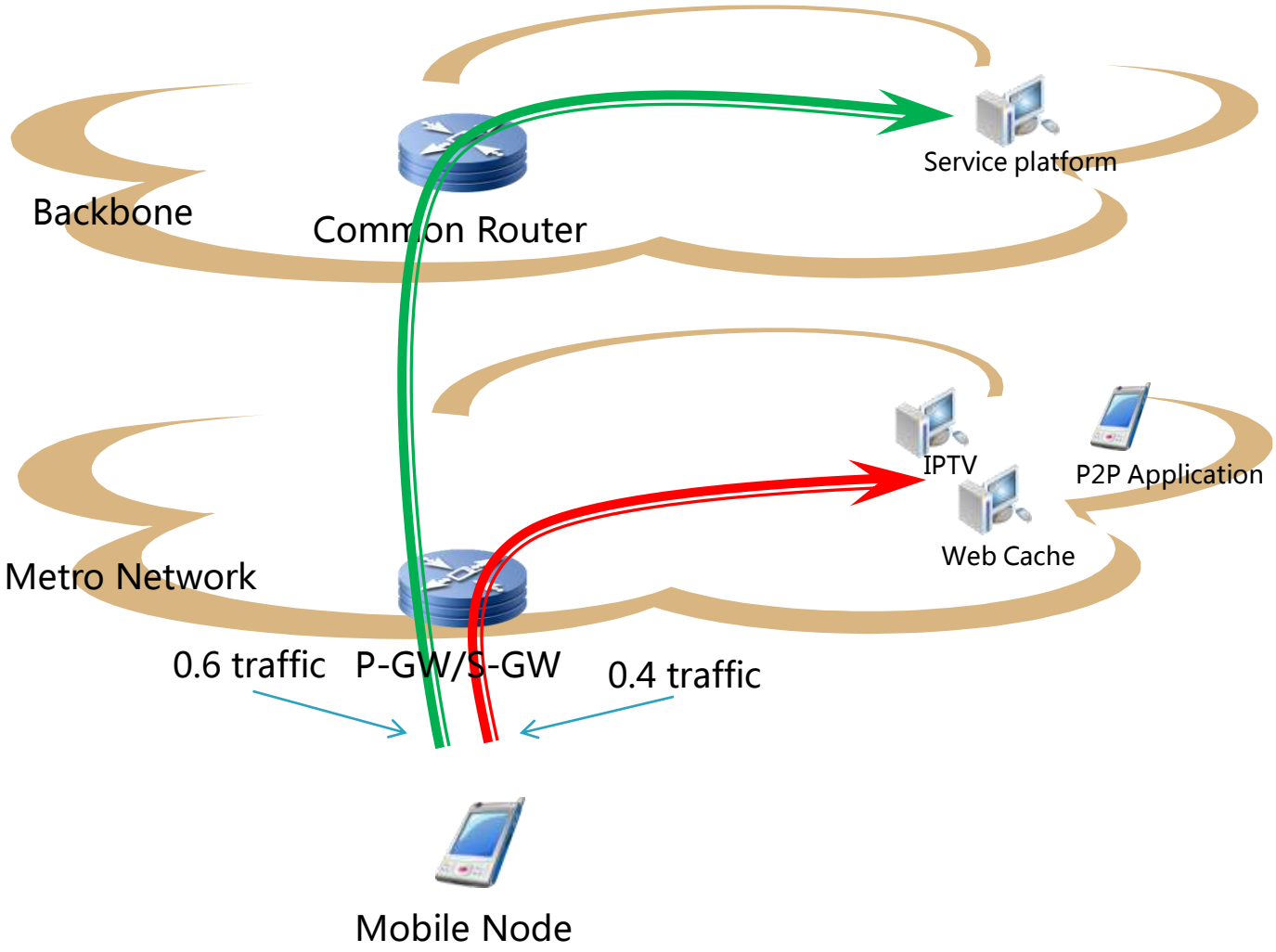
Assume:

- Heads to Backbone: 60%
- Heads to Metro: 40%

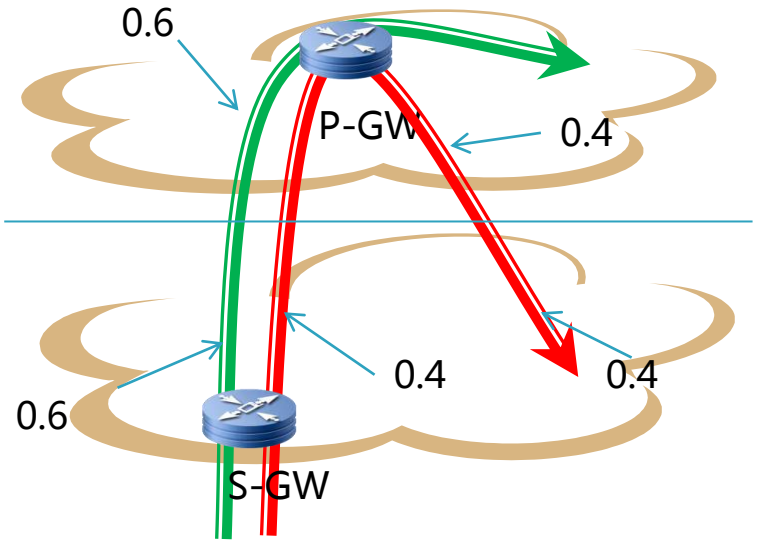
Centralized Anchor Model

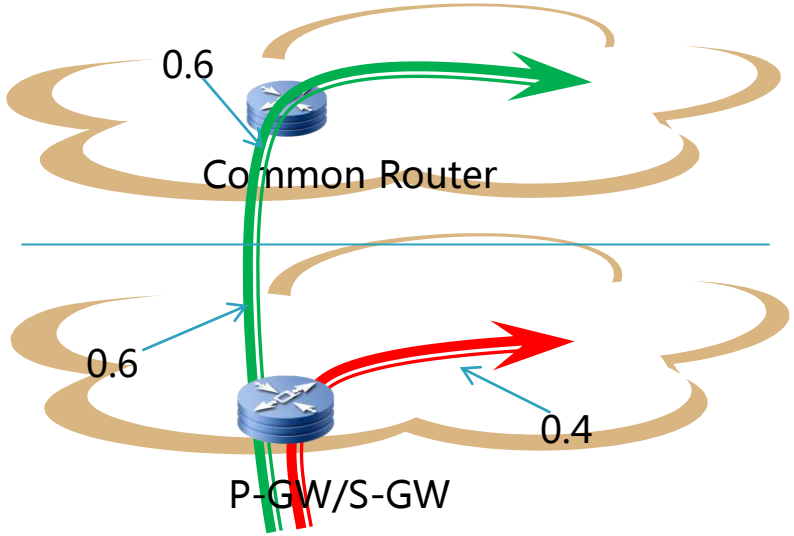


Distributed Anchor model



Traffic Load Analysis





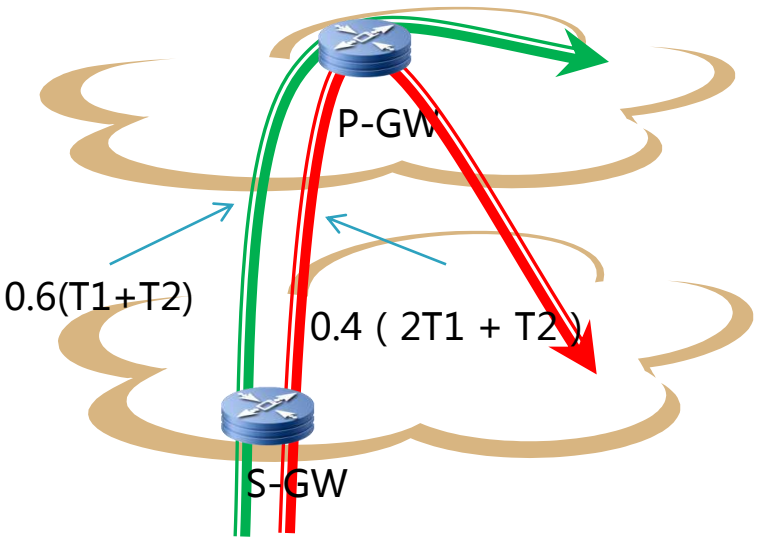
Centralized, Traffic Load
- In metro: 1.4 copy (0.6.+0.4+0.4)
- In Backbone: 1 copy (0.6+0.4)

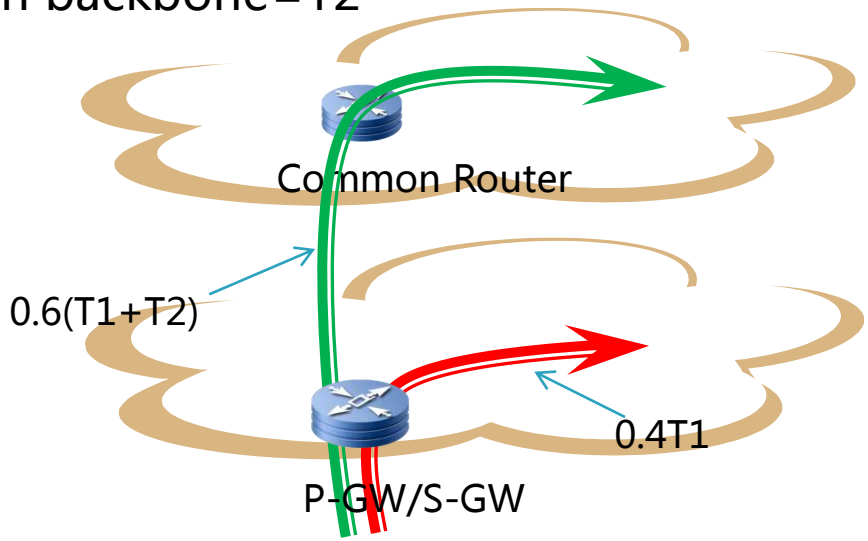
Distributed, Traffic Load
- In metro: 1 copy (0.6.+0.4)
- In Backbone: 0.6 copy (0.6+0.4)

- Distributed model saves 40% of traffic load within backbone
- Distributed model saves 28.6% of traffic load within metro

Delay Analysis

Let Delay within metro=T1, Delay within backbone=T2



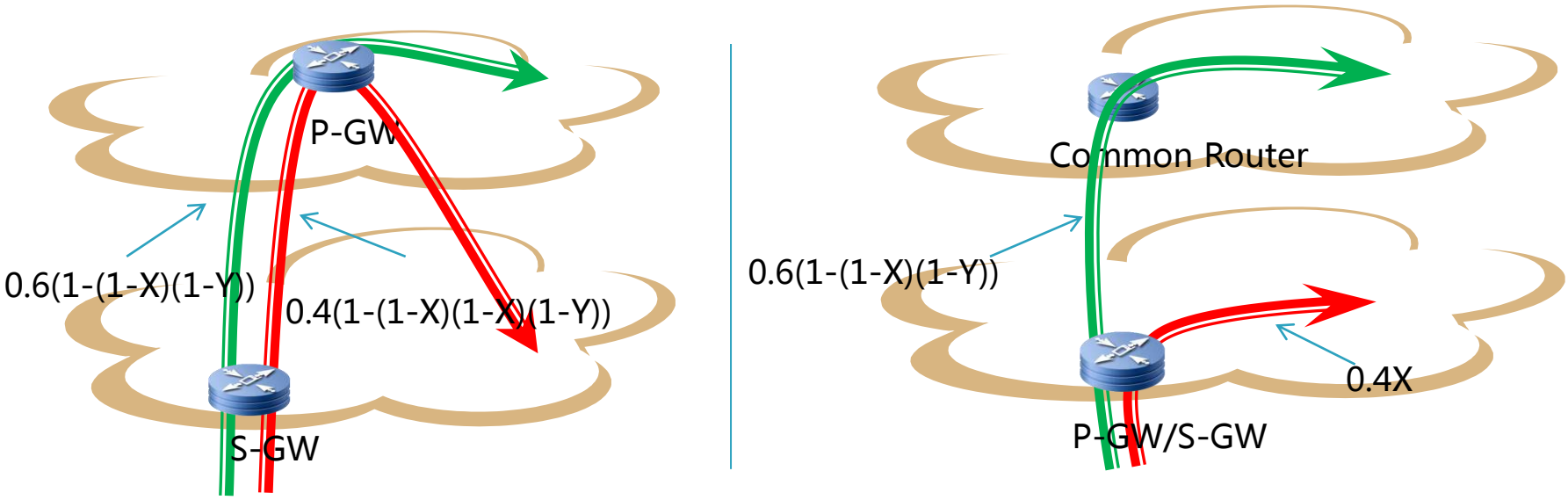


- Centralized, Total Delay
  - 1.4T1 + T2
- Distributed, Total Delay
  - T1+0.6T2

- Distributed model decreases the Delay
  - If T1=T2, distributed model decreases 33.3% of total delay
  - If T2=0, distributed model decreases 28.6% of total delay

Congestion Analysis

- Let congestion possibility within metro = X, congestion possibility within backbone=Y



- Distributed model decreases the congestion possibility
  - E.g., Let X=Y=3%, the congestion probability of Centralized model = 7.01%, the congestion probability of Distributed model = 4.75%. So, the congestion probability is 2.29% lower then the centralized model

Conclusion

- Distributing mobility anchor to the network edge has benefits
  - Save traffic load in both backbone and metro
  - Decrease the end to end delay
  - Decrease congestion possibility

Thanks !

Q&A