

Week 4: Bandwidth

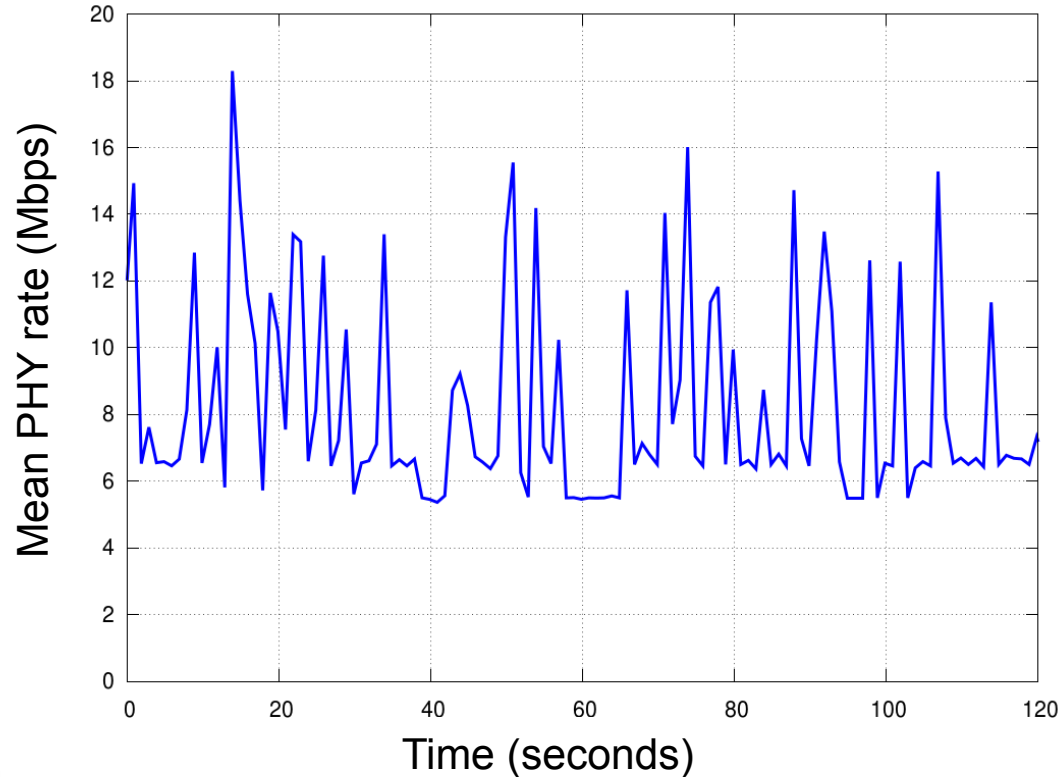
1. Introduction
- 2. Definitions of bandwidth metrics**
 - A. The basics
 - B. Limitations**
3. End-to-end measurement approaches
4. Flooding
5. Advanced probing
6. Conclusion

Bandwidth metrics

- Per-link metrics
 - Capacity
 - Utilization
 - Available bandwidth
- End-to-end metrics
 - Capacity
 - Available bandwidth
 - Bulk transfer capacity

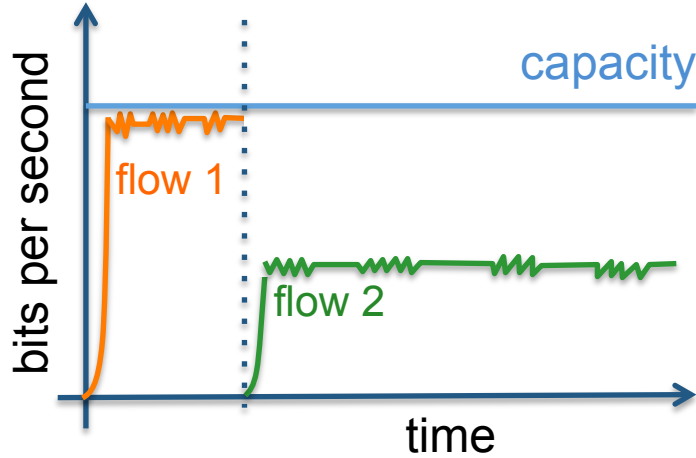
Link capacity can vary over time

- E.g., WiFi 802.11n rate adaption



Available bandwidth \neq what is available for new connections

- Cross traffic may vary when new flows appear



Bulk transfer capacity depends on many factors

- Transfer size
- TCP variant and configuration
- Cross traffic
- Congestion on reverse (ACK) path