

Advanced Computer Networking (ACN)

Exercise 2 – IPv6 and TCP

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Tutorial 2

Problem 1: IPv6

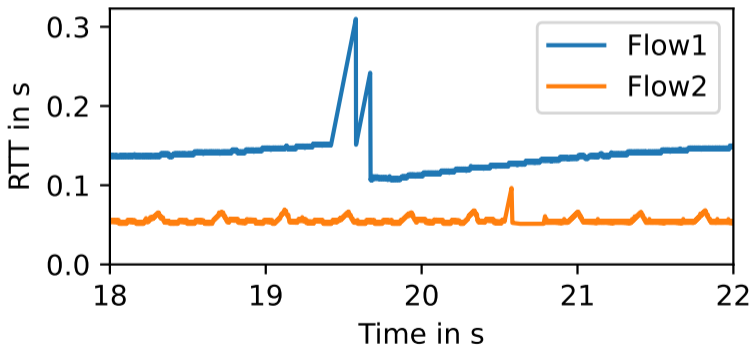
- Implement the short string representation of IPv6 addresses
- Understand different IPv6 address spaces and how addresses are derived
- Interpret results from Internet-toplist analysis

```
::  
::1  
ff01::1  
ff02::1  
fe80::4f21:13ff:fea1:dee2  
fe80::8a79:2f22:b728:ede6  
2001:4ca0:2001:3a40:e114:90fe:3862:444f
```

Tutorial 2

Problem 2: TCP Timestamp Options

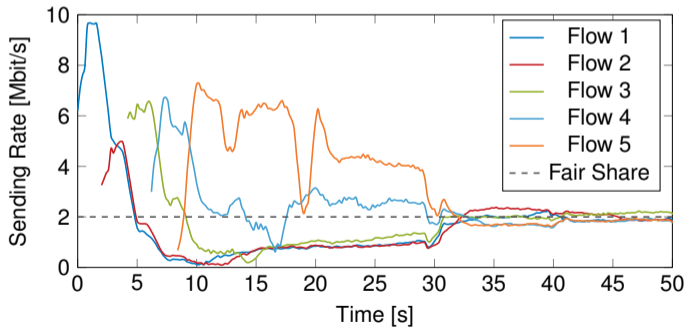
- Use timestamp options to estimate the RTT of a connection
- Recognize different TCP algorithms based on RTT behavior



Tutorial 2

Problem 3: TCP Congestion Control Fairness

- Recognize and compare different congestion control algorithms
- Understand how the bandwidth-delay product (BDP) is computed
- Implement Jain's Fairness Index and assess TCP's fairness



Deadlines

Start	November 11, 18:00
First submission	November 18, 16:00
Exercise lecture	November 18, 16:00
Second submission	November 22, 23:59

Availability

- Available in the template Git (branch: `tutorial1`) after the lecture
 - `tutorial/tutorial2/tutorial2_1.ipynb`
 - `tutorial/tutorial2/tutorial2_2.ipynb`
 - `tutorial/tutorial2/tutorial2_3.ipynb`

Important Note

- Never duplicate a cell in your Jupyter notebook!
- Never change the type of a given Jupyter cell!
- Otherwise, your solution may not be graded!