Multiservice networks

2012-2013
List of topics

1. Traffic: basic concepts and definitions
2. Poisson process as arrival process: arrival probability, inter-arrival time, residual time
3. Bernoulli process as arrival process: inter-arrival time
4. Discrete-time Markov Chains
5. Continuous-time Markov Chains
6. Birth/Death Markov processes
7. Queuing systems, Kendall's notation
8. Little's formula
9. Pure loss Systems, Erlang B
10. Ideal waiting systems, Erlang C
11. M/G/1 average delay P-K formula, M/G/1 residual time
12. Parallel queues with priority: average delay formula
13. Basics of the Internet: best effort service limitation
14. Routing and forwarding in the Internet
15. Router architectures and queuing techniques
16. Basic mechanisms for QoS support: marking, policing, shaping.
17. Token bucket: average, peak rate and burst length control
18. Priority queuing
19. Weighted fair queuing
20. Processor sharing and bit round fair queuing
21. Active queue management: RED technique
22. Differentiated services model
23. Integrated services model and RSVP
24. Case study: 3-level scheduling
25. Model of real time and best effort traffic in 3-level scheduling
26. Software defined network: basic concepts
27. Network virtualization: basic concepts