SNS COLLEGE OF TECHNOLOGY
Coimbatore-35
An Autonomous Institution

Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A+' Grade
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

19ECT301- COMMUNICATION NETWORKS

III YEAR/ V SEMESTER

UNIT 3 TRANSPORT LAYER & APPLICATION LAYER

TOPIC – PERFORMANCE ISSUES

Performance Issues

Performance Problems in Computer Networks

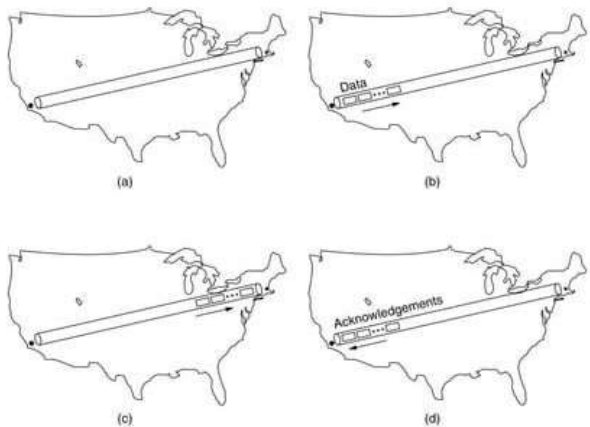
Network Performance Measurement

System Design for Better Performance

Fast TPDU Processing

Protocols for Gigabit Networks

Performance Problems in Computer Networks



The state of transmitting one megabit from San Diego to Boston
(a) At t = 0, (b) After 500 μsec, (c) After 20 msec, (d) after 40 msec.

Network Performance Measurement

The basic loop for improving network performance.

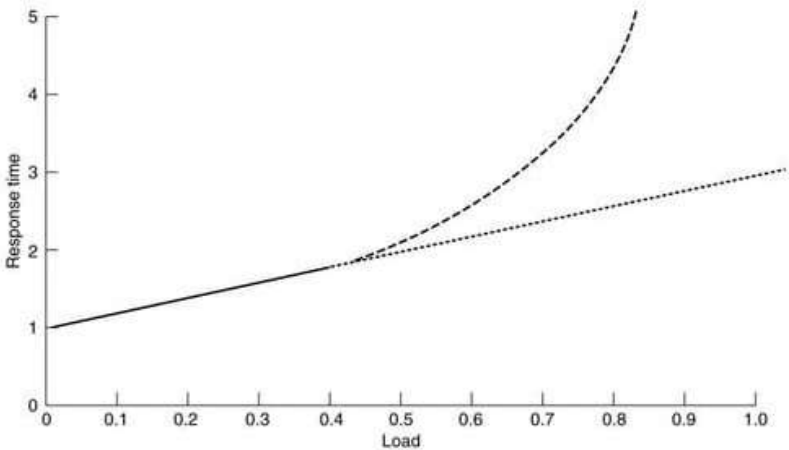
1. Measure relevant network parameters, performance.
2. Try to understand what is going on.
3. Change one parameter.

System Design for Better Performance

Rules:

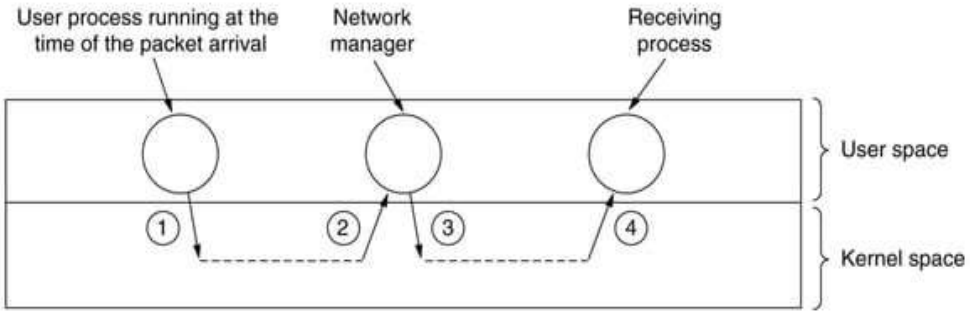
1. CPU speed is more important than network speed.
2. Reduce packet count to reduce software overhead.
3. Minimize context switches.
4. Minimize copying.
5. You can buy more bandwidth but not lower delay.
6. Avoiding congestion is better than recovering from it.
7. Avoid timeouts.

System Design for Better Performance (2)



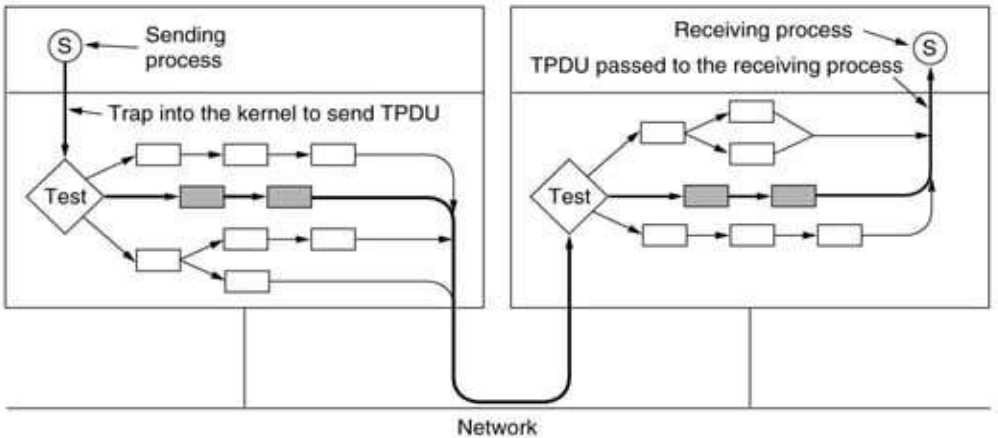
Response as a function of load.

System Design for Better Performance (3)



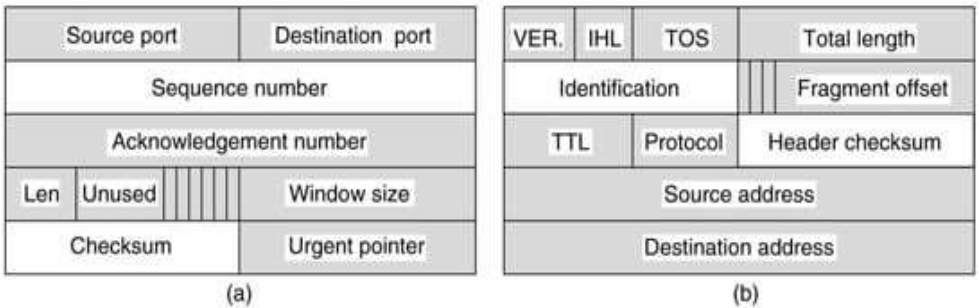
Four context switches to handle one packet with a user-space network manager.

Fast TPDU Processing



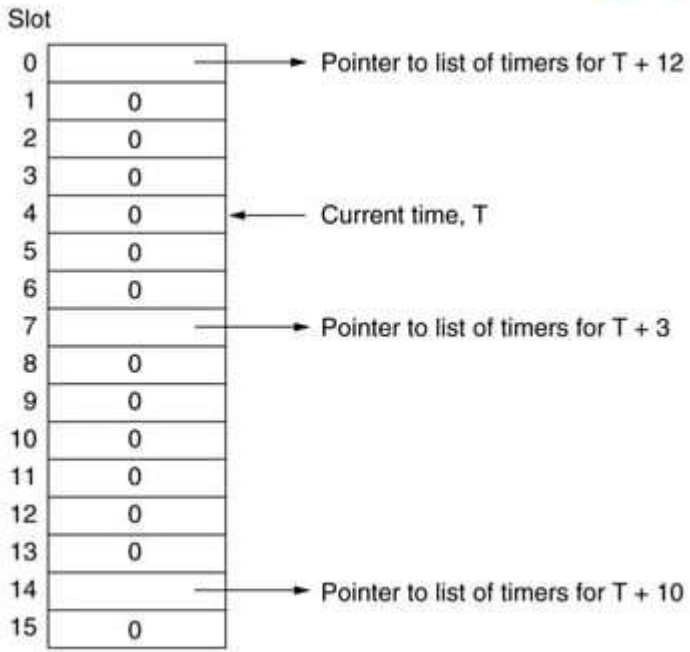
The fast path from sender to receiver is shown with a heavy line. The processing steps on this path are shaded.

Fast TPDU Processing (2)



(a) TCP header. (b) IP header. In both cases, the shaded fields are taken from the prototype without change.

Fast TPDU Processing (3)



A timing wheel.

THANK YOU