CS640 Term Project

Reliable Multicast over Datagram Network

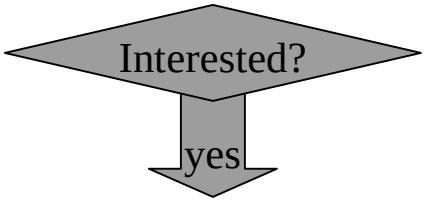
Overall process

Sender

Receivers

1. Register a multicast service and post an multicast announcement

2.Get the announcement from sender

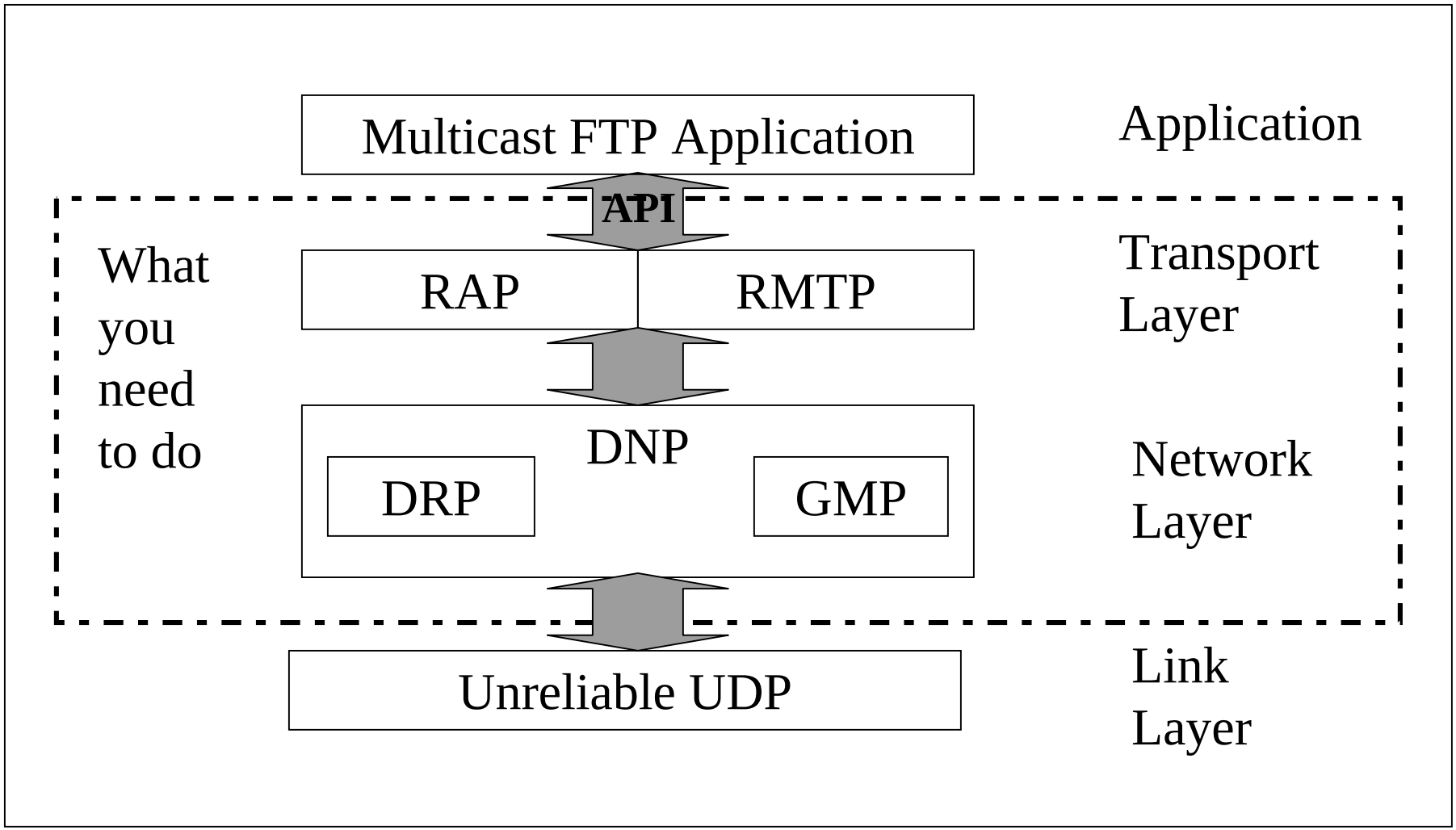


3. Join the corresponding group, and waiting for the start of multicast

4.Start multicasting the file at specified time

5.Receiving the file from network.

Overall picture



Datagram Network Protocol

- The main function of DNP
  - unreliable unicast, and multicast forwarding
- Issues you need to consider
  - DNP packet definition
  - state machine for unicast and multicast forwarding
  - interaction with GMP and DRP
  - routing table definition

Group Management Protocol

- The main function of GMP
  - keep track of group membership
- Issues you need to consider
  - GMP message definition
  - state machine
  - interval of state refreshing

Datagram Routing Protocol

- The main function of DRP
  - link-state routing protocol
  - detect link,node failure and recovery
- Issues that you need to consider
  - unicast and multicast routing algorithm
  - state machine
  - mechanism to detect topology changes

Reliable Announcement Protocol

- Issues that you need to consider
  - RAP packet definition
  - mechanism to guarantee reliability
    - timeout interval
    - retransmission
    - state machine

Reliable Multicast Transport Protocol

- Issues that you need to consider
  - RMTP packet defintion
  - state machine
  - loss recovery
    - NACK packet definition
    - how to prune NACK and retransmission
  - flow control
    - flow control packet definition
    - how to prune flow control packets

General Requirements

- Reliability
  - packet loss or corruption
  - node or link failure
- Scalability
  - when the multicast group size enlarges
- Performance

Checkpoints

- First version of design report: October 11
- Final version of design report: October 25
- First demonstration: November 23
  - this demo will not include garbler and link/node failures
- Final demonstration: December 20,21