Sync in MANET Library+Demo

8th NDN Hackathon

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Tasks Completed

- Implement a working Sync library over NDN for MANET
- Demonstrate with a simple chat room application
  - Tried 2-5 peers on same host
  - Ad Hoc communication between two Macbook Laptops (connected using Ad Hoc mode)
    - 1-3 clients running on each one
  - Detect new member
  - Fetch previous data once member connects

Sync Interest/Reply

1. Design State Vector format

- Producer prefix
- sequence number (data known to the node)
- preference flag/sequence number (data the node actually has)

2. When receiving sync interest

- Extract and merge state vector
- Decide when to send next Sync Interest:
    - If received state vector has newer state, send immediately
    - Else if received state vector identical to local vector, do nothing
    - Else if local state vector has newer state, reset countdown timer for sending next sync interest
- Decide when to reply Sync Reply
    - If local state vector has newer state, send immediately
    - Else, send Sync Reply after some delay

Data Interest/Reply

4. When receiving Data Interest

- If data in application level data store, reply immediately
- Else, probabilistically forward the data interest (for forwarded interests, intermediate nodes doesn't have to take care of retransmission)

5. When receiving Data Reply

- Pass it to application

6. Multi-level Priority queue (in descending priority) for packet scheduling:

There should be delay between sending any two packets to avoid congestion. In case there are multiple pending packets to be sent, they should have different priorities, for example:

- Sync Reply > Sync Interest > Data Reply > Forwarded Data Interest > Self-sent Data Interest

Live Demo

2 clients on 2 mapbook laptops

Connected Using wifi ad hoc mode