CLOUD COMPUTING
CONCEPTS
with Indranil Gupta (Indy)

GOSSIP

Lecture D

GOSSIP IMPLEMENTATIONS

SO, ...

- Is this all theory and a bunch of equations?
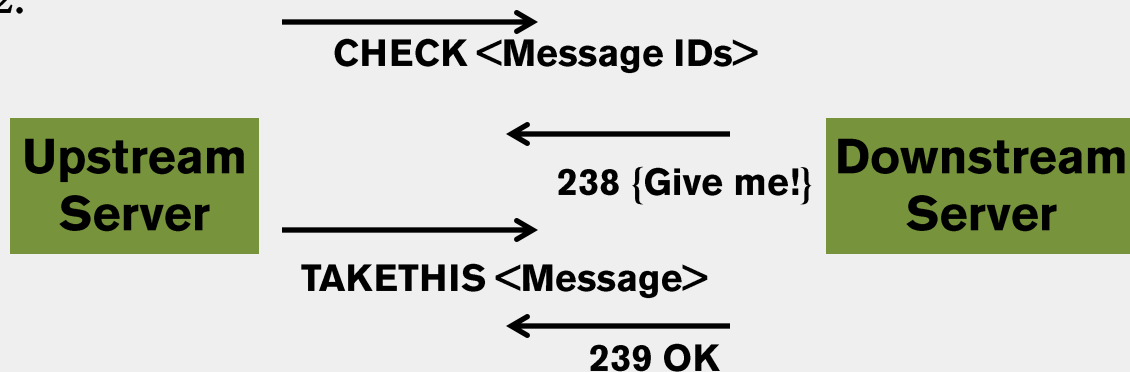- Or are there implementations yet?

Some implementations

- Clearinghouse and Bayou projects: email and database transactions [PODC '87]
- refDBMS system [Usenix '94]
- Bimodal Multicast [ACM TOCS '99]
- Sensor networks [Li Li et al, Infocom '02, and PBBF, ICDCS '05]
- AWS EC2 and S3 Cloud (rumored). ['00s]
- Cassandra key-value store (and others) use gossip for maintaining membership lists
- Usenet NNTP (Network News Transport Protocol) ['79]

NNTP Inter-server Protocol

1. Each client uploads and downloads news posts from a news server

2.

CHECK <Message IDs>

Upstream Server

238 {Give me!}

Downstream Server

TAKETHIS <Message>

239 OK

Server retains news posts for a while,
  transmits them lazily, deletes them after a while.

SUMMARY

- Multicast is an important problem

- Tree-based multicast protocols

- When concerned about scale and fault-tolerance, gossip is an attractive solution

- Also known as epidemics

- Fast, reliable, fault-tolerant, scalable, topology-aware