



CLOUD COMPUTING CONCEPTS

with Indranil Gupta (Indy)

GOSSIP

Lecture A

MULTICAST PROBLEM

MULTICAST



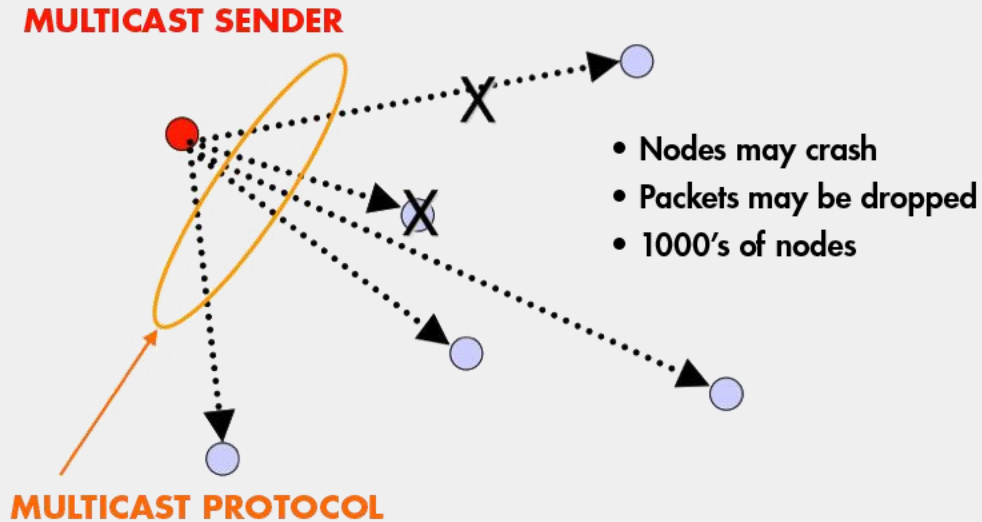
Node with a piece of information
to be communicated to everyone



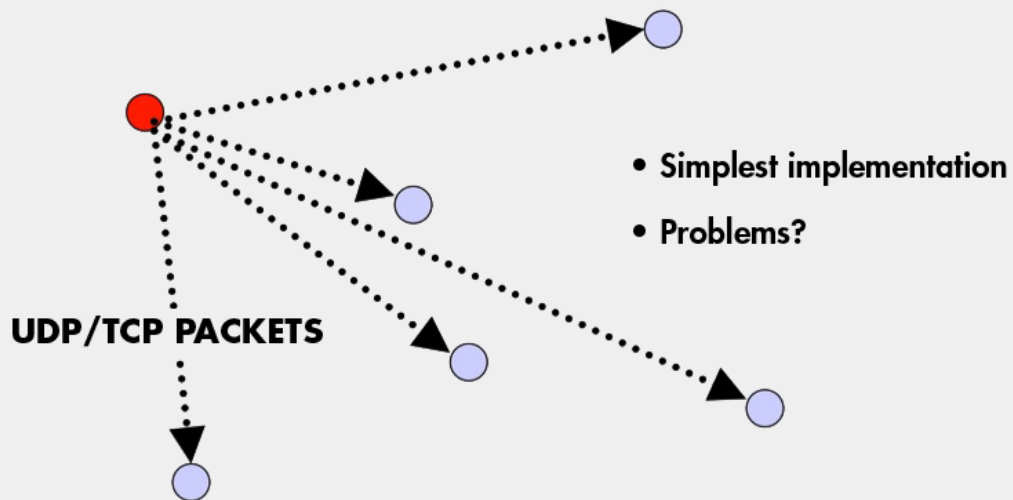
Distributed Group
of "Nodes" =

Processes at
Internet-based host

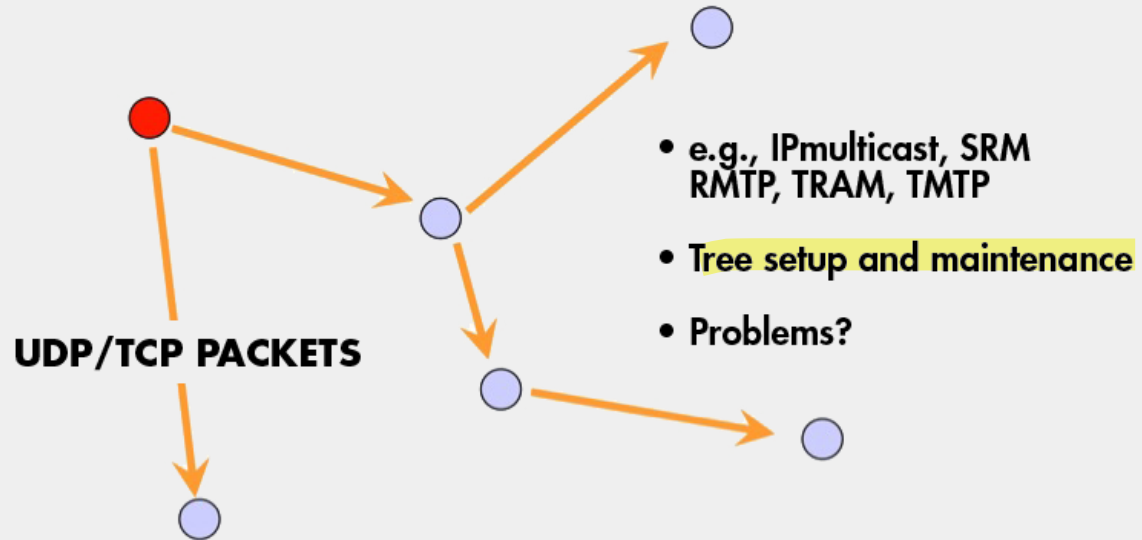
FAULT-TOLERANCE AND SCALABILITY



CENTRALIZED



TREE-BASED



TREE-BASED MULTICAST PROTOCOLS

- Build a spanning tree among the processes of the multicast group
- Use spanning tree to disseminate multicasts
- Use either acknowledgments (ACKs) or negative acknowledgements (NAKs) to repair multicasts not received
- SRM (Scalable Reliable Multicast)
 - Uses NAKs
 - But adds random delays, and uses exponential backoff to avoid NAK storms
- RMTP (Reliable Multicast Transport Protocol)
 - Uses ACKs
 - But ACKs only sent to designated receivers, which then re-transmit missing multicasts
- These protocols still cause an $O(N)$ ACK/NAK overhead