Panel 1

Last Time:

Network Layer

Routing  Shortest Path

Flooding

Distance Vector

Link State R.

Also: Parity Bit

Shuffling

Forming

Panel 2

Construct the single tree for C
Panel 3

Each node knows the delay to each neighbor (via ping packet).

Panel 4

Distance vector routing problem:

Count -to - infinity problem - explain

"Bad news travel too slow."

"Any converges too slowly if route / connection goes down"
Panel 5

**Link State Routing**

- Each router must:
  1. Discover its neighbors & unique network address
  2. Measure delay to each neighbor
  3. Construct a packet with this information
  4. Distribute this info to all routers
  5. Compute shortest path to every router

Panel 6

1. Discover neighbors

   Send "HELLO" packet with

   Your address to your neighbors.
Panel 7

2. Measure Delay

Send ECHO packet from router
Wait for return, divide time in half
\[ \cong \text{delay} \]

Should you take load into account or not

Panel 8

3. Building Link State Packet

Distribute more packets
- when state changes
- every 10 minutes
Panel 9

4. Distribution of Link State Packets

Today: Routers getting first packets will change
their routes = different routers will
have different info of reach

Use flooding,

use sequence/age field to
control the flood

Panel 10

5. Computing the new Routes

Use Dijkstra’s Algorithm

Works well, is use today (with modifications)

Trouble: large routing tables

⇒ Use hierarchy

Then: use \( \log(N) \) levels in hierarchy

for \( N \) routers!
Panel 11

Quiz, removed