

INTRA-DOMAIN ROUTING

RIP ($16 \rightarrow \infty$)

D.V. — BELLMAN-FORD

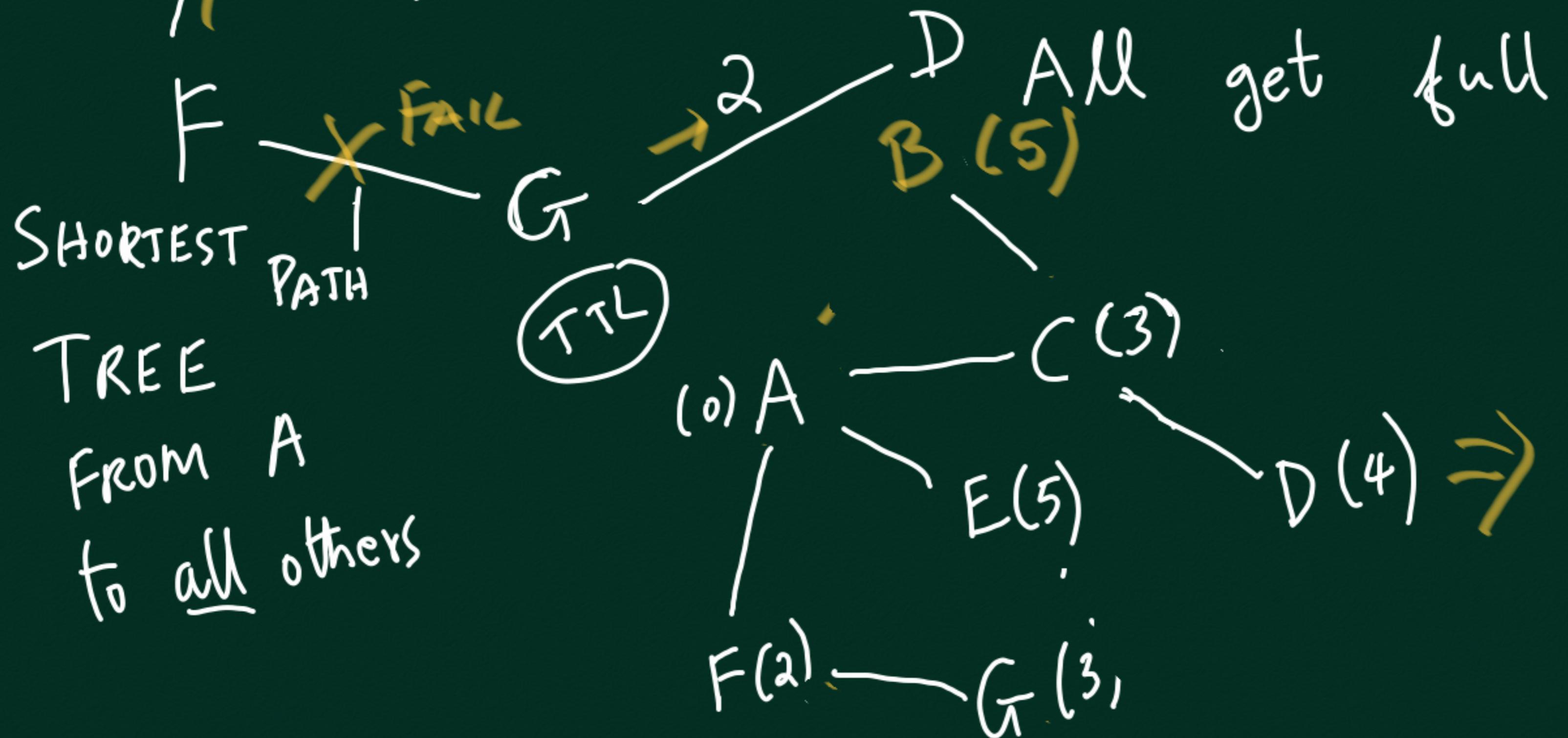
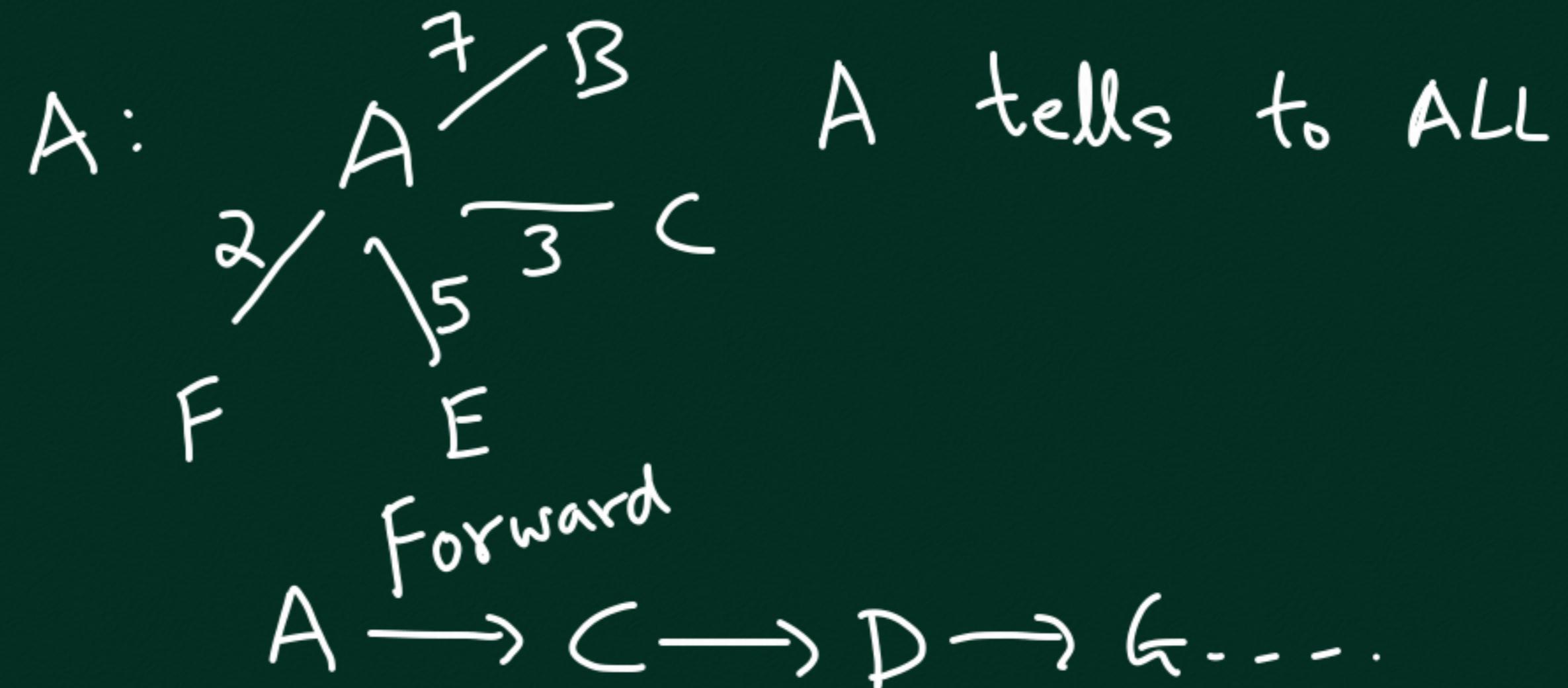
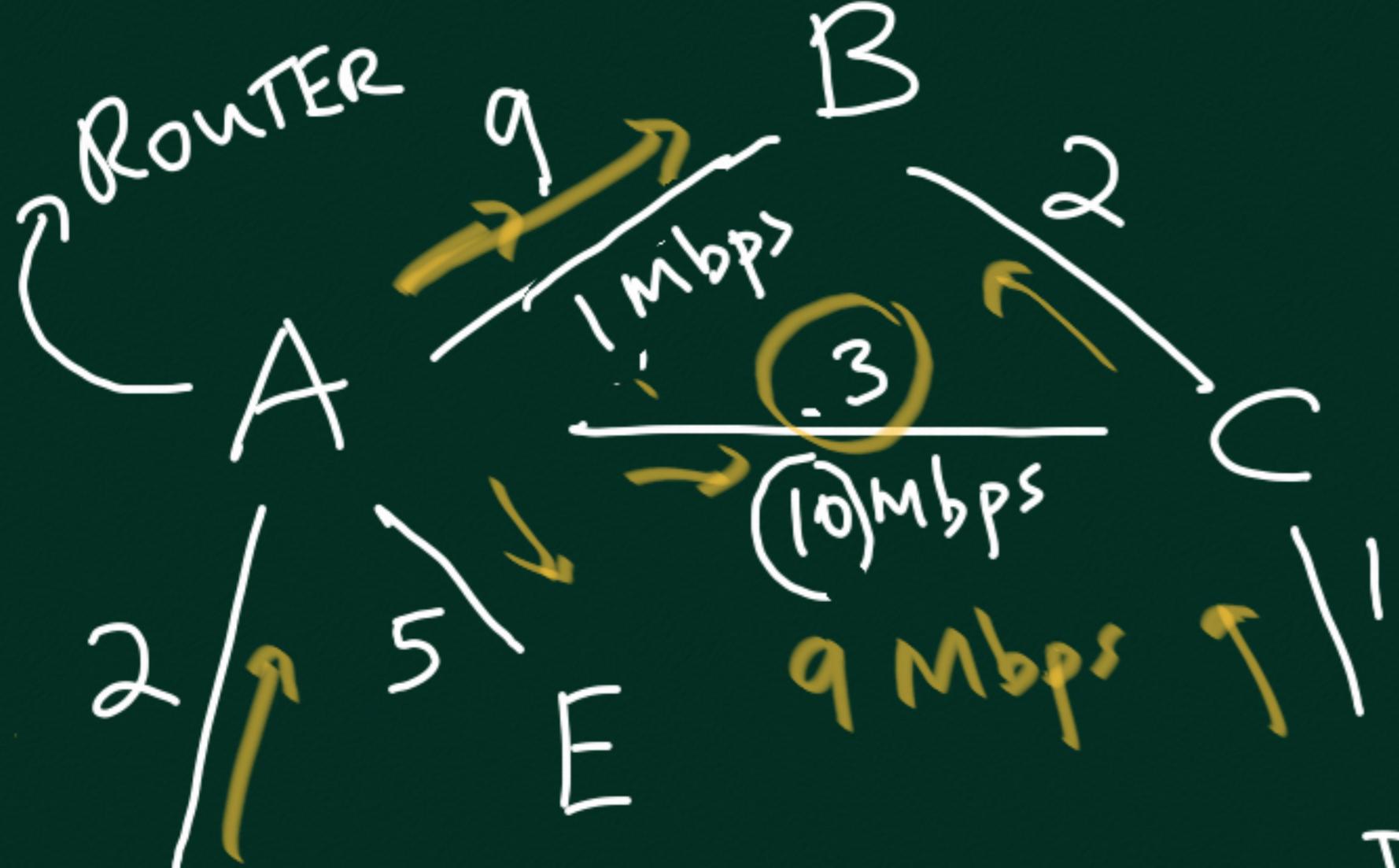
- + SIMPLF.
- COUNT-TO- ∞
- CONVERGENCE TIME HIGH

EACH NODE TELLS NEIGHBOURS : DISTANCE TO ALL OTHERS

↪ USE IF NETWORK SMALL (10-20 NODES)

↪ LSR: LINK STATE ROUTING \rightarrow DJIKSTRA

EACH NODE TELLS ALL OTHERS : DISTANCE TO NEIGHBOURS
↓
BROADCAST



Djikstra

DEST	COST	NEXT
A	0	-
B	5	C
C	3	C
D	4	E
E	5	F
F	2	G
G	3	F

TIME FOR A TO FILL ITS ROUTING TABLE

= TIME FOR BROADCAST + TIME TO RUN

→ FAST COMPARED TO D.V. ↗ DJIK STRA

IF LINK FAILS (eg: F - G): F tells ALL
(G, ∞) } ALL
G tells (F, ∞) to ALL ↗ RERUN
 ↗ DJIK STRA

May have loops
during this time

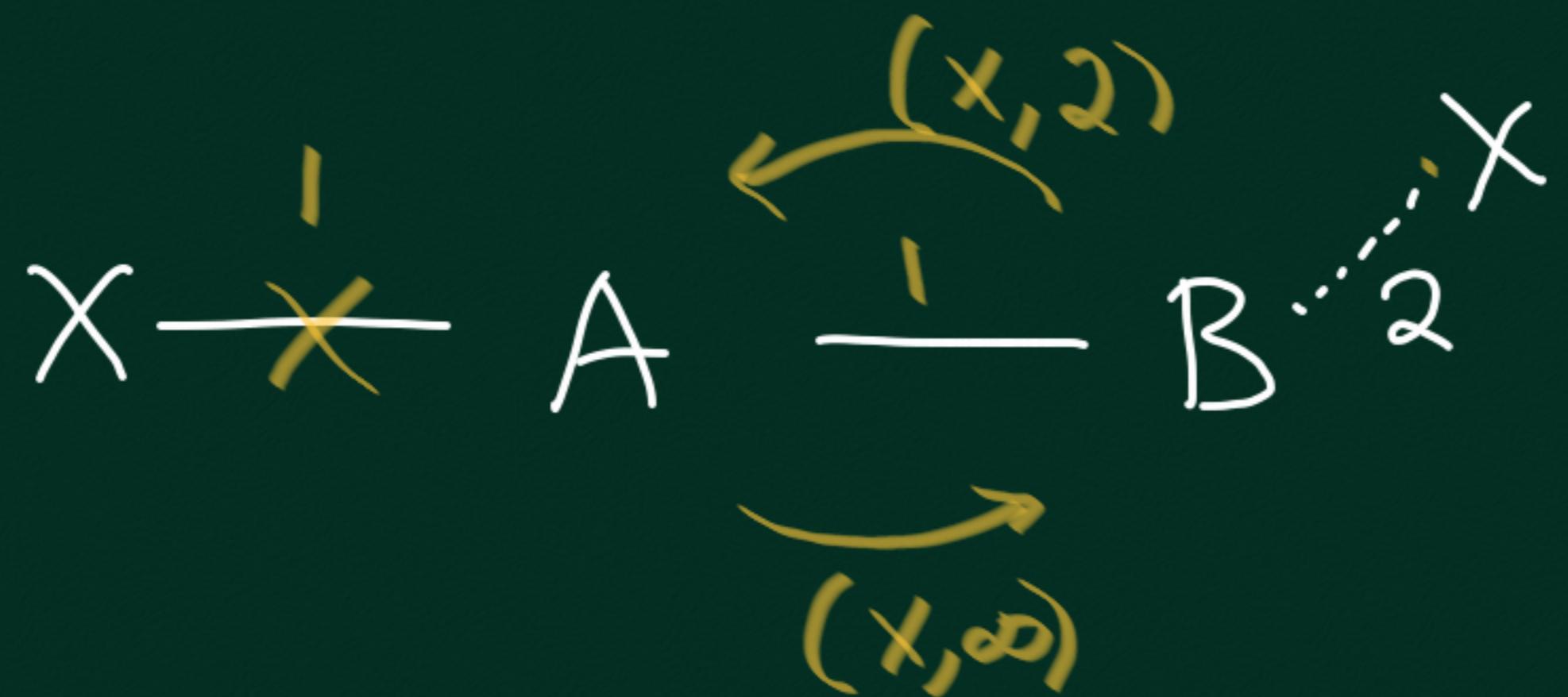
LSR + FAST CONVERGENCE

+ NO COUNT-TO-INFINITY

- NEED FULL TOPOLOGY INFO

- FULL BROADCAST FOR ANY CHANGE

- DIJKSTRA ALGO MUST BE RUN

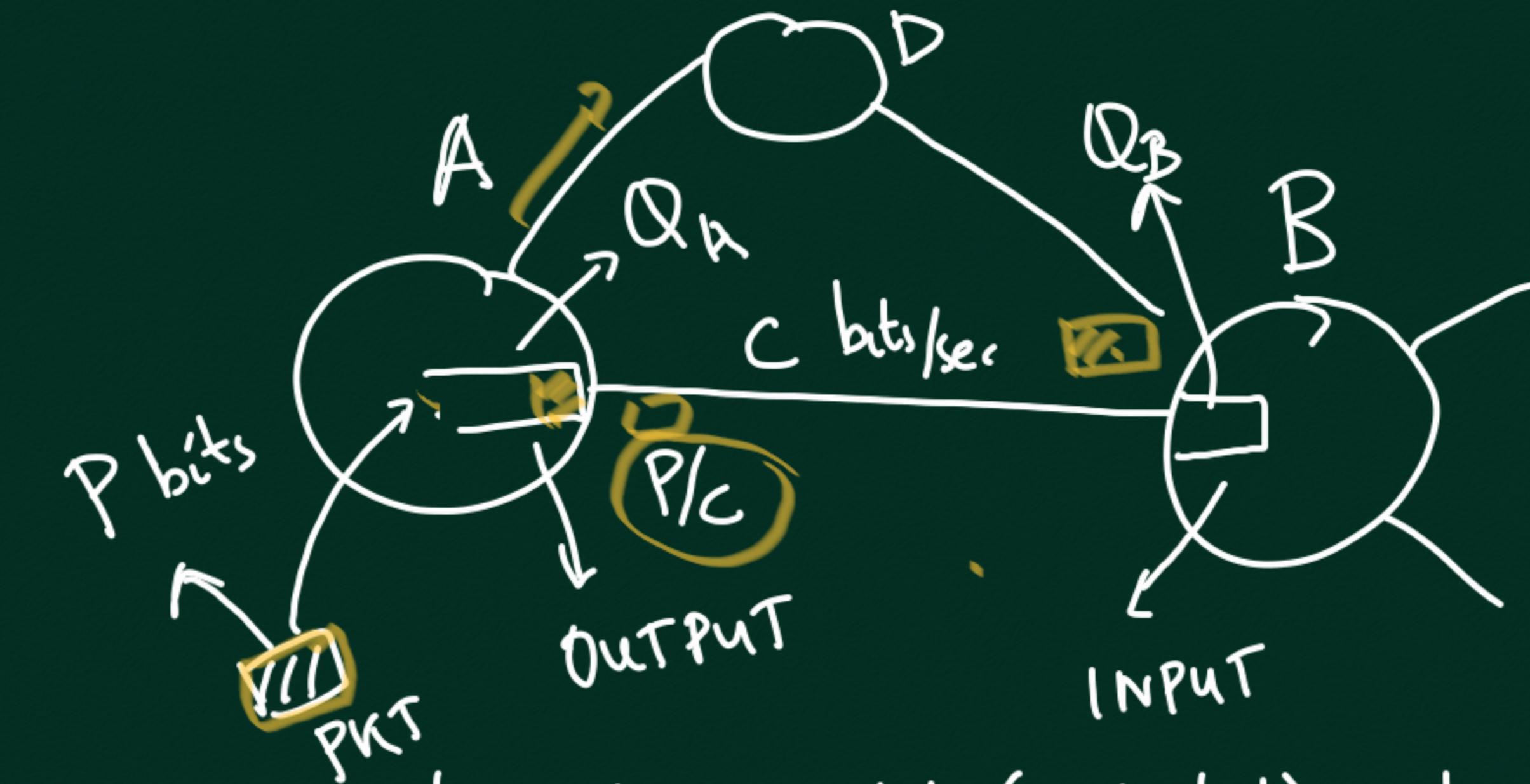
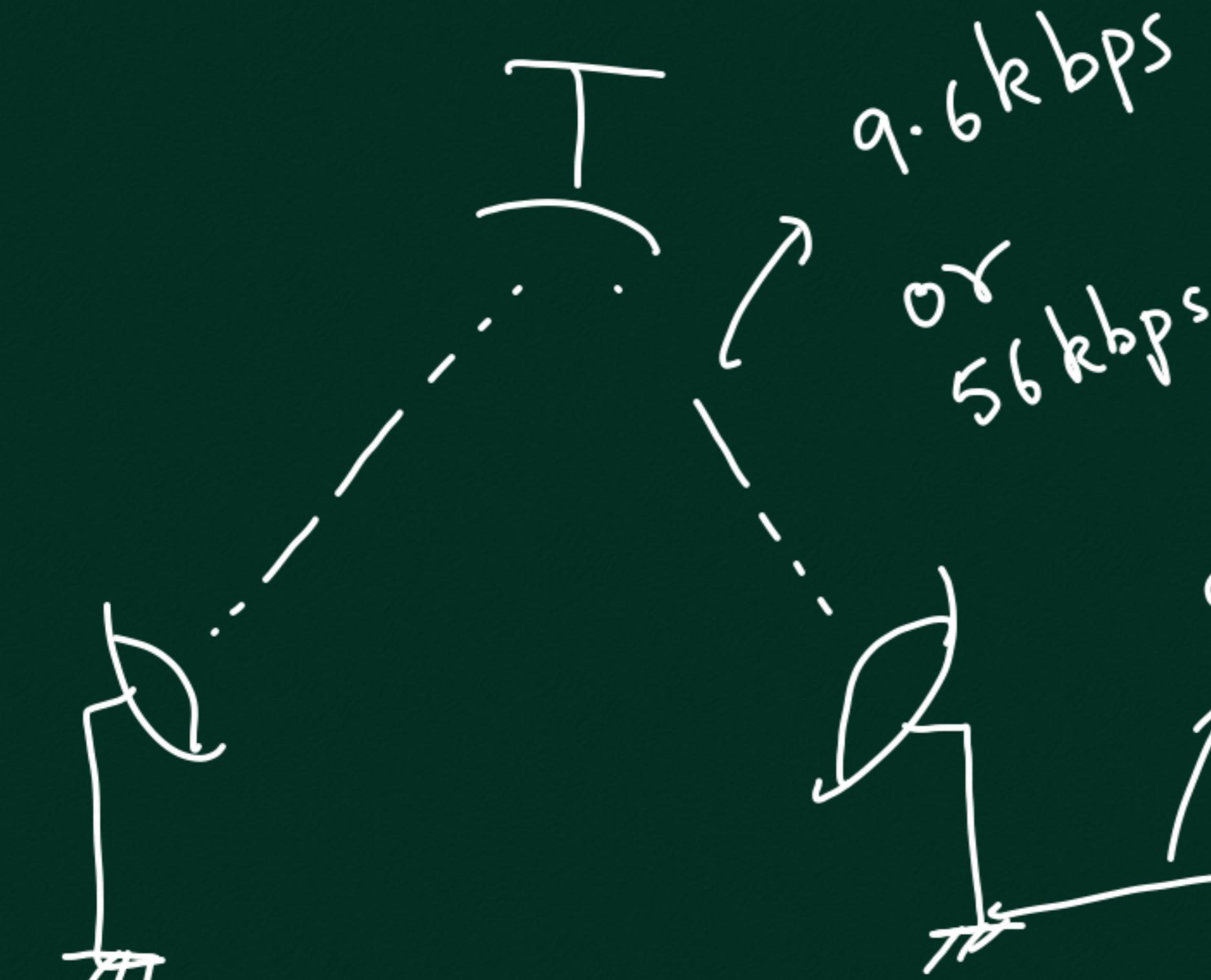


Q. What should Link WEIGHTS BE?

RIP : DEFAULT WEIGHT = 1 FOR EVERY LINK
 (D.V.)

OSPF (LSR) : WEIGHT = $\max \left(\frac{10^8}{\text{LINK SPEED IN bits/sec}}, 1 \right)$

ARPANET (1969-)



t_0 = time pkt (last bit) enters Q_A

Measure $(t_1 - t_0)$ = Queuing delay (at Q_A) + Speed of light delay (P/C) + transmission delay

- Avg. these delays over some time period

- Set link weight to this avg.

ISSUES

1) OSCILLATIONS

2) SATELLITE Links WERE PENALIZED A LOT
(due to high Speed of Light delay)

3) Range of link weights was very high

| heavily loaded 9.6 kbps \approx 126 links of 56 kbps.

9.6 kbps terrestrial
had less weight than
56 kbps SAT LINK

