Why Per-Flow State Won’t Work

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Not traditional in the core

- Cisco/Juniper don’t run per-flow state protocols in the core

- Except DVMRP, MOSPF, PIM-SM, PIM-DM, …
Insufficient processing time

- Say OC-192 (10Gbps) and commodity processors (1GHz)

- 40 bytes packets @ 10Gbps @ 1GHz = 32 cycles/packet

- Far less than TCP processing @ 33 instructions [Jacobson]
Needs Too Much Silicon

- Say short flows @ 8KB/sec
- $10\text{Gbps} / 8\text{KB/sec} = 125\text{K entries}$
- Far more than backbone forwarding tables with 120K entries
Wrap-up

- Have shown per-flow state won’t work in the core
- Next time: show it won’t work at edges or hosts