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Performance evaluation of Flow-Aware Multi-Topology Adaptive Routing

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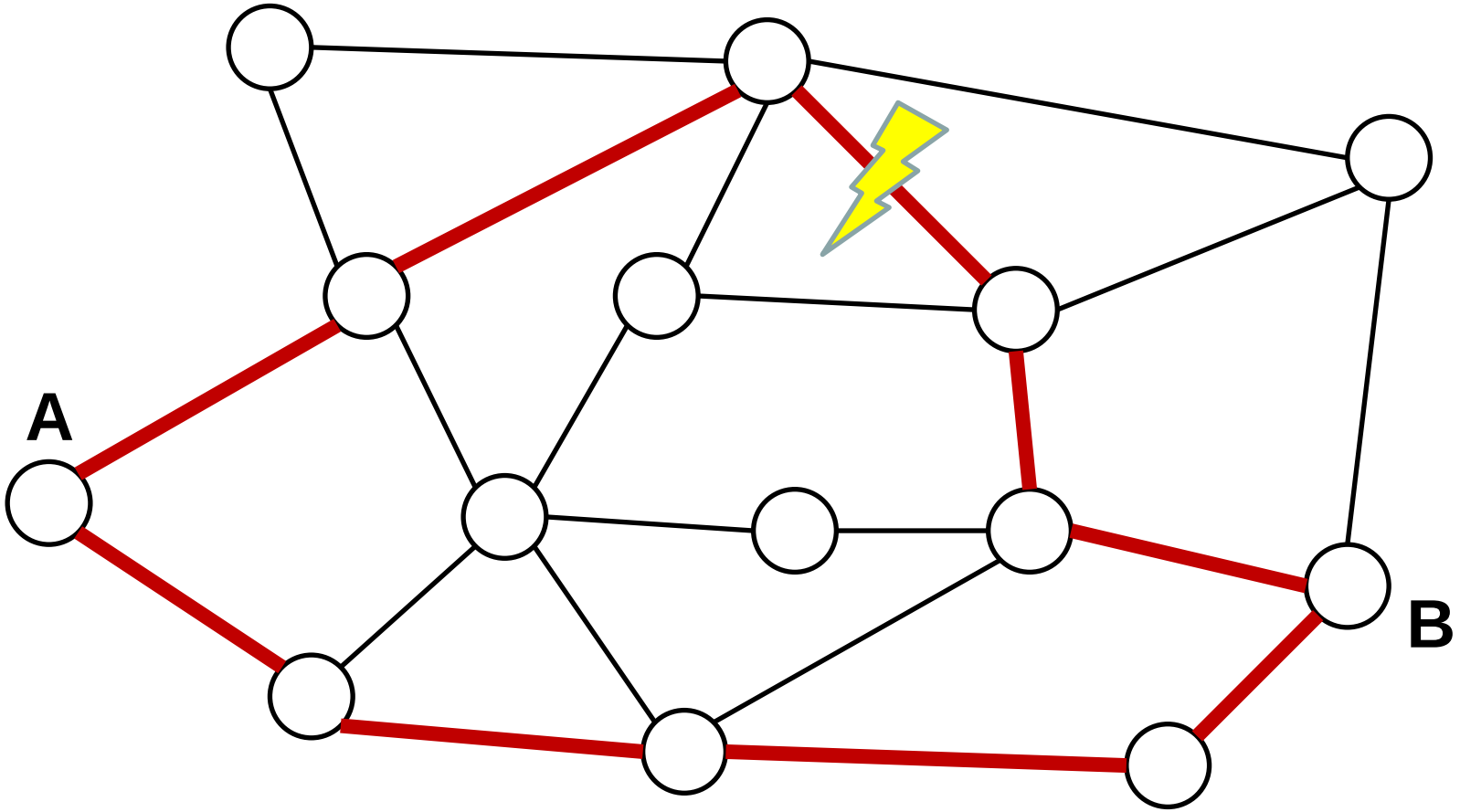
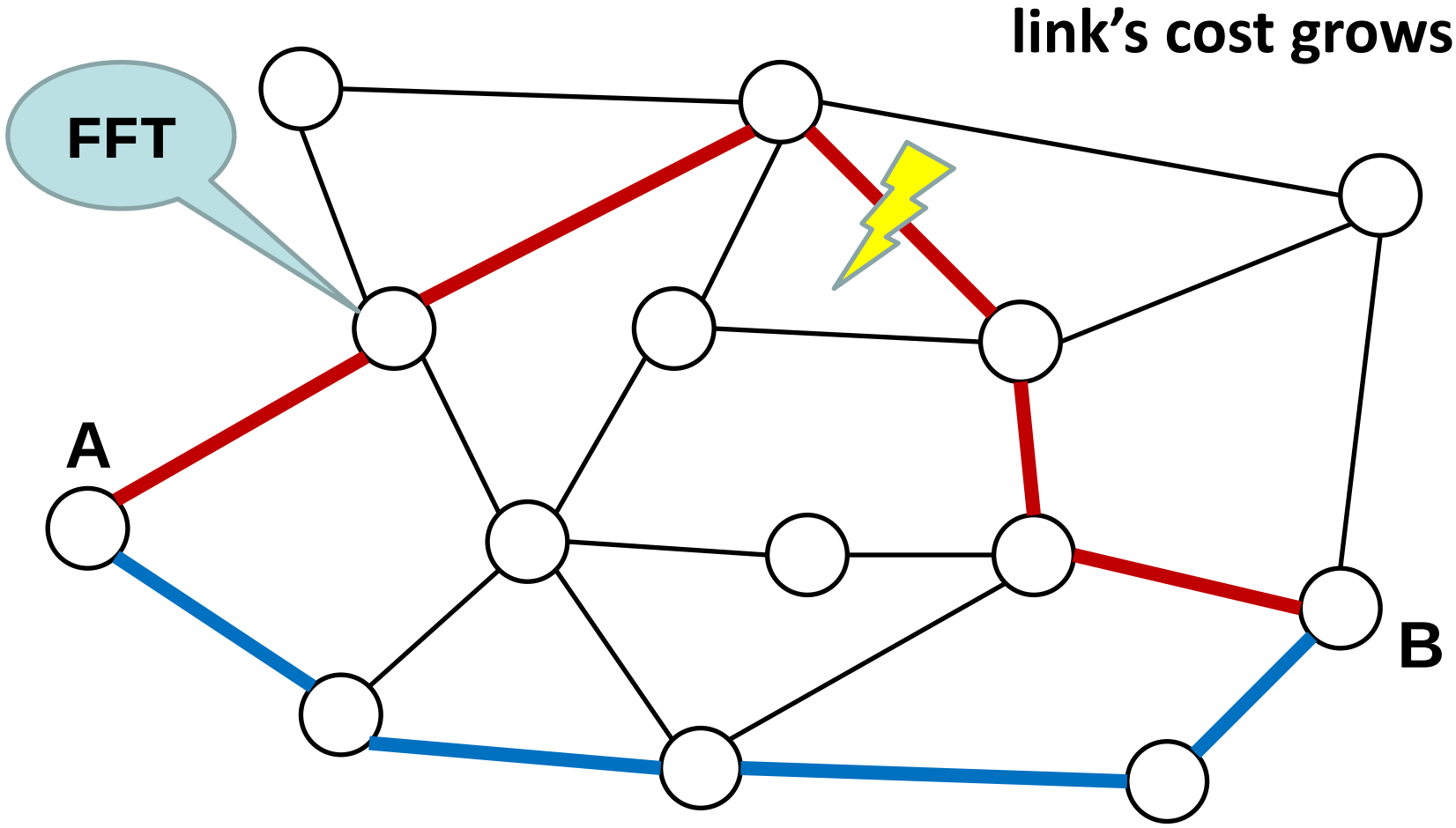
Standard IP routing



Problems with load balancing

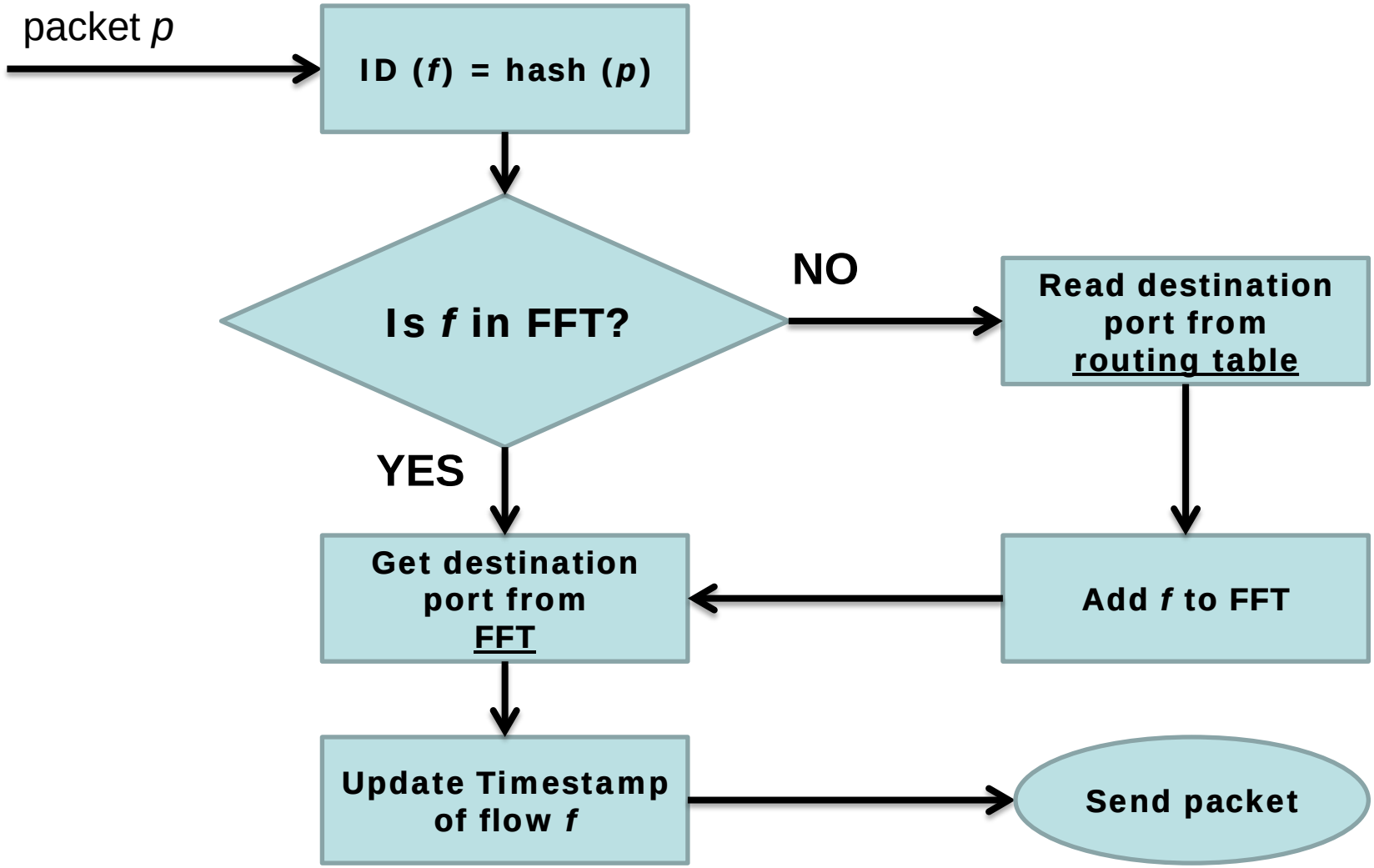
- Equal-cost paths are required
- Traffic is balanced also when it is not necessary
- Congested links still pose problems

FAMTAR



A new path is established, however, the original one still forwards traffic!

Packet service in FAMTAR



FAMTAR's Performance evaluation

Parameter	Std. IP routing	FAMTAR	Gain
Sent data [GB]	**16.5**	**30.6**	**86%**
Received data [GB]	**14.7**	**29.2**	**97%**
Received to sent data ratio	**0.89**	**0.95**	**6%**
Mean packet delay [ms]	**28.1**	**22.8**	**19%**
Mean hop count	**5.0**	**5.4**	**7,5%**
Mean link costs changes	**0**	**185**	**---**

FAMTAR's performance results

- **Scenario 1 (fixed simulation time):**
  - FAMTAR **doubled** the amount of tranferred data in the network
  - Mean packet delay was reduced by **19%**

- **Scenario 2 (fixed amount of data):**
  - Transfer time was reduced by **46%**
  - Mean packet delay was reduced by **35%**

Summary: benefits of FAMTAR

- Optimal paths are always used
- FAMTAR cooperates with every routing protocol
- Minimal changes to the routing protocol
- Only when necessary, FAMTAR finds and uses alternative path(s)
- No central controller

Thank you for your attention!

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