


What Keeps Your Network up at Night?

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Publication date:

2023-12-05

Permanent link:

<https://doi.org/10.3929/ethz-b-000649098>

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Originally published in:

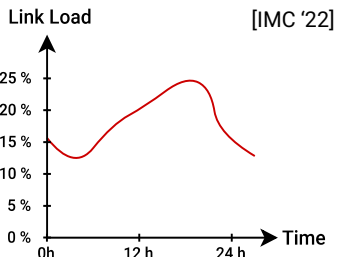
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What keeps your network up at night?

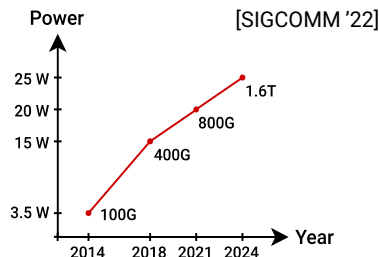
Lukas Röllin, Romain Jacob, Laurent Vanbever

Observation

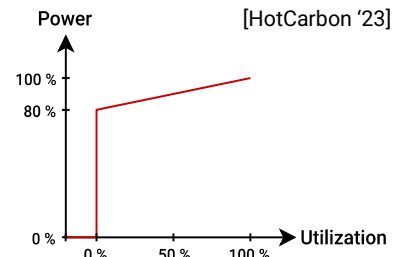
Network links are **underutilized, power-hungry** and **inefficient**



Avg. link load in networks is low



Power per transceiver is increasing

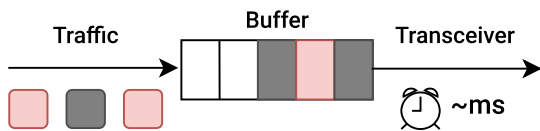


Low utilization is bad for efficiency

Theory

Save energy with sleeping and buffering

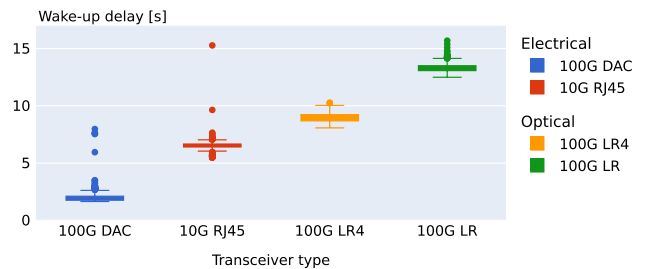
Assumption: Transceiver ready within milliseconds



[NSDI '08]: Buffer traffic while transceivers wake up

Practice

Transceiver **wake-up** takes **seconds!**

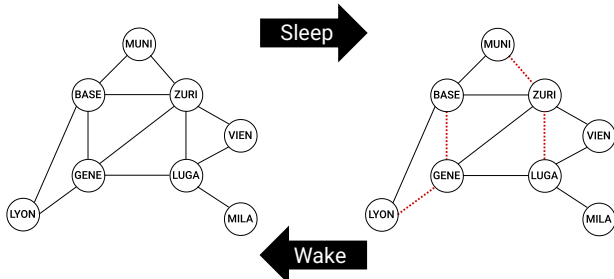


Contribution

Turning links off still works when considering longer timeframes

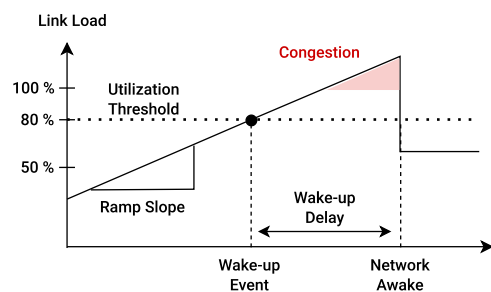


The controller turns off non-essential links



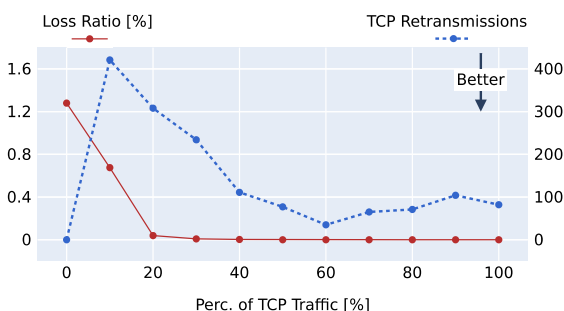
Nodes wake up the network if the load is too high

No disruption to the network if the traffic doesn't change too fast



Result

TCP limits the impact of congestion if traffic changes too fast



Future

Faster wake-up **boosts energy savings** and **reduces performance impact**

