Off-the-shelf MPTCP proxy
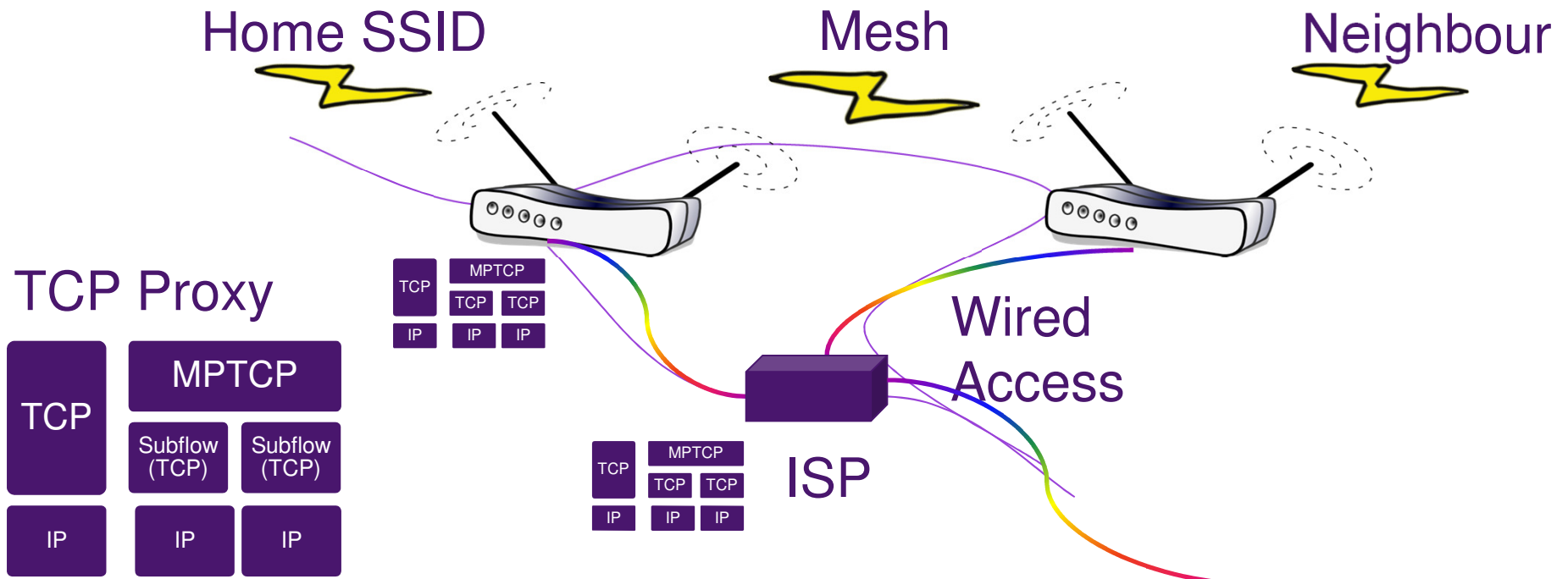
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MPTCP Use Case: Bonding over WiFi

- Multipath access over home and neighbour DSL
  - 2+ paths give higher reliability and speeds
- MPTCP proxies at home gateway and ISP router
- Prototyped on Linux at Algonquin College

Home SSID   Mesh   Neighbour

TCP Proxy

TCP	MPTCP	
	Subflow (TCP)	Subflow (TCP)
IP	IP	IP

TCP	MPTCP	
	TCP	TCP
IP	IP	IP

Wired Access

TCP	MPTCP	
	TCP	TCP
IP	IP	IP

ISP

Proxy Design

- UCL MPTCP kernel + TCP interception proxy

- Standard TCP interception proxy – Mallory
  - Terminates both TCP and MPTCP sessions, copies data between them
  - Plugin architecture allows data & socket manipulation
  - Kernel converts TCP to MPTCP automatically

- Works when one or neither side is MPTCP enabled

- If both sides are MPTCP enabled
  - Proxy works when all flows are on-path
  - If first flow is on-path, off-path flows won't be recognized by server
  - If first flow is off-path, on-path flows won't be recognized by server

- Possible to allow mix of on / off-path through plug-in?

Resources

- Mallory:
  - https://intrepidusgroup.com/insight/mallory/

- UCL MPTCP Linux kernel implementation:
  - www.multipath-tcp.org