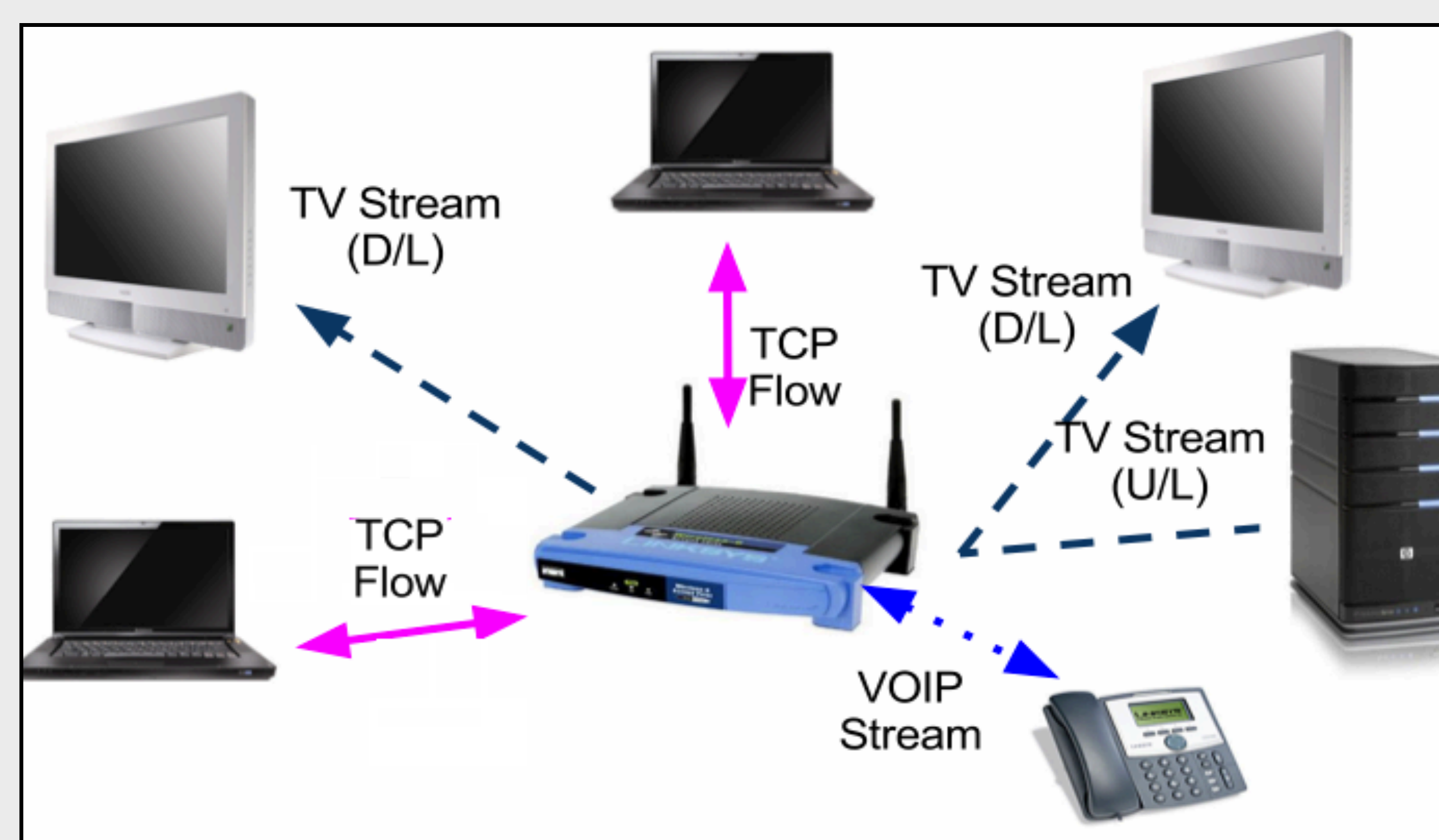




Traffic Shaping in Wireless Home Networks

Media devices have **minimum bandwidth requirements**.

The **nature** of 802.11's distributed medium access does not guarantee stable link bandwidth.

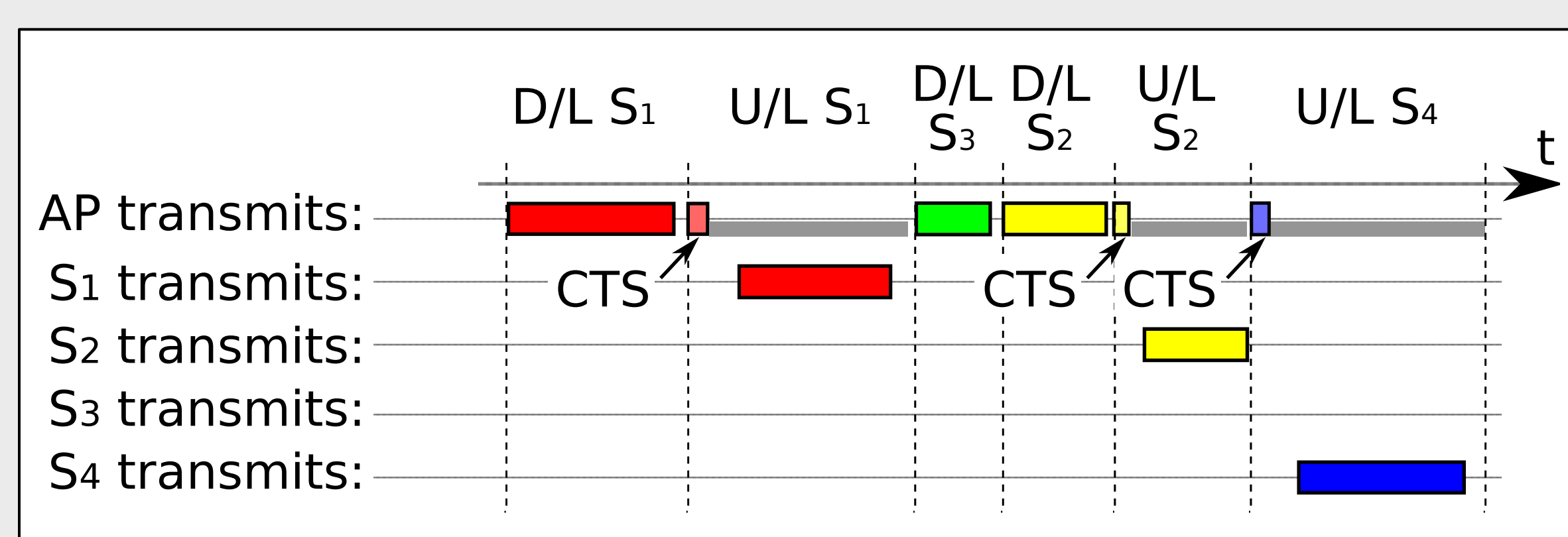


In **our solution**, the home AP is in control of the home's wireless bandwidth management.

AP **allocates** available bandwidth to "protected" links.

Solution is **transparent** to legacy 802.11 devices.

Challenge: How to protect uplink traffic?

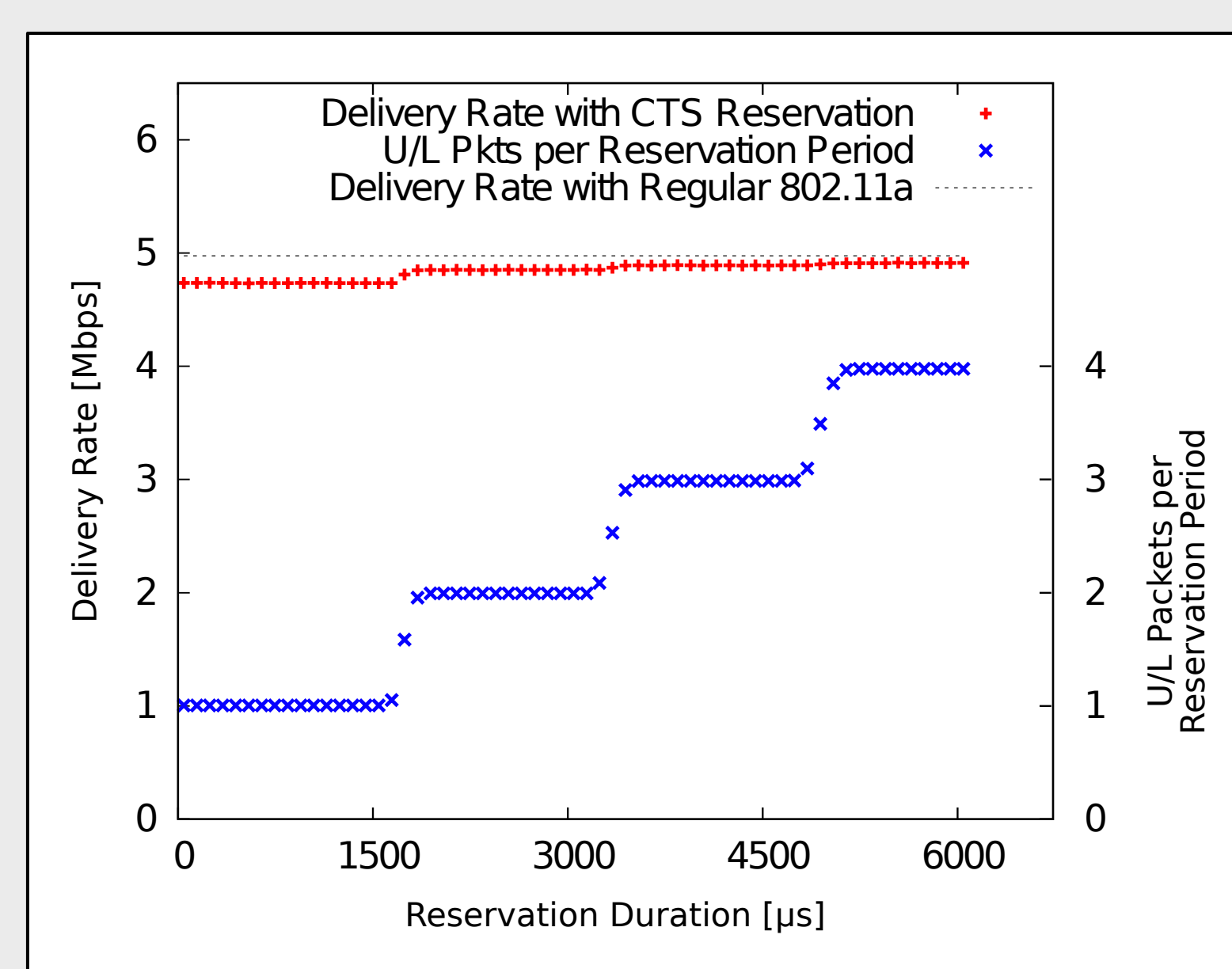


"Protected" **uplinks** are implicitly polled using Virtual PCF:

- AP accesses the medium aggressively.
- AP transmits unsolicited CTS frames to "protected" stations.

ns-3 Study of CTS-based medium access

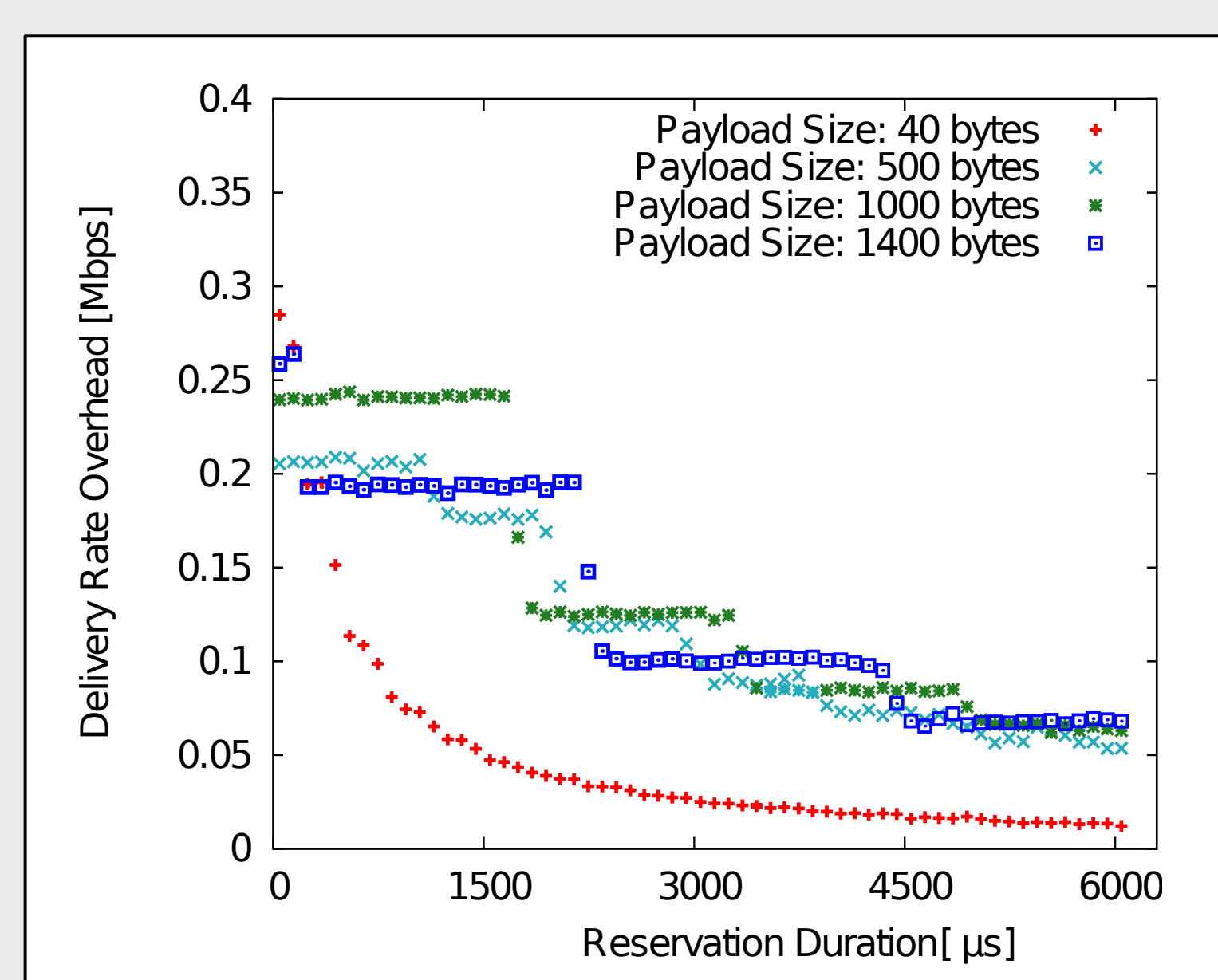
Overhead of CTS Frames



Large overhead is not incurred.

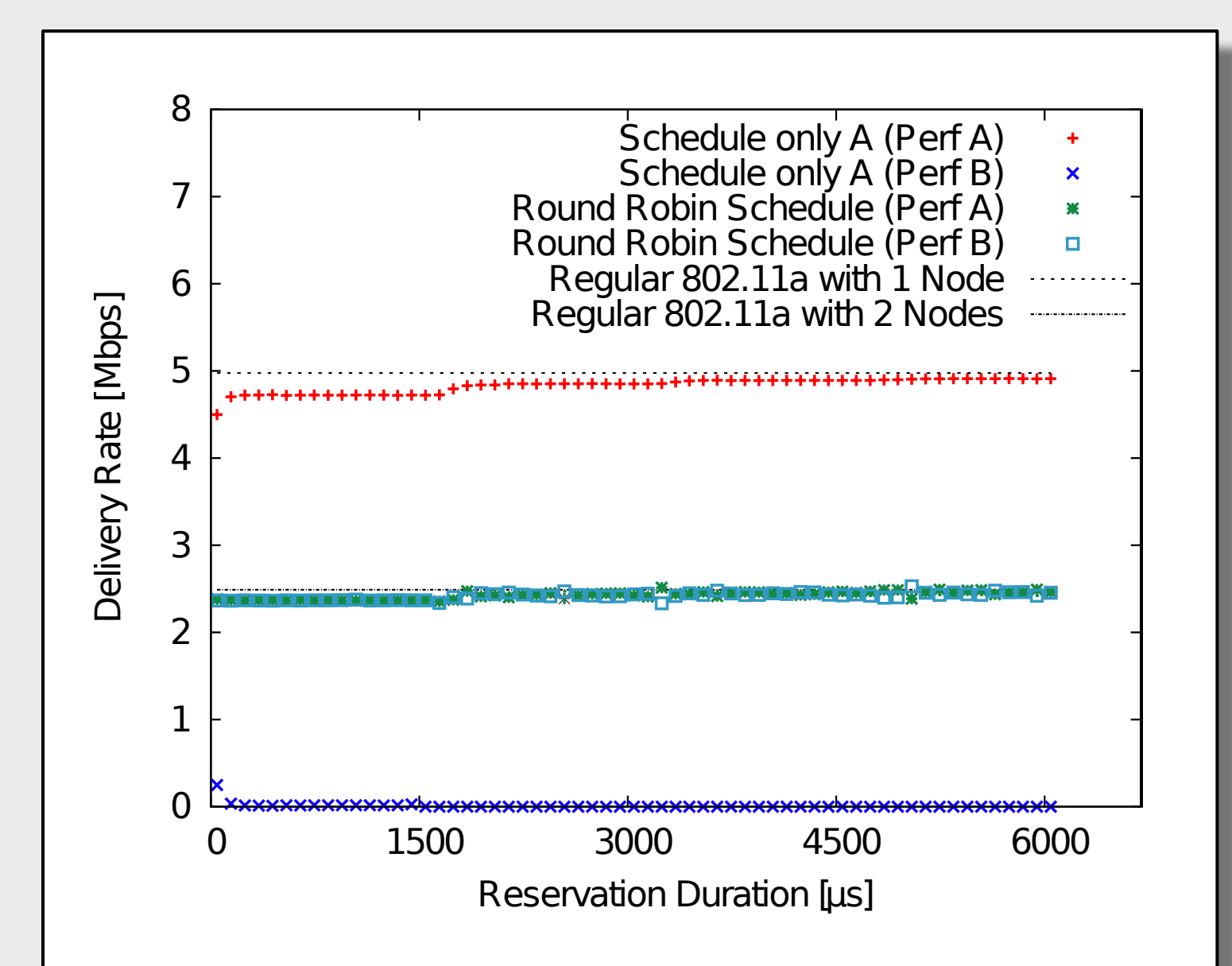
Reduced by uplink transmission batching.

Overhead depends on the uplink frame transmission time.

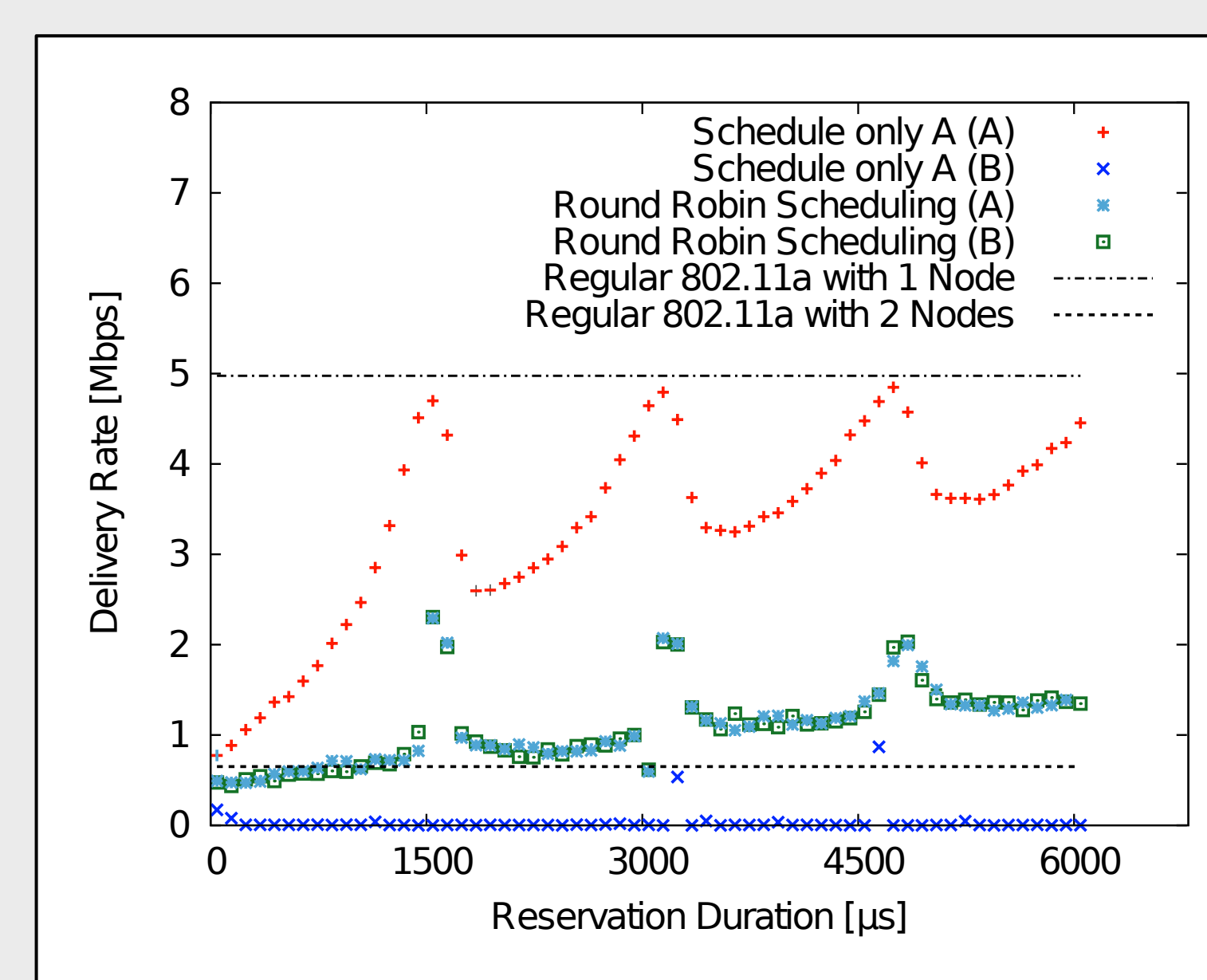


Priority Allocation

For stations in carrier sensing range, short reservation length is sufficient to give a head start to the prioritized uplink.



For a network with hidden terminals, reservation length must cover the transmission of entire frames.



In conclusion, transmitting unsolicited CTS frames to **protect** selected uplinks is a **simple** mechanism that requires **no modifications** to end devices.