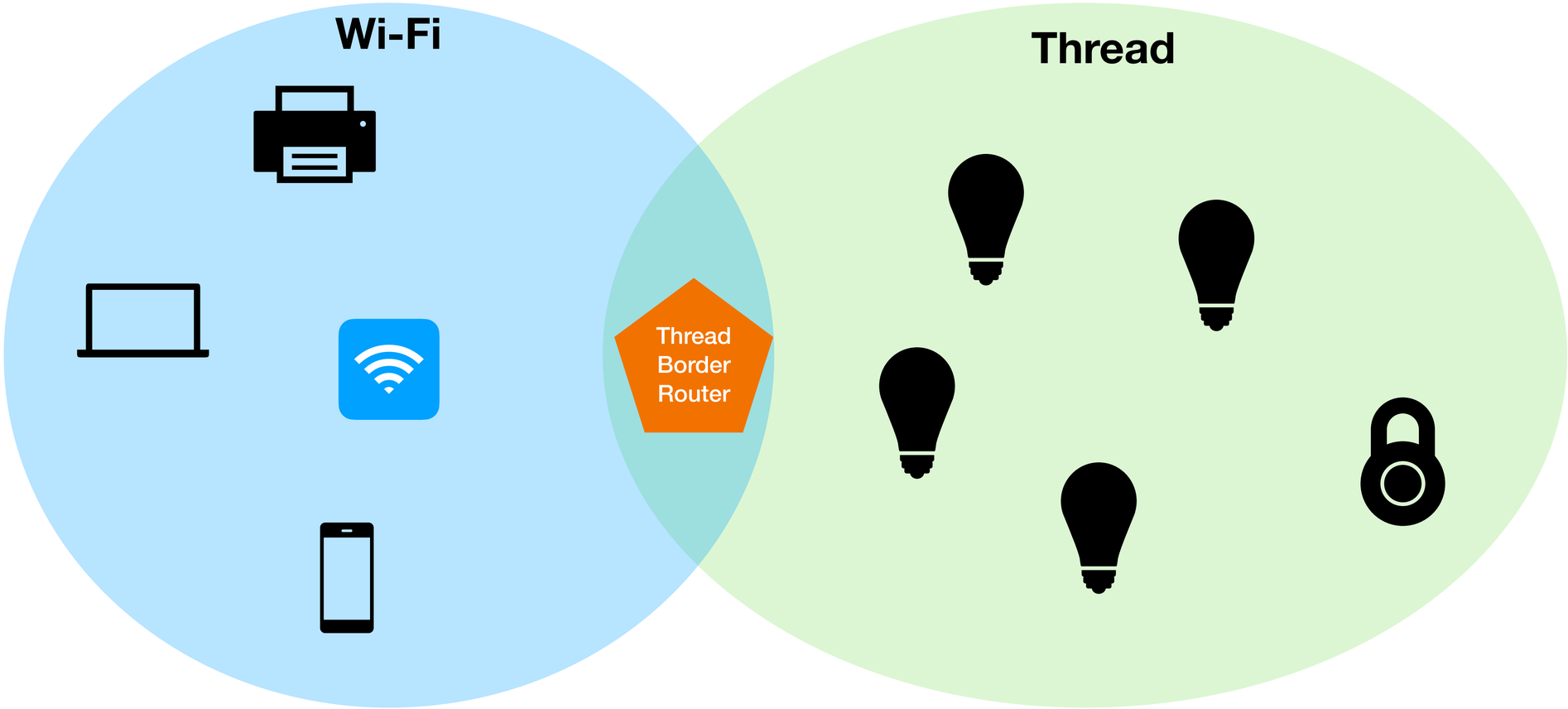
SRP Remove All Services EDNS(0) option

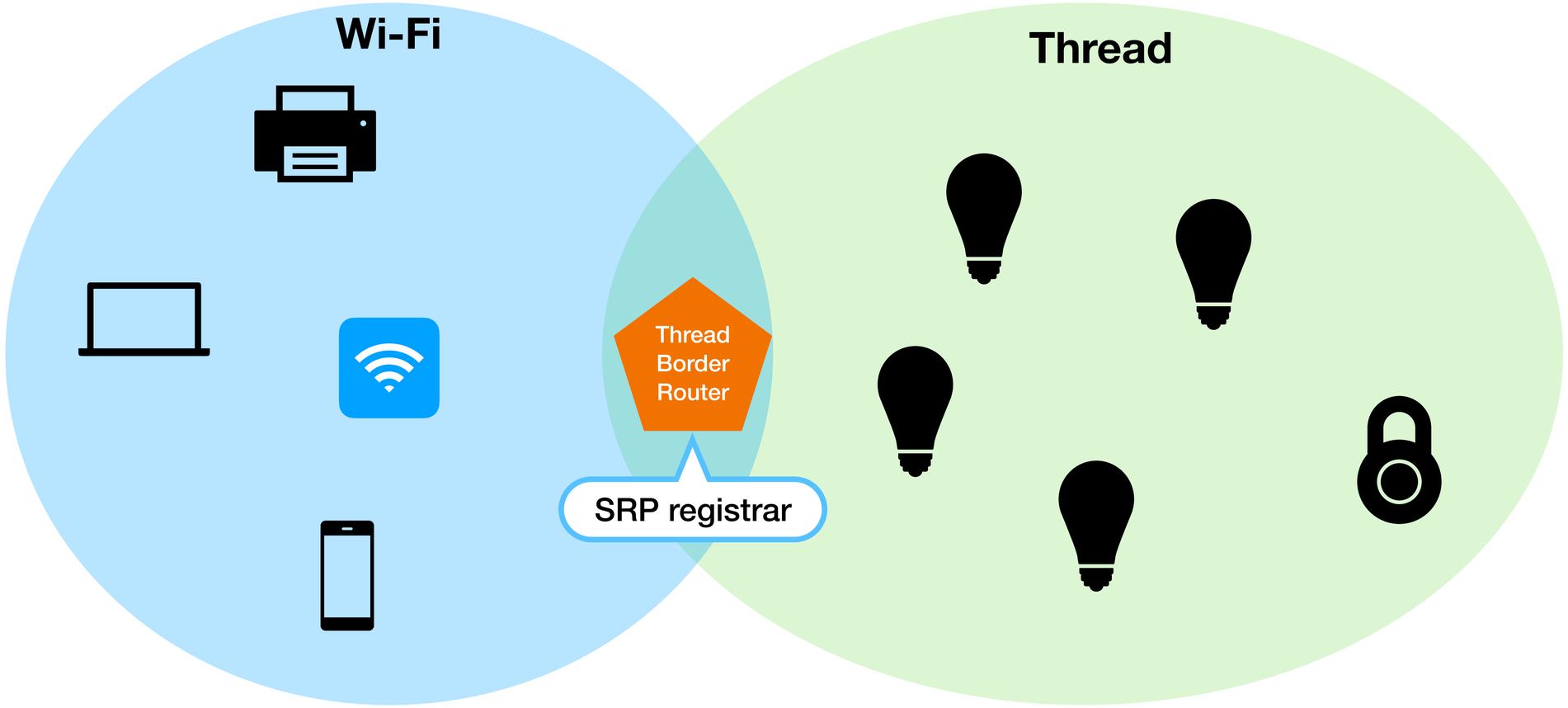
draft-michel-srp-remove-all-00

François Michel <f_michel@apple.com>
Esko Dijk <esko.dijk@iotconsultancy.nl>

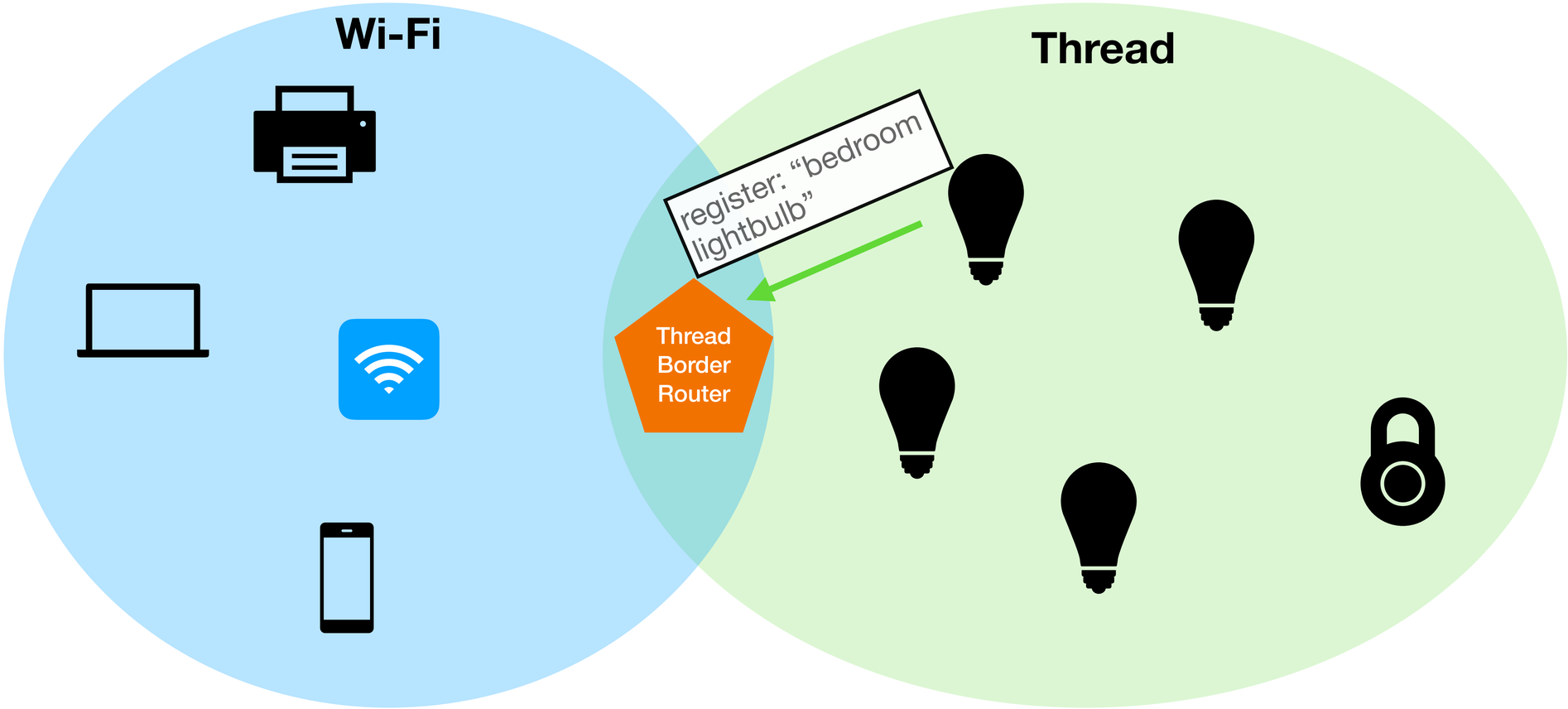
Thread + Matter: an important use-case for SRP



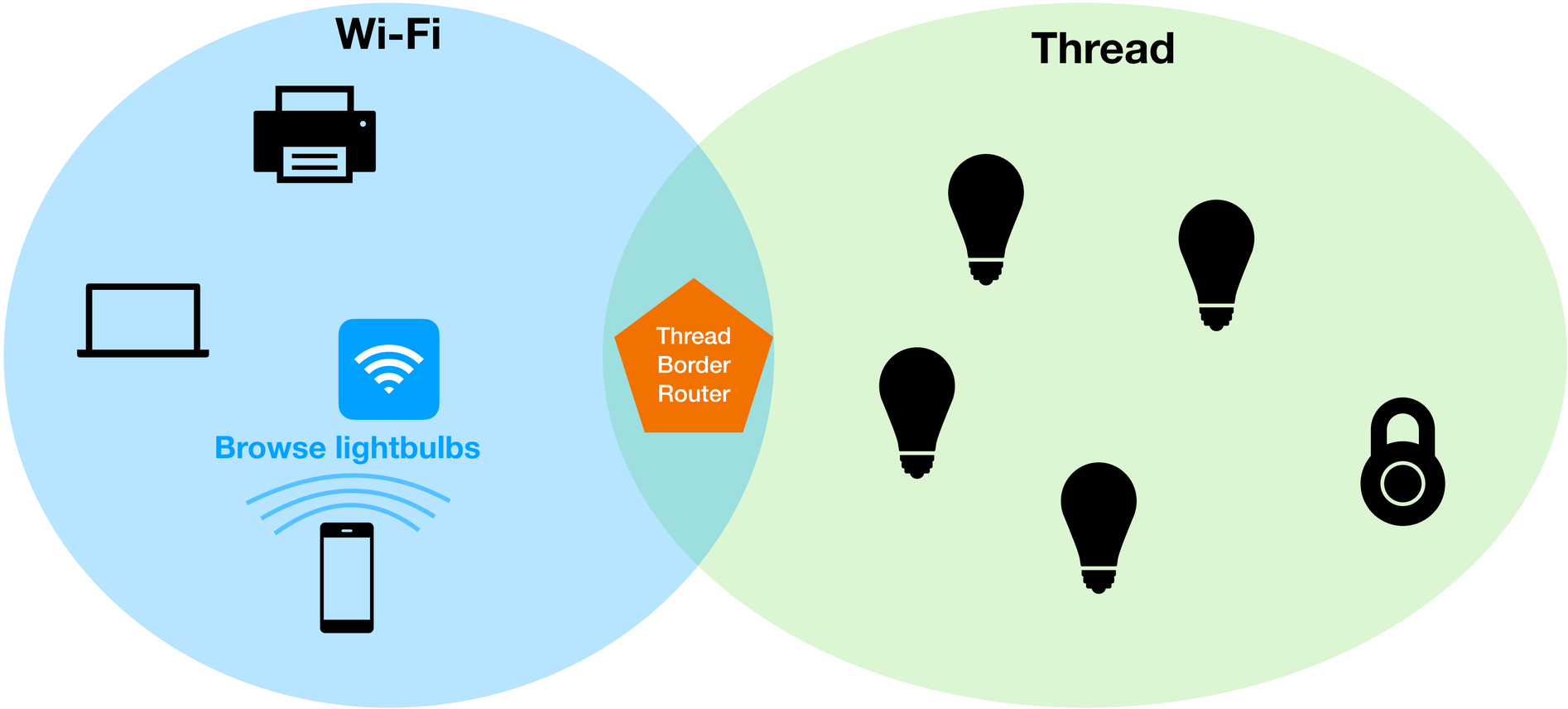
Thread + Matter: an important use-case for SRP



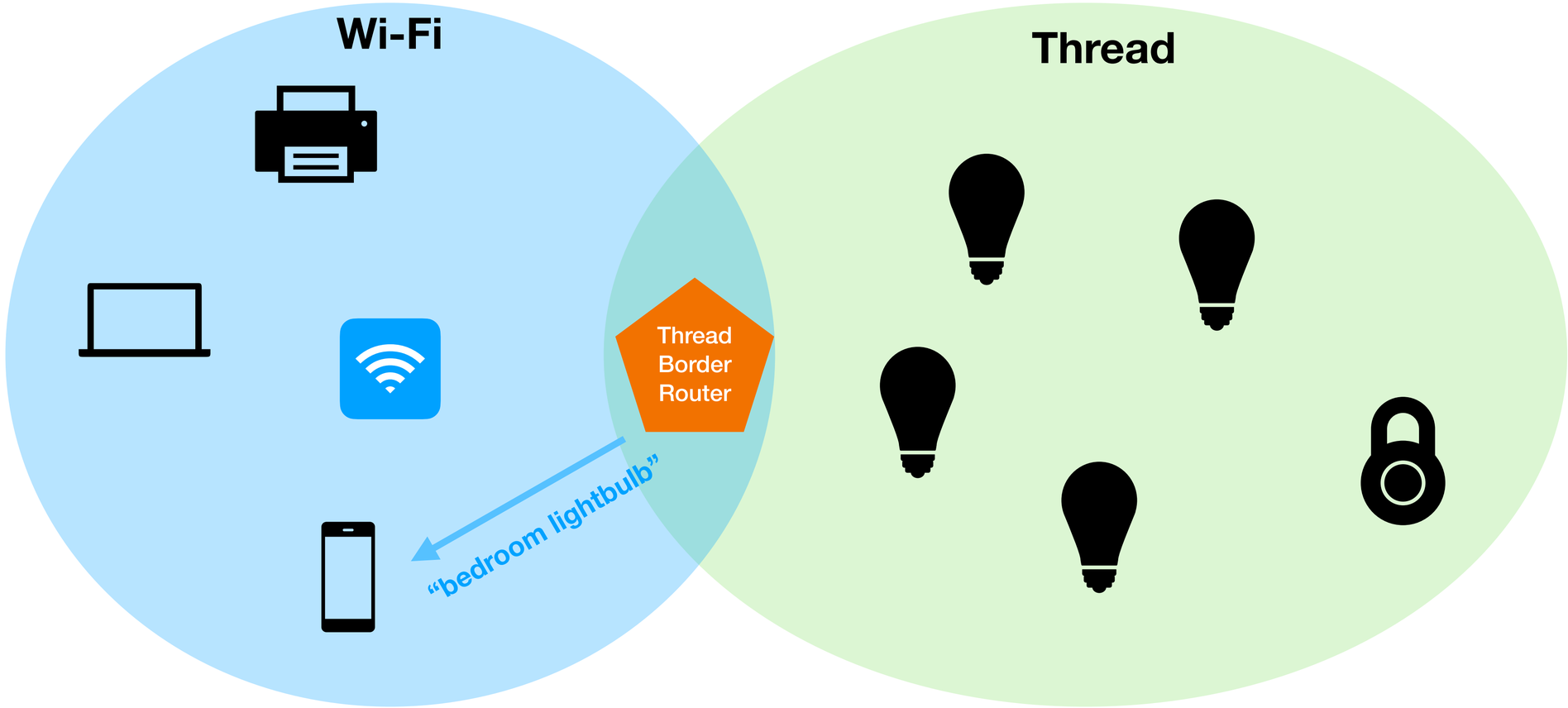
Thread + Matter: an important use-case for SRP



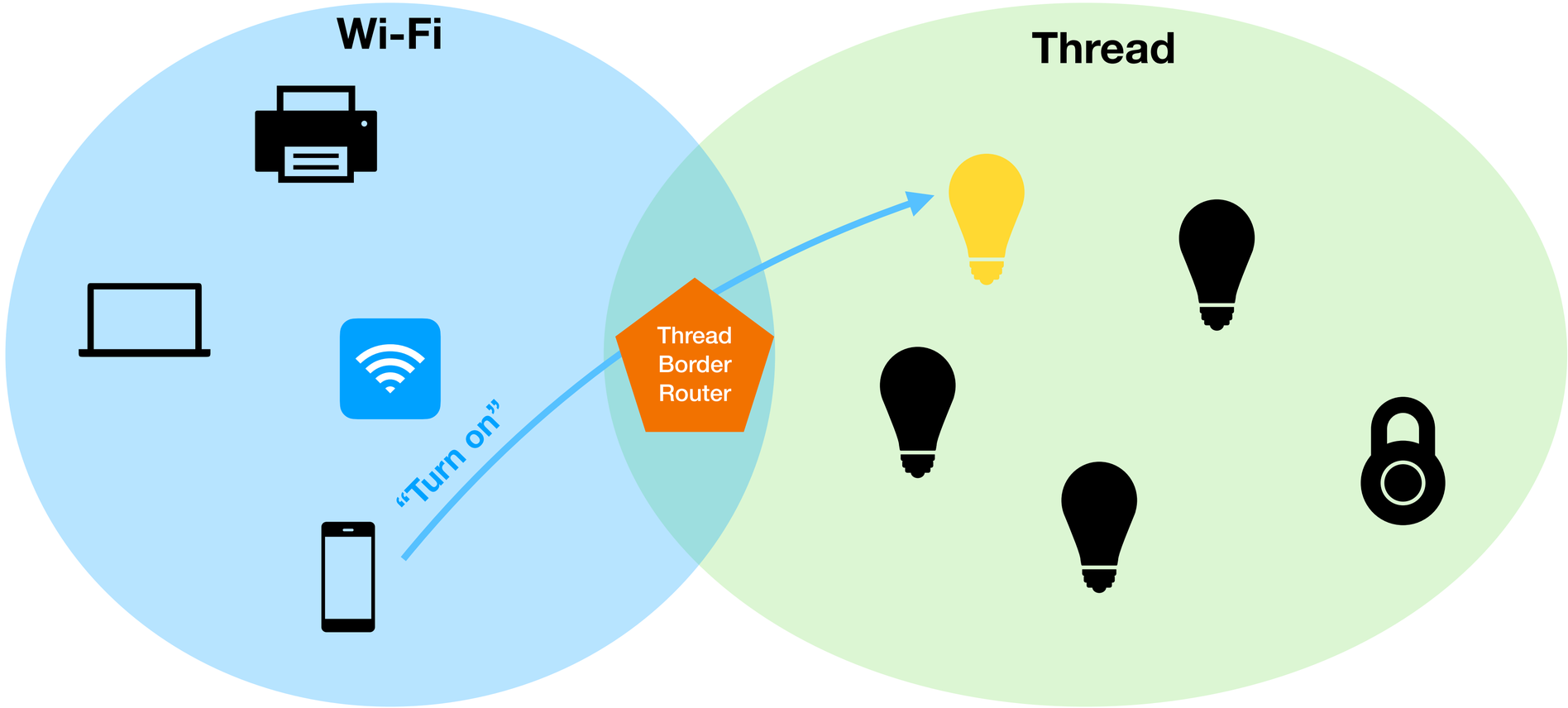
Thread + Matter: an important use-case for SRP



Thread + Matter: an important use-case for SRP



Thread + Matter: an important use-case for SRP



Congestion control and SRP

Thread’s maximum bitrate is ~250Kbps

Thread must coexist with 2.4ghz Wifi, Bluetooth, and other Thread devices

- It doesn’t always have transmit permission.

SRP registrations span ~2 packets

- Too short to estimate throughput or adapt sending rate from receiver feedback

Matter SRP updates can be large

Congestion control and SRP

Thread's maximum bitrate is ~250Kbps

Thread must coexist with 2.4ghz Wifi, Bluetooth, and other Thread devices

- It doesn't always have transmit permission.

SRP registrations span ~2 packets

- Too short to estimate throughput or adapt sending rate from receiver feedback

Matter SRP updates can be large

Source	Src port	Destination	Dst port	Protoc	Length	Info
fdde:ad…	49155	fdde:ad…	53	DNS	313	Dynamic update 0xe4cf SOA default.service.arpa
fdde:ad…	53	fdde:ad…	49155	DNS	60	Dynamic update response 0xe4cf
fdde:ad…	49155	fdde:ad…	53	DNS	654	Dynamic update 0x3c32 SOA default.service.arpa
fdde:ad…	53	fdde:ad…	49155	DNS	83	Dynamic update response 0x3c32 OPT

Congestion control and SRP

Thread's maximum bitrate is ~250Kbps

Thread must coexist with 2.4ghz Wifi, Bluetooth, and other Thread devices

- It doesn't always have transmit permission.

SRP registrations span ~2 packets

- Too short to estimate throughput or adapt sending rate from receiver feedback

Matter SRP updates can be large

Source	Src port	Destination	Dst port	Protoc	Length	Info
fdde:ad…	49155	fdde:ad…	53	DNS	313	Dynamic update 0xe4cf SOA default.service.arpa
fdde:ad…	53	fdde:ad…	49155	DNS	60	Dynamic update response 0xe4cf
fdde:ad…	49155	fdde:ad…	53	DNS	654	Dynamic update 0x3c32 SOA default.service.arpa
fdde:ad…	53	fdde:ad…	49155	DNS	83	Dynamic update response 0x3c32 OPT

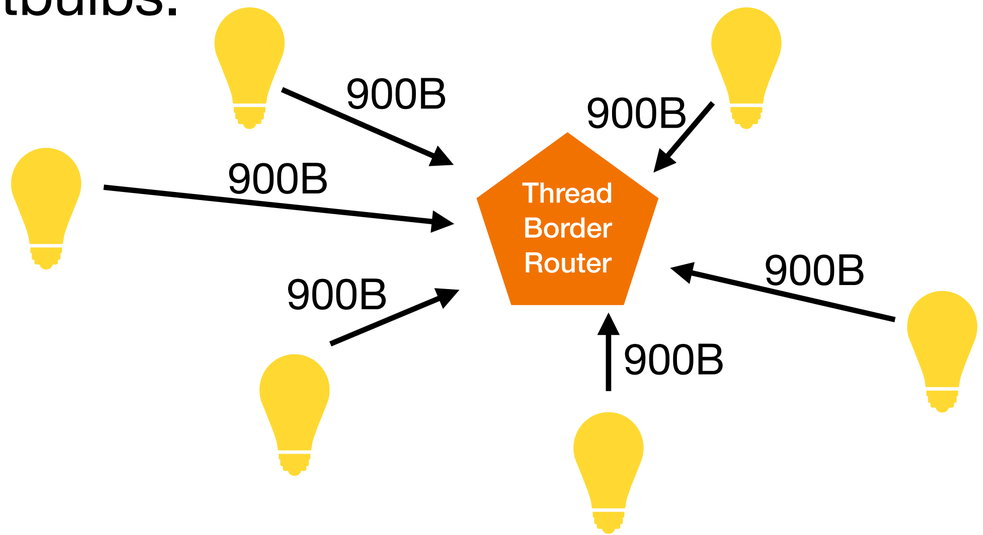
"Remove all published services" (a.k.a. Update-Lease: 0)

"Register new services"

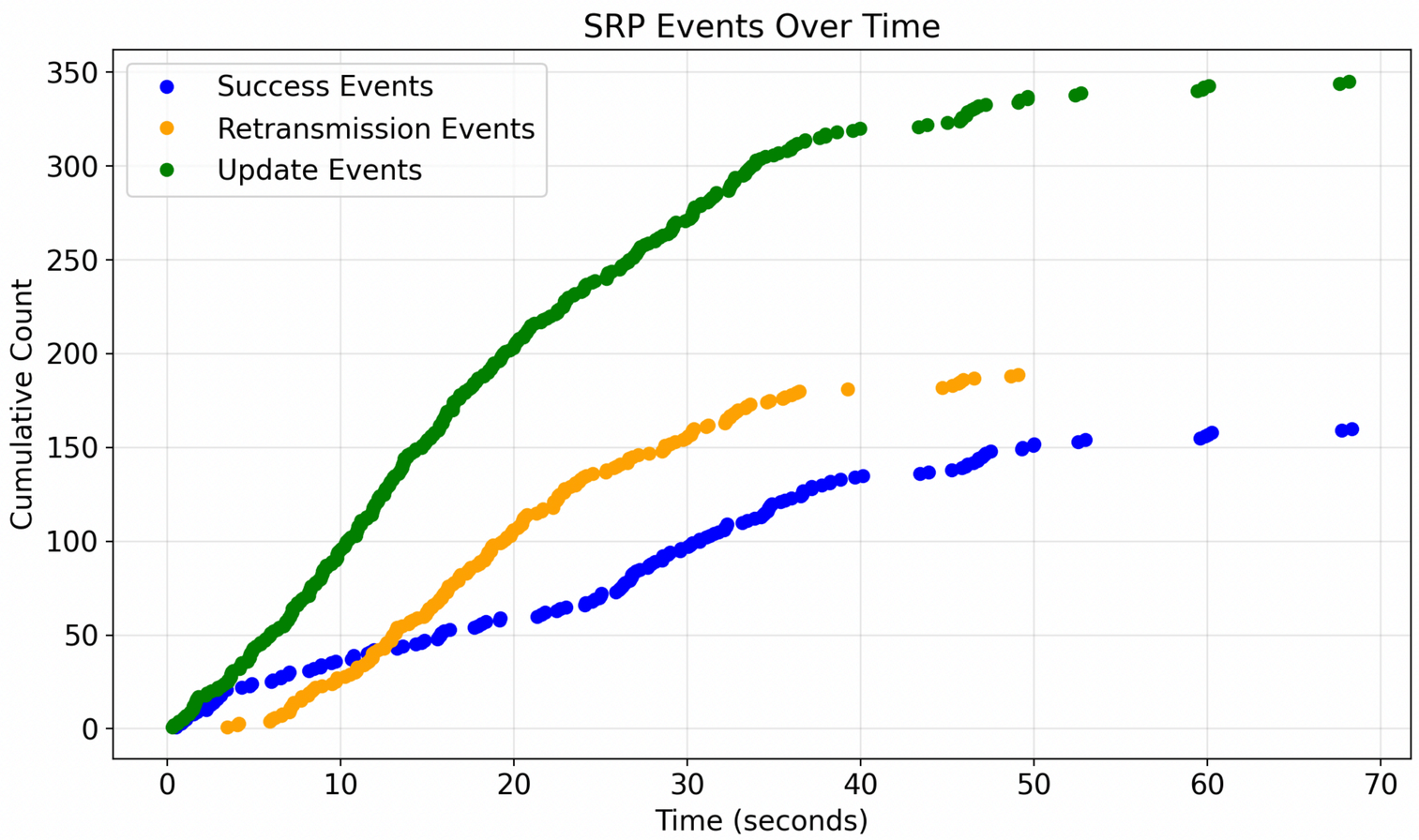
Synchronization events

SRP registrations can be synchronized

- IPv6 prefix changes on the Thread mesh
- SRP registrar reboot
- Such synchronization events can take several (dozens of) minutes to converge with several dozens of lightbulbs.



An example from our simulated testbed



SRP Remove All Services EDNS(0) option

This EDNS(0) option has no payload.

Its presence in an SRP Update says “*first remove all published services before adding the ones in the update*”.

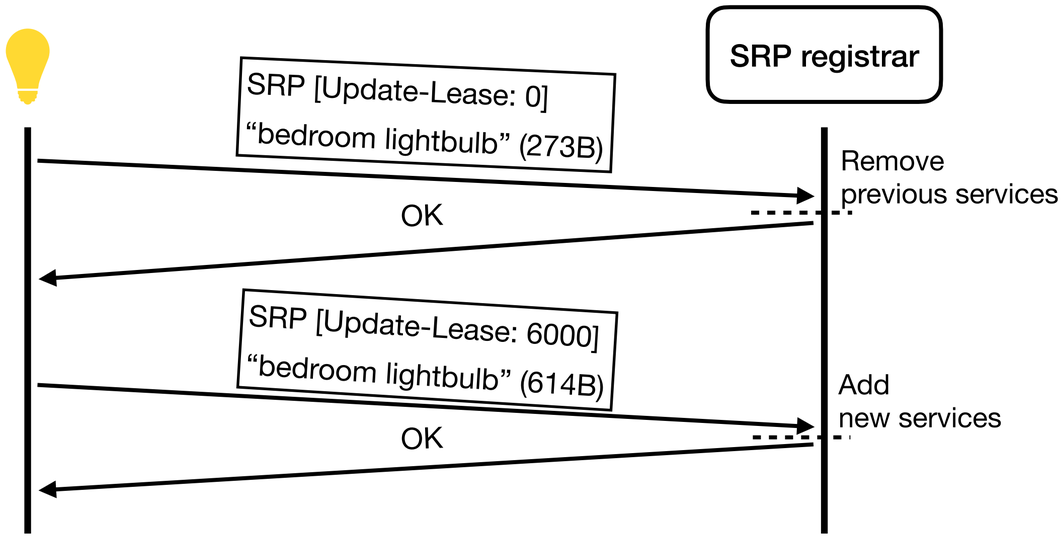
- Transactional: either both remove & add operation succeed or both fail.
- Idempotent

SRP Remove All Services EDNS(0) option

This EDNS(0) option has no payload.

Its presence in an SRP Update says “*first remove all published services before adding the ones in the update*”.

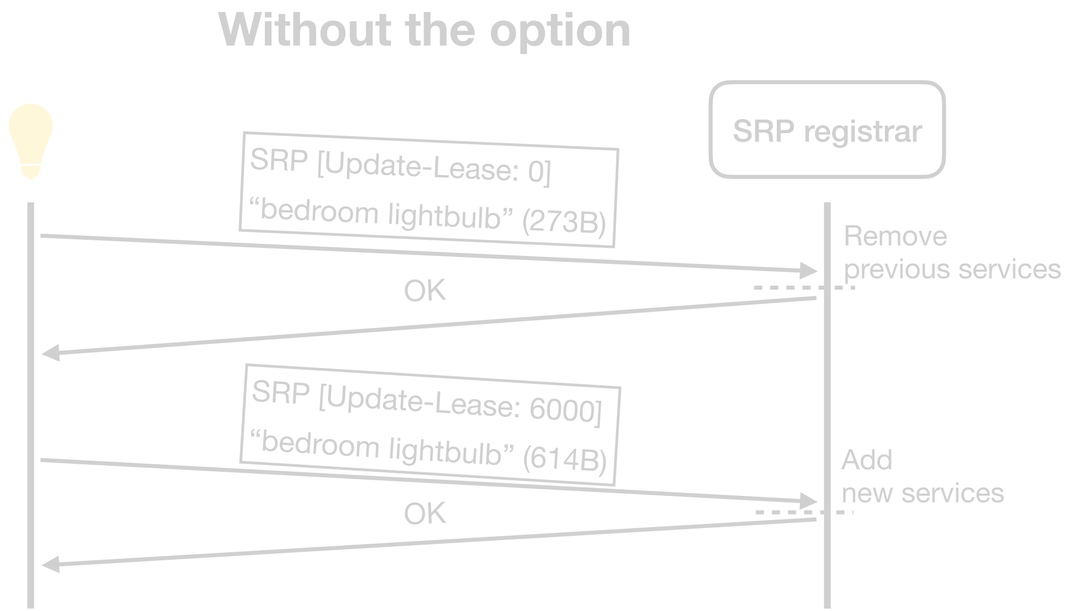
Without the option

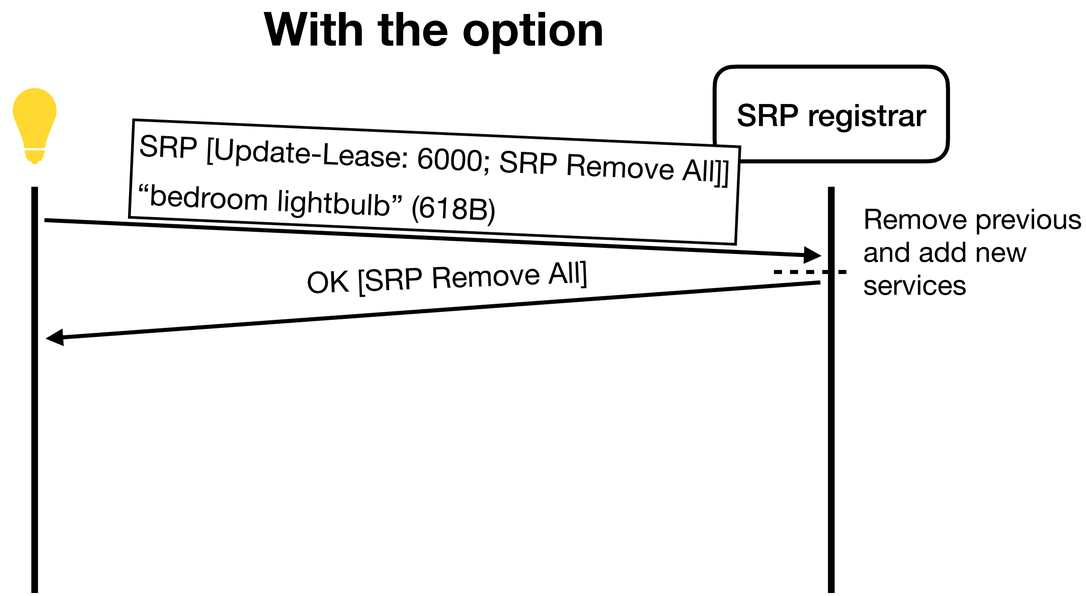


SRP Remove All Services EDNS(0) option

This EDNS(0) option has no payload.

Its presence in an SRP Update says “*first remove all published services before adding the ones in the update*”.





SRP Remove All Services EDNS(0) option

This EDNS(0) option has no payload.

Its presence in an SRP Update says “*first remove all published services before adding the ones in the update*”.

Source	Src port	Destination	Dst port	Protoc	Length	Info
fdde:ad…	49155	fdde:ad…	53	DNS	313	Dynamic update 0xe4cf SOA default.service.arpa
fdde:ad…	53	fdde:ad…	49155	DNS	60	Dynamic update response 0xe4cf
fdde:ad…	49155	fdde:ad…	53	DNS	654	Dynamic update 0x3c32 SOA default.service.arpa
fdde:ad…	53	fdde:ad…	49155	DNS	83	Dynamic update response 0x3c32 OPT

SRP Remove All Services EDNS(0) option

This EDNS(0) option has no payload.

Its presence in an SRP Update says “*first remove all published services before adding the ones in the update*”.

Source	Src port	Destination	Dst port	Protoc	Length	Info
fdde:ad…	49155	fdde:ad…	53	DNS	313	Dynamic update 0xe4cf SOA default.service.arpa
fdde:ad…	53	fdde:ad…	49155	DNS	60	Dynamic update response 0xe4cf
fdde:ad…	49155	fdde:ad…	53	DNS	654	Dynamic update 0x3c32 SOA default.service.arpa
fdde:ad…	53	fdde:ad…	49155	DNS	83	Dynamic update response 0x3c32 OPT

Source	Src port	Destination	Dst port	Protoc	Length	Info
fdde:ad…	49154	fdde:ad…	53	DNS	662	Dynamic update 0xdb01 SOA default.service.arpa
fdde:ad…	53	fdde:ad…	49154	DNS	91	Dynamic update response 0xdb01 OPT

Next steps

Draft adoption ?

SRP convergence measurements with the option

Other bandwidth-based optimizations ?