Multiple IPv6 Addresses per Host:
Tactics and Strategy

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Why Do We Need Multiple Addresses?

Just any ordinary host:

A single-prefix network: link-local + stable +privacy + 464XLAT = 4

Two-prefixes (multihoming or renumbering): 7

ChromeOS: the current requirement is 7-9 addresses per device

Future Use Cases: SIGCOMM CCR Paper (see PANRG talk)

RFC7934: *"it is RECOMMENDED that IPv6 network deployments provide multiple IPv6 addresses from each prefix to general-purpose hosts. To support future use cases, it is NOT RECOMMENDED to impose a hard limit on the size of the address pool assigned to a host."*

Reality: Wireless APs and Switches

- **hardcoded** and low limits on the number of IPv6 addresses/MAC

- No indication that the limit is reached

- Unpredictable behaviour when the limit is reached

Some guidance and recommendations might be needed

Tactical Fixes: draft-linkova-v6ops-ipmaclimi

Problem: hardcoded limits on the number of IPv6 addresses/MAC

Fix:

      Higher default limits

      Configuration knob

Problem: no indication that the limit is reached

Fix: send syslog/telemetry event

Problem: unpredictable behaviour when the limit is reached (not LRU)

Fix: use LRU

What to Do Long-term?

Question:

Can we make everyone equally unhappy?

Allow multiple addresses per host w/o network scalability issues?

Answer: /64 per host.

All host global addresses are off-link (no ND)

1 route per host (scalable)

Addresses fate sharing (better failure mode)

Simplified forensics/troubleshooting (all addresses in /64 owned by device)

See draft-collink-v6ops-ent64pd (submitted on Nov 11, 2022)