

464 Customer-side Translator (CLAT) Node Recommendations

Jen Linkova (Google), Tommy Jensen (Microsoft)

<https://datatracker.ietf.org/doc/draft-link-v6ops-clat/>

<https://github.com/furry13/v6ops-464xlat-enable>

Why CLAT recommendations?

- Document gotchas for implementors
 - Dealing with multihoming
 - Maximizing compatibility with upper-layer protocols who should not need to care about what CLAT is doing
 - Avoiding subtle security issues
- Encourage good practices among diverse implementations using latest standards (RFC 8781 published since RFC 8585)

Draft in a nutshell

- Use unique IPv6 addresses per interface to ensure stateless CLAT
 - With unique IPv4 from 192.0.0.0/29, max 8 CLAT instances on node
 - DAD required, use checksum-neutral addresses when using SLAAC
- Updates RFC 8585 to require RFC 8781 (PREF64 RA) support
 - Enables 464XLAT in absence of DNS64
- Defer to IPv4 when present, otherwise use CLAT as discoverable in this preference order: RFC 7225, RFC 8781, RFC 7050

Open Question: CLAT versus native IPv4

- Text currently says use native IPv4 if available with/before CLAT
 - But some admins may wish to use IPv6 even if IPv4 is available
 - What about IPv4 discovered after CLAT usage – MAY, SHOULD switch?
- DHCP Option 108 (RFC 8925) would enable this without disrupting IPv4 for hosts incapable of IPv6-mostly
 - Not helpful when IPv4 is statically configured, or host prefers IPv6 always whether the network permits IPv4 usage or not
- This would unfortunately open the door for spoofed PREF64 RA or DNS response to ipv4only.arpa to direct to attacker PLAT

Open Question: changes in available prefixes

- Host may receive multiple PIOs (multihoming or renumbering)
 - Native IPv6 handles this just fine (e.g. Rule 5.5) for using correct source address
 - But CLAT uses the first address it discovers without conscious reactions to additional network signals
- Less an open question about design, and more about phrasing we just have not issued yet
 - Warning implementors that they may run into “using the wrong source address” bugs without conscious effort to handle this case

Summary

- IETF 118: submitted a -00 to provide CLAT implementors with guidance on best practices for when to enable and disable
- IETF 119: revved to the current -02 from new discussion and implementation feedback
- Seeking WG adoption