

Recommendations On NAT64 Prefix Discovery

[draft-ietf-v6ops-prefer8781](#)

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PREF64 Discovery: A Series of Fortunate Events

- **Nov 2013:** [RFC7050](#) (Using DNS64 to discover NAT64 prefixes)
Meantime ...DoT, DoH, DoQ, DNR are being developed and deployed...
- **April 2020:** [RFC8781](#) (Advertising PREF64 in RAs)
...RFC7050 gaps (see next slides) become noticeable...
- **July 2024, IETF120, DNSOP:** draft-jens-7050-secure-channel
 - *Tommy: shall we address RFC7050 security issues?*
 - *DNSOP WG: how about we deprecate RFC7050 instead?*
- **Nov 2024, IETF121: DNSOP:** draft-buraglio-deprecate7050
 - *DNSOP WG: nah, it looks like a v6ops issue....*
- **Dec 2024:** draft-ietf-v6ops-prefer8781

Why Not RFC7050?

- Dependency on Network-Provided Recursive Resolvers
 - RFC8880 is required but not widely implemented
 - VPN clients are known to override the host DNS config
- Network Stack Initialization Delay

Why Not RFC7050? (contd.)

- Latency in Updates Propagation
 - no rediscovery until 10 secs before the TTL expires
 - Operator has no control if external DNS64 servers are used
 - PREF64 changes need at least TTL secs
- Multihoming implications
 - "a node *MUST* examine all received AAAA resource records to discover one or more PREF64s and *MUST* utilize all learned prefixes."

Why Not RFC7050? Security

- If insecure channel is used: spoofing attacks
 - Hard to recover (see the previous slide)
- Secure channel is not clearly defined
 - Neither IPsec nor L2 encryption are widely deployed

This Draft in a Nutshell

- Operators deploying NAT64 networks *SHOULD* provide PREF64 information in Router Advertisements as per [RFC8781].
- Clients *SHOULD* obtain PREF64 information from Router Advertisements as per [RFC8781] instead of using [RFC7050] method. In the absence of the PREF64 information in RAs, a client *MAY* choose to fall back to RFC7050.

Mobile Networks Considerations

Use of [RFC8781] may not be currently practical for networks that have more complex network control signaling or rely on slower network component upgrade cycles, such as mobile networks. These environments are encouraged to incorporate [RFC8781] when made practical by infrastructure upgrades or software stack feature additions.

...meantime the authors are looking into abyss of 3GPP documents, planning to get them updated. Stay tuned.

Changes Since Adoption

- Add VPN use case
- Multihoming implications
- Mobile network considerations
- Text polishing

Diff can be found [here](#)

Next Steps?

- Comments?
- Suggestions?
- **WGLC?**