What's New on the IPv6 Front at the IETF?

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Disclaimers

- The oral / written comments on IETF work represent neither my employer nor the Internet Engineering Steering Group view
- Slides are *work in progress*

Unless specified all pictures and logos are from Microsoft Powerpoint stock images

Some Brief News at V6OPS 1/2

- draft-ietf-v6ops-rfc3849-update-01
  - *Expanding the IPv6 Documentation Space*
  - Smaller /20 prefix rather than 2001:db8::/32

- draft-ietf-v6ops-ipv6-only-resolver-00
  - *IPv6-only Capable Resolvers Utilising NAT64*
  - How IPv6-only iterative resolvers can use NAT64 to establish communications with IPv4-only authoritative servers
  - Need to discover the Pref64

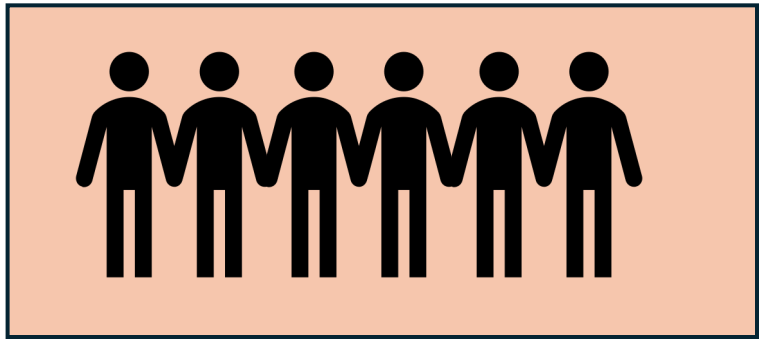
Some Brief News at V6OPS 2/2

- draft-ietf-v6ops-ula-usage-considerations-03 is back from the dead after 6 years ☹
- draft-winters-v6ops-cpe-lan-pd-05
  - DHCP-PD on the LAN side of residential gateways *(cfr SNAC WG later)*
- draft-pauly-v6ops-happy-eyeballs-v3-00
  - Add transport selection QUIC vs. TCP using SVCB DNS Resource Records
- draft-fbnvv-v6ops-site-multihoming-01 (previous talk)

draft-ietf-v6ops-dhcp-pd-per-device-05

- Using DHCPv6-PD to Allocate Unique IPv6 Prefix per Client in Large Broadcast Networks
- Scalability: aggregation of all IPv6 addresses of a node in a single prefix
  - Delegated prefix is off-link, routing to the client LLA, no NDP ;-)
- Allow for network extension (SNAC, thetering, ...)
- Similar to
  - the /64 to mobile 3GPP hand sets
  - RFC 8273 *Unique IPv6 Prefix per Host*

Some Brief News from



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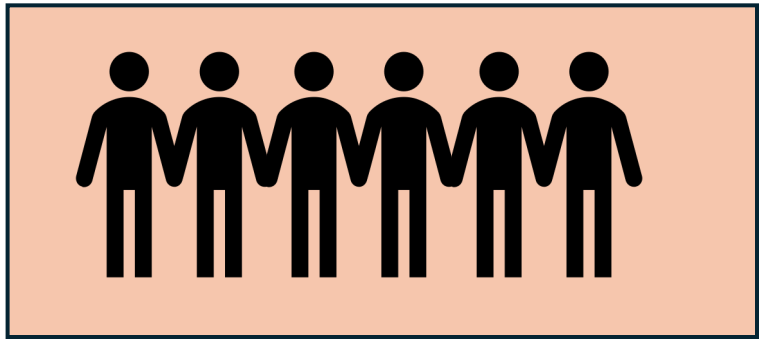


- draft-ietf-6man-pio-pflag-00
  - *Signalling DHCPv6 Prefix Delegation Availability to Hosts*
  - See the V6OPS about DHCP-PD to the host
  - A flag in the Prefix Information Option of the RA

- draft-ietf-6man-rfc6724-update-04
  - *Preference for IPv6 ULAs over IPv4 addresses in RFC6724*
  - Current preferences: IPv6 GUA, IPv4, IPv6 ULA
  - Some US Federals have deployed ULA-only networks ☹ and cannot meet the US Mandate of being IPv6-only
  - Personal concerns about ULA usage and operation in a mixed environment

- draft-templin-6man-ipid-ext-00
  - *IPv6 Identification Extension*
  - Having more than 2^{16} fragment IDs

Extension Headers in 6MAN

- draft-ietf-6man-eh-limits-10
  - *Limits on Sending and Processing IPv6 Extension Headers*
  - *A source host SHOULD NOT send a packet with an IPv6 header chain larger than 104 bytes*
  - Assumed to set "*minimum baseline of support*"…
    - ??? Can this become the value for all procurements or RIPE-772ng ???

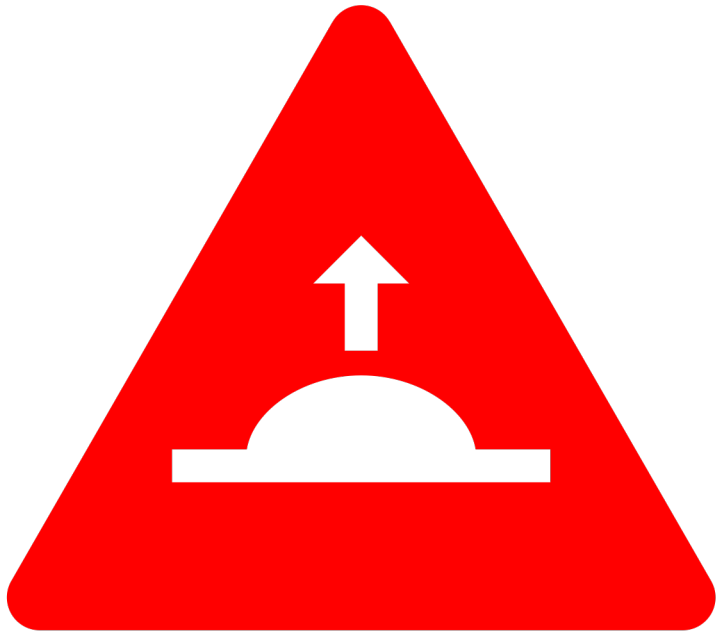
- draft-ietf-6man-hbh-processing-12
  - *IPv6 Hop-by-Hop Options Processing Procedures*
  - New Hop-by-Hop options SHOULD be designed to ensure the router can process the options at the full forwarding rate
  - Top two bits of option code are now "MAY discard" (i.e., ignore)

Routing Headers at 6MAN

- draft-ietf-6man-sids-03
  - *Segment Identifiers in SRv6*
  - clarify the relationship of SRv6 SIDs to the IPv6 Addressing Architecture [RFC4291]
  - Optional specific /16 prefix for SRv6
- draft-ietf-6man-comp-rtg-hdr-00
  - *The IPv6 Compact Routing Header (CRH)*
  - Experimental, not linked to SPRING / SRv6
- draft-bdmgct-spring-srv6-security-00
  - *SRv6 Security Considerations*
  - Very drafty, more work to be done, but high expectations

6MAN Publication Road Can be Bumpy

- draft-ietf-6man-rfc6874bis-09
  - *Representing IPv6 Zone Identifiers in Address Literals and Uniform Resource Identifiers*
  - `ping ff02::1%eth0`
  - But, `http://[fe80::1%eth0]/` is conflicting with %-encoding in URL



Blocked by two Area Directors as this I-D conflicts with browser community even if authors are quite flexible

Stub Network Auto Configuration for IPv6 (snac WG)

- How to connect an IEEE 802.15.4 IPv6 network to the residential/home Wi-Fi (and possibly to the Internet) ?
  - Different MAC address lengths 16/64 vs. 48 for Wi-Fi
  - Different speed / CPU (think airpods, light bulbs)
  - 6lo could be used, i.e., header compression
  - IPv6 is a must as ‘stub’ networks are IoT
- Challenge
  - Not a single change in the existing residential/home Wi-Fi
  - Must work with IPv4-only, dual-stack, IPv6-only Wi-Fi
  - Avoid homenet pitfalls: do not try to boil the ocean

SNAC WG: only one simple document

- draft-ietf-snac-simple-02
- Mainly re-using *existing* mechanisms
  - RA on Adjacent Infrastructure Link (AIL) to detect IPv6 and adjacent stub routers
  - ULA used
    - on the stub network in the absence of DHCP-PD
    - on IPv6-less AIL
  - NAT64
  - mDNS (same authors!)

DHC WG

- draft-ietf-dhc-rfc8415bis-03
  - Status: Internet Standard rather than Proposed Standard
  - Remove IA_TA (temporary address) as it was never used

- draft-ietf-dhc-addr-notification-06
  - Registering Self-generated IPv6 Addresses using DHCPv6
  - I.e., for hosts not using stateful DHCP IA_NA, but wanting to collect the addresses

Source: X/Twitter

Conclusion

- IPv6 is not yet done
- A lot of work still in progress
- Operators' views are ~~welcome~~, required
- Join the IETF, at least mailing lists
- Presented work is *in progress* your input is still welcome