Operational Security Considerations for IPv6 Networks

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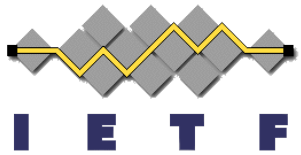

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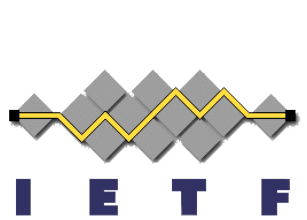
Updates for -09



- Refreshed the references, added new ones:
  - Draft-ietf-6man-hbh-header-handling
  - RFC 2993 (architectural implications of NAT)
  - RFC 6145 (stateless NAT64)
- Fixed some typos
- Acted upon most of the June reviews/comments on the mailing list.
  - Special thanks to Fred Baker, Markus deBruen for extended review
  - Also to Erik Kline, Bob Sleigh
  - Still have to work on Lee Howard (16th of July but on -08) and the many other comments (yet to be processed)

Diffs in -09

- Section 2.1, Addressing Architecture
  - Although initially IPv6 was thought to make renumbering easy, in practice, it may be extremely difficult to renumber *without a good IP Addresses Management (IPAM) system*.
  - However, one aspect to keep in mind is who has *administrative* ownership of the address space and who is *technically* responsible if/when ~~Law Enforcement Agency may need~~ there is a need to enforce restrictions on routability of the space due to malicious criminal activity.

Diffs in -09

- Section 2.1.2 Use of ULAs
  - *It is also important to note that the IETF does not recommend the use of ULA and NPTv6.*
  - Looking for the actual reference ;-) RFC 6296 ? RFC 4864 ?

Diffs in -09

- Section 2.1.4 Privacy addresses
  - ... it is advised in scenarios where user attribution is important to *rely on a layer-2 authentication mechanism such as IEEE 802.1X [IEEE-802.1X] with the appropriate RADIUS accounting (Section 2.6.1.6) or* to disable SLAAC and rely only on DHCPv6. ...

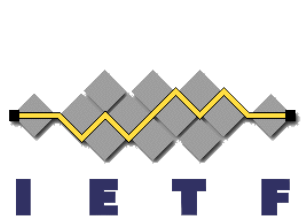
Diffs in -09

- Section 2.6.1.5 Stateful DHCP leases
  - The mapping between data-link layer address and the IPv6 address can be secured by using switches implementing the SAVI [RFC7513] algorithms. *Of course, this also requires that data-link layer address is protected by using layer-2 mechanism such as [IEEE-802.1X].*

ToDo in -10

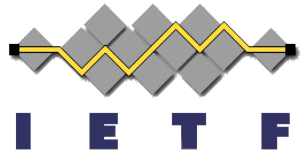
- Document started in early 2012...
- Security is a moving target ;-)
- Acting on all comments...

ToDo in -10



- Add section on extension headers
  - Reference draft-ietf-opsec-ipv6-eh-filtering (if work is still done), RFC 7045
  - White list approach with difference between transit/Internet routers and enterprise/edge devices

ToDo in -10 [Brian Carpenter]



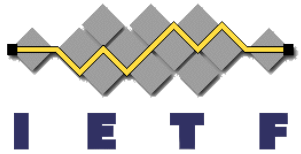
- Remove references to 'dead' I-D
  - NDP throttler & co
- RFC 6877 (XLAT 464) ?
  - Unsure as for the network operation it is NAT64
- Add a privacy section
  - Unsure as it is not related to operation

ToDo in -10 [Lee Howard]

- *"This is listed as Informational, but in some places is recommending best practice"*
- *"the tone suggesting IPv6 is new is misplaced"*
  - Unsure, it is still new for people deploying it though (the audience of this I-D).
  - => will review the wording
- Proposal for the ULA + NPTv6 section ;-)

ToDo in -10 [Lee, cont.]

- Many English corrections to Frenglish ;-)
- Section 2.3.5 (3GPP) should get some rewording (other reviewer had the same comment)



Q&A

THANK YOU!