Routing and Addressing: Differences Between IPv4 & IPv6

Thomas Narten

narten@us.ibm.com

ARIN XVI

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IPv6 Routing/Addressing Architecture

- Essentially the same as IPv4, but bigger addresses

- Routing/Aggregation via CIDR

- /64 architectural boundary

  - Assumed by stateless address auto configuration

  - Other protocols also using (e.g., CGA-based ideas)

- We have 2**64 networks, *not* 2**128 addresses

Address Space Considerations

- Wastage of address space less of a concern than in IPv4

  - In 2003::/3, we can number 500M /32s

  - Each /32: 65K /48s (total), 7K /48s (.8 HD ratio) or 32K (.94 HD ratio)

  - We can safely give more address space to end sites (in terms of /64s) than we could in IPv4.

- Scaling the routing system concern is the same:

  - We can't route 500M /32s...

  - No magic bullet on the horizon...

- We *can* tradeoff lower utilization in favor of better aggregation