

Brief review of RFC 5887:  
*Renumbering Still Needs Work*  
(Carpenter, Atkinson, Flinck)

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# Background

- For many users, renumbering is a non-issue; they renumber every time they reboot their CPE.
  - (the fact that they usually get the same RFC 1918 address range each time is beside the point)
- But planned renumbering will be needed from time to time at medium to large sites. Reasons:
  - Change of ISP, or adding an ISP, when PI addressing is not an option
  - ISP itself has to renumber
  - Subnet reorganisation\*
  - Merger of several sites into one, or split of one site\*
  - Change of IPv6 access method (e.g., tunnel to native).

## The really hard target

- The most demanding case would be unplanned automatic renumbering, initiated by a site border router, for reasons connected with wide-area routing.

# Survey of existing mechanisms

- DHCP
- SLAAC
- PPP
- DNS Configuration and Dynamic Update
- Dynamic Service Discovery
- Router Renumbering
- Multi-Addressing capability of IPv6

# Survey of operational issues

- Network Layer Issues
- Transport Layer Issues
- DNS Issues
- Application Layer Issues
  - apps that remember addresses
- Router-Related Issues
- NAT State Issues
- Mobility Issues
- Multicast Issues
- Management Issues
  - distributed config including addresses
- Security Issues

# Proposed/potential mechanisms

- SHIM6
- MANET work
- DHCP options
- NETCONF
- Name Server Control Protocol (NSCP)

# Gap analysis (1)

- expose address lifetimes in the socket API
- name-based transport
- single registry per host for all address-based config
- deploy DHCPv6 RECONFIGURE
- resolve the 'IPv6 ND M/O flag debate'
- make hosts learn about the availability of upstream links dynamically, by deduction from RA messages
- MPTCP (and MP UDP?)
- central repository for site config data (NETCONF?)
- useable MANET-style solutions
- useable Router Renumbering, RFC 2894
- useable IPv6 Prefix Options for DHCPv6, RFC 3633

## Gap analysis (2)

- deploy DNSsec & Secure Dynamic DNS Update
- address management tools need to support multiple prefixes and ULAs
- monitoring systems must work during renumbering
- encourage databases and secure config protocols for network elements and servers (e.g., NETCONF)
- document requirements for renumbering tools & procedures
- document renumbering instructions for products
- all IPv6 deployment plans to include renumbering method
- method for announcing changed site prefix to other sites
- better mechanism to handle change of MIP home agent address while mobile is disconnected