DHCPv6/SLAAC
Interaction Problems
(draft-liu-bonica-dhcv6-slaac-problem-01)

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Background 1/2

- ICMPv6 RA messages include the following flags:
  - **“Autonomous Flag”:** indicates that a prefix can be used for SLAAC
  - **“Managed Flag”:** indicates that addresses are available via DHCPv6
  - **“OtherConfig Flag”:** indicates that other configuration information is available via DCPv6

![Fig. M/O flags in RA message](image1)

![Fig. A flag in Prefix Information Option](image2)
Background 2/2

• RFC 4861 provides a clear definition for these flags
• Neither RFC 4861 nor RFC 4862 completely specifies the host behavior when these flags are set
  – *Prescriptive behavior* – Host MUST use protocol X to obtain information Y when flag is set. Host MUST NOT use protocol X to obtain information Y when flag is not set
  – *Advisory behavior* - Protocol X is available to obtain Information Y. However, host behavior may be influenced by other factors.
Testing

• We tested various operating system’s handling of these flags
  – Windows 7
  – Linux (Ubuntu 12.10)
  – Mac OS (10.7)
Important test results

A flag behaviors
- For SLAAC-configured hosts, when A changed from 1 to 0, the behaviors varied, Win7 releases address learned from SLAAC while Linux/MAC doesn’t.

M flag behaviors
- Linux/MAC only start DHCPv6 until receive RA with M=1
- SLAAC-configured hosts receiving RA with M=1, Win7 does DHCPv6, Linux/MAC don’t
- DHCPv6-configured hosts receiving RA with M=0, Win7 release DHCPv6 addresses, Linux/MAC doesn’t

O flag behaviors
- Linux/MAC won't initiate stateless DHCPv6 when A flag is NOT set. Window will.
- O=1, then M from 1 to 0 or vice versa, Win7 would switch to stateless DHCPv6 or statefull DHCPv6; Linux/MAC no action
Operational Issues

• Given inconsistent host behavior, it is difficult for network managers to predict and control host addressing

• In the nominal case

• In the case of renumbering
  – Renumbering exercise may require transition from SLAAC to DHCP or vice versa
Question

• Does 6man need to specify:
  – Whether flags have prescriptive or advisory influence on host behavior?
  – If advisory, what other factors influence host behavior?
Comments?

Thank you

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