

Provisioning IPv4 Configuration over IPv6 Only Networks

draft-ietf-dhc-v4configuration-01

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History

- The requirement to align the provisioning of IPv4 configuration parameters over IPv6 only networks dates from IETF85
- draft-rajtar-dhc-v4configuration adopted in May 2013
- Major differences between the draft presented in IETF86 and current draft – added solution requirements and conclusion

Solution Overview

- DHCPv4o6 Based Provisioning
 - Uses DHCPv4 messages encapsulated in IPv6
 - Protocol stack: DHCPv4/UDPv6/IPv6
- DHCPv6 Based Provisioning
 - Uses new DHCPv6 options
 - Protocol stack: DHCPv6/UDPv6/IPv6
- DHCPv4oSW Based Provisioning
 - IPv4 address & ports configured using DHCPv6 as above
 - DHCPv4 messages (DHCPINFORM only) are sent over a software tunnel
 - Protocol stack: DHCPv4/UDPv4/IPv4/IPv6
- DHCPv4oDHCPv6 Based Provisioning
 - DHCPv4 messages are transported within new DHCPv6 message types
 - Protocol stack: DHCPv4/DHCPv6/UDPv6/IPv6

Solution Requirements

1. Minimize the amount of work necessary to implement the solution through re-use of existing standards and implementations as much as possible.
2. Provide a method of supporting all existing DHCPv4 options so that they can be utilized without the need for further standardization.
3. Allow for the dynamic leasing of IPv4 addresses to clients. This allows for more efficient use of limited IPv4 resources.
4. Enable the separation of IPv4 and IPv6 host configuration infrastructure, i.e. independent DHCPv4 and DHCPv6 servers.
5. Avoid leaving legacy IPv4 options in DHCPv6.
6. Provide a flexible architecture to give operators the option of only deploying the functional elements necessary for their specific requirements.

Solution Comparison

Req. No.	DHCPv4o6	DHCPv6	DHCPv4oSW	DHCPv4oDHCPv6
1	No	Yes	No	Yes
2	Yes	No	Yes	Yes
3	Yes	No	No	Yes
4	Yes	No	Yes	Yes
5	Yes	No	Yes	Yes
6	No	No	Yes	Yes

New Provisioning Method?

- Full DHCPv4 configuration over A+P softwires (draft-troan-dhc-dhcpv4osw-00)
- Describes running full DHCPv4 over a softwire
 - IPv4 address and ports also learnt
 - All message types (not just DHCPINFORM)
 - Requires the concentrator to be a DHCPv4 server or relay
 - DHCPv4 client and server need to be updated for client messages sourced from ports other than 68
- Question for the WG – should this be included as a fifth mechanism?

Current Status and Next Steps

- v01 published and aligned with the DHC WG; the major point being the agreement of using DHCPv4-over-DHCPv6 as the provisioning mechanism
- Update draft based with new DHCPv4oSW mechanism (conclusion and recommendation remains unchanged)
- Next step – request WGLC