Authorization Option for DHCPv6 Relay Agents on Broadband Access Server

draft-yeh-dhc-dhcv6-authorization-opt-00

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Network Scenario & Requirements & Solution Space

- Centralized RADIUS Server, which is associated with the User Management database on AAA;
- Centralized DHCPv6 Server, which is only responsible (or take care) for the prefix/address assignment for users;
- DHCPv6 Server are not necessary to locate at the same place to share the same user database with RADIUS server.
Option Design

• Do we need a new DHCPv6 option for this case?
  – If yes, then how?
  – Stateless option?

• Container Option - Option_Authorization

  – carry the information got from the RADDIUS attributes:
    • Framed-Pool (88) defined in [RFC2869]
    • Delegated-IPv6-Prefix (123) defined in [RFC4818]
    • Framed-IPv6-Address, Stateful-IPv6-Address-Pool, Delegated-IPv6-Prefix-Pool defined in [ietf-radext-ipv6-access-06]
Message Sequences in the case of IPoE

<p>| DHCPv6 | Access Mode: | NAS | Radius |</p>
<table>
<thead>
<tr>
<th>Client</th>
<th>PPPoE or IPoE</th>
<th>DHCPv6</th>
<th>Server</th>
</tr>
</thead>
</table>

---Solicit-----
---Access-Request---
<--Access-Accept--
  (e.g. Framed-Pool)
  (e.g. Delegated-IPv6-Prefix)

DHCPv6 messages  RADIUS messages

<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DHCPv6</td>
</tr>
<tr>
<td>Server</td>
</tr>
</tbody>
</table>

---Relay-Forward-----
  (Option_Authorization)
<--Relay-Reply-----

---Request-----
  (e.g. Prefix, Address)
<--Reply-----
  (e.g. Prefix, Address)

DHCPv6 messages  DHCPv6 messages
Message Sequences in the case of PPPoE

```
+--------+   +--------+   +--------+
|DHCPv6 | Access Mode: | NAS | Radius |
|Client | PPPoE or IPoE | (DHCPv6| Server |
|       |              | Relay) |       |
+--------+   +--------+   +--------+

| PPP LCP Config-Request---> |

|---Access-Request---------> |

|---Access-Accept-----------> |

(e.g. Framed-Pool)

(e.g. Delegated-IPv6-Prefix)

|<----PPP LCP Config-ACK----|

PPP messages       RADIUS messages

|----Solicit---------|

|---Relay-Forward-----|

| (Option_Authorization) |

|<--Relay-Reply --------|

|<--Advertise----------|

(e.g. Prefix, Address)

|---Request----------|

(e.g. Prefix, Address)

|---Relay-Forward-----|

| (Option_Authorization) |

|<--Relay-Reply --------|

|<--Reply-------------|

(e.g. Prefix, Address)
```

DHCPv6 messages       DHCPv6 messages
Sub-Option Design

• Discussion on the Alternatives:

  – Design-1: Sub-option as option-data of Option_Authorization (Refer to the details of draft-yeh)
    
    • Pros:
      – define the new sub-option to meet the new requirement as usual, new requirement today is limited for the address & prefix assignment;
      – develop its own option within the DHCPv6 protocol; no much dependence on the development progress of RADIUS;
    
    • Cons: but need new parser for each new option.

  – Design-2: RADIUS attributes as option-data of Option_Authorization (Same method of [RFC4014])
    
    • Pros: reuse the parser codes of RADIUS attributes;
    • Cons: but need DHCPv6 server to support the parser codes of RADIUS for a list of attributes associated with DHCPv6.
Proposal for Next Step

• Deserved a new WG item?

Q & A ?!