Mitigating Aggregated Traffic of DHCP Discover Messages
draft-yang-dhc-ipv4-dis-01

Tianle Yang, Liangluan Li, Qiongfang Ma
China Mobile
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Problem Description

• For dual-stack capability hosts, DHCP DISCOVERY messages will be broadcasted until DHCP OFFER messages are received.

• In IPv6-only network, DHCP server is down and there will be no DHCP Discovery messages to the dual stack hosts.
Problem Description

• It is not specified in RFCs what the hosts should do when there is no DHCP OFFER messages

• In our test, different OSs work in their own way
  – Time interval sending next DHCP
  – Whether or not Obtaining IPv4 link local address
  – Whether or not get IPv4 address after resetting DHCP server
## Test Result: Different OS behavior

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<th>OS</th>
<th>Behavior</th>
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| **WinXP (SP3)**  | • After 9 fails of DHCP Discover, host will discover 4 times every 5min with exponential backoff algorithm;  
                      • Obtain 169.254.96.2 after 1min;  
                      • Obtain new IP address after DHCP service reset. |
| **Win7 (SP1)**   | • Obtain 169.254.198.228 immediately;  
                      • After 8 fails of DHCP Discover, host will discover 8 times every 5min with exponential backoff algorithm;  
                      • Obtain new IP address after DHCP service reset. |
| **Symbian S60 5th** | • Send DHCP Discover with alternating intervals of 2s and 4s; Cut off the Internet connection after 1min.  
                      • Request 169.254.8.21 after 6s;  
                      • NOT obtain new IP address after DHCP service reset. |
| **IOS 5.01**     | • After 10 fails of DHCP Discover, host will discover 10 times every 2min with exponential backoff algorithm (maximum = 8.5s).  
                      • Obtain 169.254.161.128 after 15s;  
                      • Obtain new IP address after DHCP service reset. |
| **Android (2.3.7)** | • No link local address,  
                      • DHCP Discover will be sent 5 times every 20s with exponential backoff algorithm. Mark the connection into “blocked” and never try again if fail to connect 9 or 10 times.  
                      • NOT obtain new IP address after DHCP service reset.  
                      • Notice: After first “blocked”, all the requests for other connections will be only 1 time. |
Proposal

• Define DIS_MAX_RT for client and a new TLV DIS_MAX_RT_OPTION, similar to draft-droms-dhc-dhcptrv6-solmaxrt-update-02
  • Client must initial the value of DIS_MAX_RT
  • A DHCPv4 client MUST include the DIS_MAX_RT_OPTION in any message it sends. The DHCPv4 server MAY include the DIS_MAX_RT_OPTION code in any response it sends to a client that has included the DIS_MAX_RT_option code in a request message
  • After receiving new DIS_MAX_RT_OPTION value, the client should resend another DHCP DISCOVER message according it
Next Step

• Maybe there are other solutions to the problem
• Revise it according to the comments