

Problem Statement for DHCP Relay Agent

DHC, 2009.07

Agenda

- **Introduction**
- **Problem Statement**
- **Solution Discussion**
- **Reference**

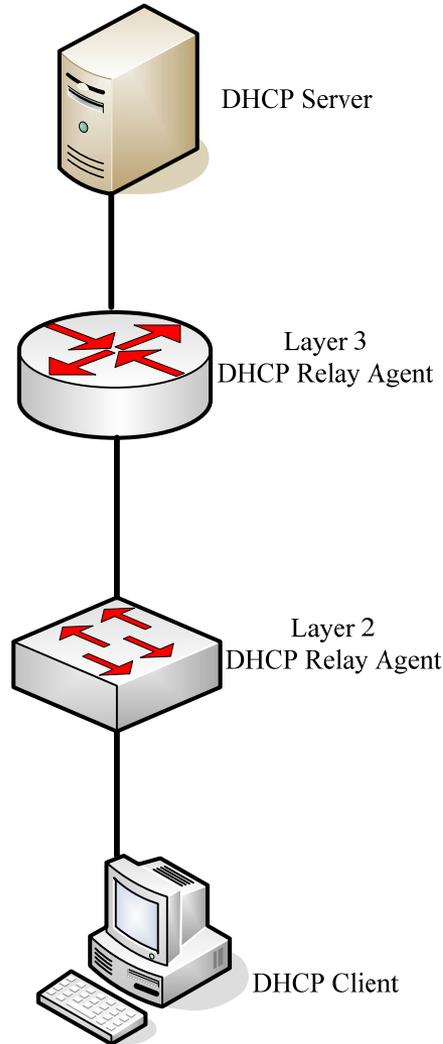
Introduction

- RFC 3046 define option 82, which can be used by DHCP server to implement IP address or other parameter assignment policies and help relay agent to forward the DHCP reply to the client.
- In some network configurations, DHCP server and clients are separated by multiple Relay Agents. This document describes two such network scenarios and their unique requirements which may not be meet very well through option 82.

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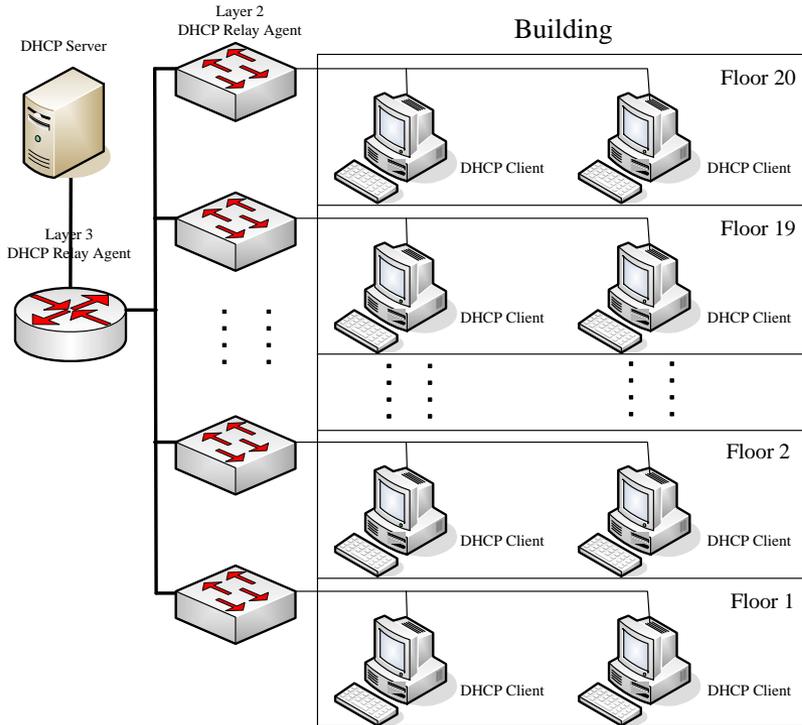
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Problem Statement-(1)



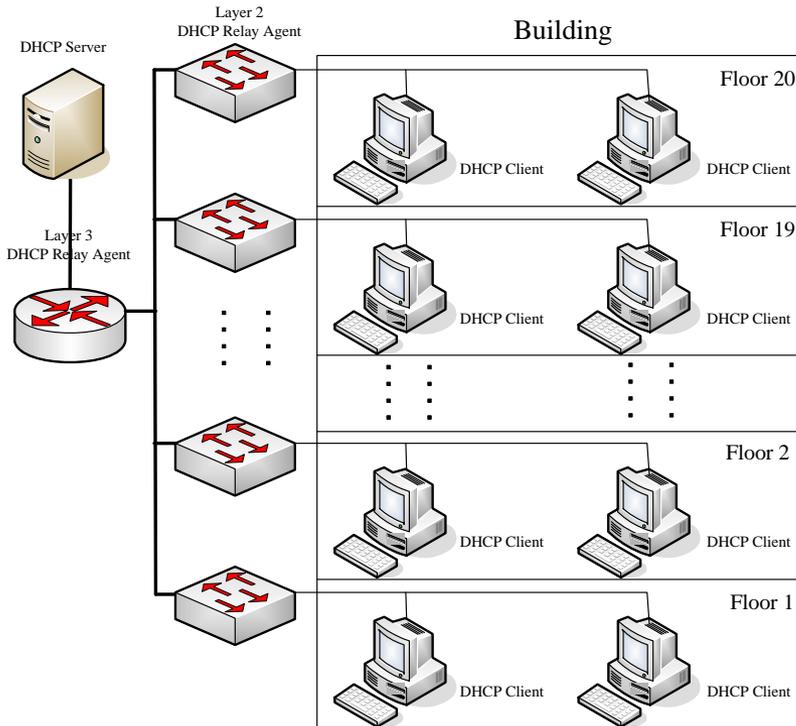
- **Under current mechanism defined in RFC3046, only Layer 2 relay agent can insert relay agent information.**
- **When Layer 3 Relay Agent uses unnumbered interfaces, it need to maintain internal states to identify the outgoing interface for the DHCP reply packets. Maintaining state information for each packet will not scale as number of DHCP clients increases.**

Problem Statement-(2)



- **When IPoE is used as access authentication mechanism, clients' location is recognized through DHCP relay agent information.**
- **In the current deployment, relay agent information can be inserted either by the floor switches or the building switches, which means that the subscriber's location is either too specific or too ambiguous. It will need much more policies for the operator to configure the subscriber's right to access from various kind of location scenario.**

Problem Statement-(2) cont.



• An example

- Assume a layer 3 switch is installed for a 20 floor building and a layer 2 switch is installed at each floor inside this building
- If the administrator plan to allow client A to access only from the first floor of this building and allow client B to access from every each floor. The necessary policies are shown in the table

Need 21 policies based on current mechanism	Need only 2 policies If Layer 3 switch can also insert relay agent info
A ↔ Floor 1 B ↔ Floor 1 B ↔ Floor 2 B ↔ Floor 20	A ↔ Floor 1 B ↔ Building

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Solution Discussion

- Relay agent information we need
 - Agent ID
 - Agent address (optional)
 - Downstream interface
 - Level
- How to solve
 - Extend option 82
 - Define new sub-options
 - Allow to insert multiple option 82
 - Define new option x

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Reference

- Normative References

- [RFC2131] Droms, R., "Dynamic Host Configuration Protocol", RFC 2131, March 1997.
- [RFC2132] Alexander, S. and R. Droms, "DHCP Options and BOOTP Vendor Extensions", RFC 2132, March 1997.
- [RFC3046] Patrick, M., "DHCP Relay Agent Information Option", RFC 3046, January 2001.

- Informative References

- [Relay Chaining], B. Joshi, P. Kurapati, "Relay Chaining in DHCPv4", draft-kurapati-dhc-relay-chaining-dhcpv4-02.txt , July 2009.
- [Extension of Relay Option], Lu Huang, "Extension of DHCP Relay Agent Information Option", draft-huang-dhcp-su-00.txt, March 2009.

Thank you

Q&A