 dhcp option for CoAP Proxy Discovery
draft-ma-core-dhcp-pd-01

Abstract

CoAP utilizes DNS to discovery the IP address of the CoAP server. However DNS is heavy for the most resource constrained end-points. In this case the assistance from CoAP proxy or research directory (RD) is needed for CoAP transaction. This specification proposes to define one new dhcp option for proxy/RD discovery for the most resource constrained end-points.

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1. Introduction

CoAP [I-D.ietf-core-coap] is a RESTful protocol designed for constrained devices. The ultimate goal of CoAP is to enable the "Web of Things" concept, which connects the smart sensor network with the global internet.

CoAP utilizes DNS for CoAP server IP address discovery. However in some circumstances, DNS is heavy to be implemented in the resource constrained nodes. In this case the assistance from CoAP proxy is needed for CoAP transaction.

Also in many M2M scenarios, direct discovery of resources is not practical due to sleeping nodes, disperse networks, or networks where multicast traffic is inefficient. These problems can be solved by employing an entity called a Resource Directory (RD) [I-D.shelby-core-resource-directory], which hosts descriptions of resources held on other servers, allowing lookups to be performed for those resources.

Before the CoAP sensor makes use of the CoAP proxy or RD, it must know the location of the proxy or RD. There can be multiple ways to discover the proxy’s location, including both static and dynamic methods. Static configuration is a straightforward way for the client to access the server. However, in many situations, static configuration is not enough to meet the requirements.

In another hand, although CoAP is assumed to be running over IPv6, there are various approaches to implement it over other protocols, SMS and GRPS for example [I-D.li-core-coap-over-sms] [I-D.becker-core-coap-sms-gprs]. There are also scenarios where IPv4 is used as the lower layer transport for CoAP. In such case the dynamic configuration method based on IPv4 protocol suite is necessary.

1.1. Conventions used in this document

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL","SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC2119]

2. dhcp option for proxy discovery

dhcp [RFC2131] provides dynamic methods to deliver configuration information to the end node. dhcp options [RFC2132] are defined to specify server information. This document specifies one new dhcp option for CoAP proxy/rd discovery.
The CoAP proxy/rd option specifies a list of CoAP proxy or Research Directory servers available to the client. Servers SHOULD be listed in order of preference.

The code for the name server option is x. The minimum length for this option is 4 octets, and the length MUST always be a multiple of 4.

```
<table>
<thead>
<tr>
<th>Code</th>
<th>Len</th>
<th>Address 1</th>
<th>Address 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
<td>n</td>
<td>a1</td>
<td>a2</td>
</tr>
</tbody>
</table>
```

CoAP proxy/rd option

3. Security Considerations

TBD.

4. IANA Considerations

This document needs to register one new dhcp option number at IANA.

5. Normative References

[I-D.becker-core-coap-sms-gprs]

[I-D.ietf-core-coap]

[I-D.li-core-coap-over-sms]
Li, K., "CoAP Over SMS", draft-li-core-coap-over-sms-00 (work in progress), October 2011.

[I-D.shelby-core-resource-directory]
draft-shelby-core-resource-directory-02 (work in progress), October 2011.


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