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PCP Description Option
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Abstract

   This document extends Port Control Protocol (PCP) with the ability to
   associate a description with a PCP-instantiated mapping. It does so
   by defining a new DESCRIPTION option.

Requirements Language

   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 RFC 2119 [RFC2119].

Status of This Memo

   This Internet-Draft is submitted in full conformance with the
   provisions of BCP 78 and BCP 79.

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   This Internet-Draft will expire on February 01, 2014.
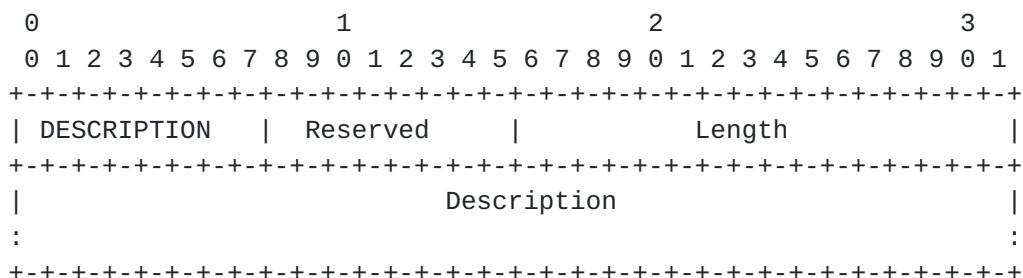
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1. Introduction

   This document extends the base PCP [RFC6887] with the ability to
   associate a human-readable description with a PCP-instantiated
   mapping. It does so by defining a new DESCRIPTION option.

   This PCP option can be used in both simple scenarios with a PCP
   client and PCP server, as well as in more complex scenarios where an
   interworking function is used to proxy between a UPnP IGD Control
   Point and a PCP server [RFC6970].

   Querying the PCP server to get the description text of an existing
   mapping is out of scope.

2. Format

   The format of the DESCRIPTION option is shown in Figure 1.

```
    0                   1                   2                   3
    0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
   +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
   | DESCRIPTION   |   Reserved    |            Length             |
   +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
   |                         Description                           |
   :                                                              :
   +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```

     This Option:

           Option Name: Description Option (DESCRIPTION)
           Number: <to be assigned in the optional-to-process range>
           Purpose: Used to associate a text description with a mapping
           Valid for Opcodes: MAP, PEER
           Length: Variable
           May appear in: request. May appear in response only if it
                          appeared in the associated request.
           Maximum occurrences: 1

                      Figure 1: Description Option

   The Description field MUST carry UTF-8 encoded [RFC3629] description
   text. The description text SHOULD NOT be null terminated.

   This option can be used by a user (or an application) to indicate a
   description associated with a given mapping such as "FTP server", "My
   remote access to my CP router", "Camera", "Network attached storage
   serve", etc.

3. Behavior

   The DESCRIPTION option is optional to be supported by PCP servers and
   PCP clients.

   This option (Code TBA, Figure 1) MAY be included in a PCP MAP/PEER
   request to associate a description with the requested mapping.

   The PCP server MAY be configurable to accept the DESCRIPTION option.
   If the PCP server does not support the DESCRIPTION option or it is
   configured to ignore it, received DESCRIPTION options MUST be ignored
   by the PCP server and a DESCRIPTION option MUST NOT be included in
   the response. The PCP server MUST store the content of the
   DESCRIPTION option only if it supports the DESCRIPTION option and if
   it is configured to accept handling DESCRIPTION options it receives.

   If the PCP client does not receive a DESCRIPTION option in a response
   to a request enclosing a DESCRIPTION option, this means the PCP
   server does not support that Option. If the DESCRIPTION option is
   not included in the request, the PCP server MUST NOT include the
   DESCRIPTION option in the associated response.

The maximum length SHOULD be configurable in the PCP server. The
configured maximum length MUST NOT exceed 1016 octets. The suggested
maximum length is 128 octets. If a PCP client includes a DESCRIPTION
option with a length exceeding the maximum length supported by the
PCP server, only the portion of the Description field fitting that
maximum length is stored by the PCP server and returned to the PCP
client in the response.

If the PCP server receives a DESCRIPTION option having a length which
does not exceed the maximum value configured, the PCP server MUST
record the complete sequence of the description text and MUST send
back to the PCP client the same DESCRIPTION option as the one
included in the request. If the description text carried in the
DESCRIPTION option is null terminated, the exact description text,
including Null characters, MUST be returned by the PCP server.

Invalid DESCRIPTION options (e.g., the content is not a legal UTF-8
string) MUST be ignored by the PCP server.

To update the description text of a mapping maintained by a PCP
server, the PCP client generates a PCP MAP/PEER renewal request which
includes a DESCRIPTION option carrying the new description text.
Upon receipt of the PCP request, the PCP server proceeds to the same
operations to validate a MAP/PEER request refreshing an existing
mapping. If validation checks are successfully passed, the PCP
server replaces the old description text with the new one included in
the DESCRIPTION option, and the PCP server returns the updated
description text in the response, truncated (if necessary) as
described above.

The PCP client uses empty DESCRIPTION option (i.e., Length set to 0)
to erase the description text associated with a mapping. Upon
receipt of a PCP renewal request which includes an empty DESCRIPTION
option, the PCP server MUST clear the description text associated
with a mapping it maintains. When sending a successful PCP response,
the PCP server MUST return back the empty DESCRIPTION option in the
response to confirm the deletion of the description text is
successfully handled.

4. Security Considerations

PCP-related security considerations are discussed in [RFC6887]. In
addition, administrators of PCP servers SHOULD configure a maximum
description length which does not lead to exhausting storage
resources in the PCP server.

If the PCP client and the PCP server are not under the same
administrative entity, the DESCRIPTION option SHOULD NOT be used to

leak privacy-related information (for example, see Section 3.2 of
   [RFC6462]).

5. IANA Considerations

The following PCP Option Codes are to be allocated in the optional-
to-process range (the registry is maintained in http://www.iana.org/
assignments/pcp-parameters/pcp-parameters.xml#option-rules):

     DESCRIPTION

6. References

6.1. Normative References

   [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate
              Requirement Levels", BCP 14, RFC 2119, March 1997.

   [RFC3629] Yergeau, F., "UTF-8, a transformation format of ISO
              10646", STD 63, RFC 3629, November 2003.

   [RFC6887] Wing, D., Cheshire, S., Boucadair, M., Penno, R., and P.
              Selkirk, "Port Control Protocol (PCP)", RFC 6887, April
              2013.

6.2. Informative References

   [RFC6462] Cooper, A., "Report from the Internet Privacy Workshop",
              RFC 6462, January 2012.

   [RFC6970] Boucadair, M., Penno, R., and D. Wing, "Universal Plug and
              Play (UPnP) Internet Gateway Device - Port Control
              Protocol Interworking Function (IGD-PCP IWF)", RFC 6970,
              July 2013.

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