PCP Stability of External Address

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PCP Interim Meeting

http://tools.ietf.org/html/draft-penno-pcp-ext-addr-01

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Definition

- Address Pooling Paired (APP) Definition [RFC4787]: Other NATs use the same external IP address mapping for all sessions associated with the same internal IP address. These NATs have an "IP address pooling" behavior of "Paired"

Problem & Proposal

- Currently PCP specification does not mandate Address Pooling Paired Behavior
- Propose change to mandate (SHOULD?) APP behavior.

New Text

- To:

... Static mappings for that internal address (e.g., those created by a command-line interface on the PCP server or PCP-controlled device) may exist to a certain external address. **If the suggested external IP address is the IPv4 or IPv6 all-zeros address, and the internal address currently has *any* active mappings (implicit, explicit, or static) with an external address of the indicated address family, then that external address SHOULD be used for the new mapping, so that PCP behavior follows NAT requirements of REQ-2 of [RFC4787] and REQ-2 of [RFC6888].If the existing mappings for that external address family do not all share a single external address, then the choice of which external address is assigned for the new mapping is implementation dependent.**

Which Error Code?

- If the PCP Server can not maintain APP behavior for a new mapping then it should fail the request and send a CANNOT_PROVIDE_EXTERNAL error back to the client.

- [N.E.] This is a departure from RFC6887 which says CANNOT_PROVIDE_EXTERNAL error can only be sent back to client when PREFER_FAILURE was used in the request. But since APP is mandatory, one could argue there is an implicit PREFER_FAILURE. Should we come up with a more descriptive error code? Or maybe we use NO_RESOURCES?

PCP Client & Server Behavior

- [N.E.] should there be an option for the client to say it does not care about APP? The server of course does not need to honor such request, but for certain applications such as SSH, Telnet, HTTP, DNS, maintaining APP might not be needed.

PCP Proxy Beahvior

- If a PCP Proxy [I-D.ietf-pcp-proxy] has an associated NAT and can not maintain APP behavior for a new mapping, it should fail the request locally instead of forwarding it to the next upstream PCP Server.

- If the upstream Proxy can not main APP for the new mapping, it should fail the request, which will cause the downstream Proxy to also fail the request.