OARS: Operator-Assisted Relay Services Architecture

(https://tools.ietf.org/html/draft-wang-tram-oars-00)

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Why we proposed a new architecture

• We’ve been exploring:
  – Service Providers might provide TURN relay service to their customers (mostly ICPs, Application Providers)
  – Utilize the already deployed CGN/CDN devices as TURN servers
  – Minimum changes to the exist CGN/CDN devices.
  – SDN technologies and architecture are emerging.

• But we found it was complex
  – Every CGN (TURN server) needs reserve and plan Address/Port, which is a big burden for SPs, especially there are many CGN devices deployed in a distributed manner
  – Signaling is complex: ICE-based interaction; different processing for UDP, TCP and v4-v6 communication
  – So many CGN devices can hardly directly open to customers
OARS Architecture (Updated since last meeting)

- Architecture
  - RS—Relay Selection
  - CGN/CDN—Data Relay
  - Client---Connection Initial

- Reduce the complexity
  - Relay(CGN/CDN) needs not allocate different relay address for clients, as that in TURN.
  - Signaling procedures are significantly simplified, compared with TURN.
  - Restful interface(from RS) is easier for use by App provider.

- So that
  - SPs can easily integrate the relay functions into distributed devices such as CGN/CDNs.
  - SPs can easily provides data relay service to ICP/App Provider via RESTful Interfaces
1. Clients register to their App server, and get the RS address, get their reflective addresses to RS(REFLX_RS) and report them to App server.

2. App server sends REFLX_RS pair to RS, let RS select one optimal relay device to relay data.

3. Clients get their reflective addresses to Relay (REFLX_Relay) and report them to RS, RS form COUPLE packet and send it to the selected CGN devices.

4. Clients send TCP/UDP packet via the selected CGN device, CGN device relay the data based on the table built by COUPLE command.
## Core difference points between TURN and OARS

<table>
<thead>
<tr>
<th></th>
<th>TURN</th>
<th>OARS</th>
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</thead>
<tbody>
<tr>
<td>Relay Address Allocation</td>
<td><strong>Different</strong> for every client</td>
<td><strong>Same</strong> for every client under one Relay.</td>
</tr>
<tr>
<td>TCP/UDP Data Relay</td>
<td><strong>Different</strong> Signaling Process and Data Transfer Procedure</td>
<td><strong>Same</strong> Signaling Process and Data Transfer Procedure</td>
</tr>
<tr>
<td>Relay Selection Decision</td>
<td>Done <strong>by every client</strong></td>
<td>Done by <strong>Relay Selector</strong> which has whole system view</td>
</tr>
<tr>
<td>Necessary Signaling</td>
<td>8 (Binding/Allocate/Send/Data/Channel Bind/Connect/ConnectBind/ConnectAttempt)</td>
<td>2 (Binding/Couple)</td>
</tr>
</tbody>
</table>
Relationship with TURN

• OARS is NOT intended to be a full alternative of TURN

• We consider it as a complementary solution for SP-Public-Relay-Service
Communication Procedures
Under different SP Domain

1. When communication clients located in different SP’s domain, the App provider can select one of RS to finish the “relay selection” function.
2. Even better is to let the RS in different SP’ domain select their prefer relay device, and build tunnel between two relay devices.
3. Detail procedure will be provided in further version of this draft.
Next Steps

• Feedbacks are welcomed
  – Especially from ICP perspective
  – Also from ISP/CDN provider perspective

• A useful work? Possibly added to the charter?
Comments?

Thank you!

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