draft-gu-ppsp-tracker-protocol-04

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IETF-81, Quebec, July, 2011

Important updates to Tracker Protocol

- Make the final decision to use text based protocol, based on rough consensus in mailing list.
  - Remove Binary encoding from the draft.
  - If you have any oppsite opinion, please annouce at the meeting.
- Explicitly point out that NAT traversal will not be solved in Tracker Protocol. Refer to dedicated draft and Tracker Protocol may support the reqs from that draft.
- Update HTTP encoding
- Add Security Consideration section

Out-of-scope issues

- Bootstrapping
- NAT Traversal

Methods

- CONNECT --- DISCONNECT
- JOIN/JOIN_CHUNK --- LEAVE
- FIND/FIND_CHUNK
- KEEPALIVE
- STAT_REPORT --- STAT_QUERY

Encoding introduction

- Common Header

  <PPSPTrackerProtocol version="***">

  <Method>***</Method>

  <TransactionID>***</TransactionID>

  ...Method specific xml information...

  </PPSPTrackerProtocol>

- *** is used to represent data to be inserted.

Method Encoding and processing

- CONNECT

  <Method>CONNECT</Method>

  <TransactionID>***</TransactionID>

  <PeerID>*</PeerID>**

  <Cer>*</Cer>**

  </PPSPTrackerProtocol>

  - 1) Sent from the new peer to the tracker, indicating the desire to connect;
  - 2) A response is generated by the tracker indicating success, failure, or some condition that must be satisfied to succeed (for example, providing credentials).
- Processing
  - The tracker checks peer's validation, and, if succeed, records the peer as a connected peer.

- DISCONNECT

  <Method>DISCONNECT</Method>

  <TransactionID>***</TransactionID>

  <PeerID>*</PeerID>**

  <Cer>*</Cer>**

  </PPSPTrackerProtocol>

  – Sent from peer to tracker.

- Processing
  – The tracker MUST remove the peer from all swarms the peer is participating. It will honor no more requests from the peer unless the peer CONNECTs again.
  – In addition, it will not provide the peer in response to FIND/FIND_CHUNK in the future.

- JOIN

  <Method>JOIN</Method>

  <TransactionID>***</TransactionID>

  <PeerID>*</PeerID>**

  <SwarmID>*</SwarmID>**

  <ExpireTime>*</ExpireTime>**

  </PPSPTrackerProtocol>

  – Send by the Peer to inform the Tracker that it would like to participate in a particula swarm

- Processing

  – Check message, and if correct, the tracker enters the information into the internal data store

- LEAVE

  <Method>LEAVE</Method>

  <TransactionID>***</TransactionID>

  <PeerID>*</PeerID>**

  <SwarmID>*</SwarmID>**

  </PPSPTrackerProtocol>

  – sent from peer to tracker

- Processing

  – Check message, and if correct, the tracker remove the peer from the list of peers participating in a particular swarm.

- FIND

  <Method>FIND</Method>

  <TransactionID>***</TransactionID>

  <PeerID>*</PeerID>**

  <SwarmID>*</SwarmID>**

  <ChunkID>*</ChunkID>**

  <Peernum>*</Peernum>**

  <Stats>

  <Stat property="*">***</Stat>**

  ... more stats ...

  </Stats>

  </PPSPTrackerProtocol>

  – Sent from peer to tracker

- Processing

  – tracker will choose peers that can provide the specific content and satisfy the propertyrequirement set by requesting peers.

- FIND Response

  <Response>FIND</Response>

  <TransactionID>***</TransactionID>

  <SwarmID>*</SwarmID>**

  <ChunkID>*</ChunkID>**

  <Peers>

  Peer list

  </Peers>

  </PPSPTrackerProtocol>

  –sent from tracker to peer

- KEEPALIVE

  <Method>KEEPALIVE</Method>

  <TransactionID>***</TransactionID>

  <PeerID>*</PeerID>**

  </PPSPTrackerProtocol>

  – Sent from peer to tracker

- Processing

  – Tracker should update an internal timer to indicate that the tracker has heard from the peer.

- STAT_QUERY

<Method>STAT_QUERY</Method>

<TransactionID>***</TransactionID>

<PeerID>###</PeerID>

<StatRequest>

<Stat property="*"></Stat>**

... more stats ...

</Stats>

</PPSPTrackerProtocol>

–Sent from tracker to peer

- STAT_QUERY Response

<RESPONSE>STAT_QUERY</RESPONSE>

<TransactionID>***</TransactionID>

<PeerID>###</PeerID>

<Stats>

<Stat property="*">***</Stat>**

... more stats ...

</Stats>

</PPSPTrackerProtocol>

– Sent from tracker to peer

- STAT_REPORT

```
<Method>STAT_REPORT</Method>
<TransactionID>***</TransactionID>
<PeerID>###</PeerID>
<Stats>
 <Stat property="***">***</Stat>
  ... more stats ...
</Stats>
</PPSPTrackerProtocol>
```

  - Sent from peer to tracker
- Processing
  - Tracker store the statistical information for future use.

Security Considerations

- Authentication between communicating tracker and peers
- Signaling protection between communicating tracker and peers
- Content Integrity protection against polluting peers/trackers
- Residual attacks and mitigation

Need consensus to move forward

- We propose to accept Tracker protocol as an WG item.
  - The architecture and functions, as well as methods, have gotten rough consensus
  - The essential Open Issues, e.g. encoding and NAT, have gotten rough consensus.
  - The basic messages definitionhave been described.

Next Steps on protocol design

- Define Peerlist
- Define mandatory security mechanism
- Define QoS guarantee mechanism