

Peer Protocol

Yingjie Gu

Revision overview

- Binary protocol , request & response mode
- Flexible Signaling
- Decreased communication rounds
- PULL(Mandatory)/PUSH (Optional)
(PPSP.PP.REQ-7)

Protocol Overview

- 3 Message types, 8 Method types

Message types	Method types
REQUEST	DATA_AVAILABILITY, DATA_AVAIL_QUERY, PROPERTY_PROVISION, PROPERTY_QUERY, PEERLIST_QUERY, TRANSPORT_MANDATORY, TRANSPORT_PARAMETER
RESPONSE	DATA_AVAILABILITY, PROPERTY_PROVISION, TRANSPORT_MANDATORY, TRANSPORT_PARAMETER, PEERLIST_PROVISION
ADVERTISE	DATA_AVAILABILITY, PROPERTY_PROVISION, TRANSPORT_MANDATORY, TRANSPORT_PARAMETER

Message Types

- REQUEST message: a requesting peer can send REQUEST message to candidate peer. This message is mandatory to PULL based peer protocol.
- RESPONSE message: a candidate peer can send RESPONSE message to requesting peer. This message is mandatory to PULL based protocol and optional to PUSH based peer protocol.
- ADVERTISE message: a peer can send Advertise message to advertise its data availability, property and etc. This message is mandatory to PUSH based protocol.

Method definition

- **DATA_AVAILABILITY:** Peers use the DATA_AVAILABILITY method to provide their data availability.
- **DATA_AVAIL_QUERY:** Peers use the DATA_AVAIL_QUERY method to request the remote peers to return their data availability regarding the desired content. The data availability is usually presented as a bitmap, but this is not mandatory. The format of data availability is not in the scope of peer protocol.
- **PROPERTY_PROVISION:** Peers use PROPERTY_PROVISION method to provide their properties.
- **PROPERTY_QUERY:** Peers use PROPERTY_QUERY method to request remote peer to return their properties, which can help requesting peers to make decision whether the remote peers are satisfactory peers to obtain desired content.
- **PEERLIST_QUERY:** Peers use PEERLIST_QUERY method to request remote peer to return the peers that can provide specific content.
- **TRANSPORT_MANDATORY:** Peers use TRANSPORT_MANDATORY to indicate that it only support mandatory transport protocol.
- **TRANSPORT_PARAMETER:** This method allows peers to negotiate a suitable transport protocol that is supported by both peers.

Example flow – PULL based (M)

***** Open Connections to Remote Peers *****

Requesting Peer

Remote Peers

|<----- Connection (using Peer-ID or IP address) ----->|
(Repeated for one or more peers)

** Query for Available Data and Obtain Additional Peerlist*****

Requesting Peer

Remote Peers

|----- * Data availability provision and query;
* Request Peerlist;
* Peer property provision and query
* Transport negotiation parameter ----->|

|<----- * Response data availability;
* Additional Peerlist
* Peer property provision
* Transport negotiation parameter -----|

(Repeated for one or more peers)

***** Data Transfer *****

Example flow– PUSH based (O)

***** Open Connections to Remote Peers *****

Requesting Peer

Remote Peers

|<----- Connection (using Peer-ID or IP address) ----->|
(Repeated for one or more peers)

** Advertise Available Data and Obtain Additional Peerlist**

Requesting Peer

Remote Peers

|<----- * Data availability;
* Additional Peerlist;
* Peer property;
* Transport negotiation parameter; -----|

|----- * Transport negotiation parameter ----->|

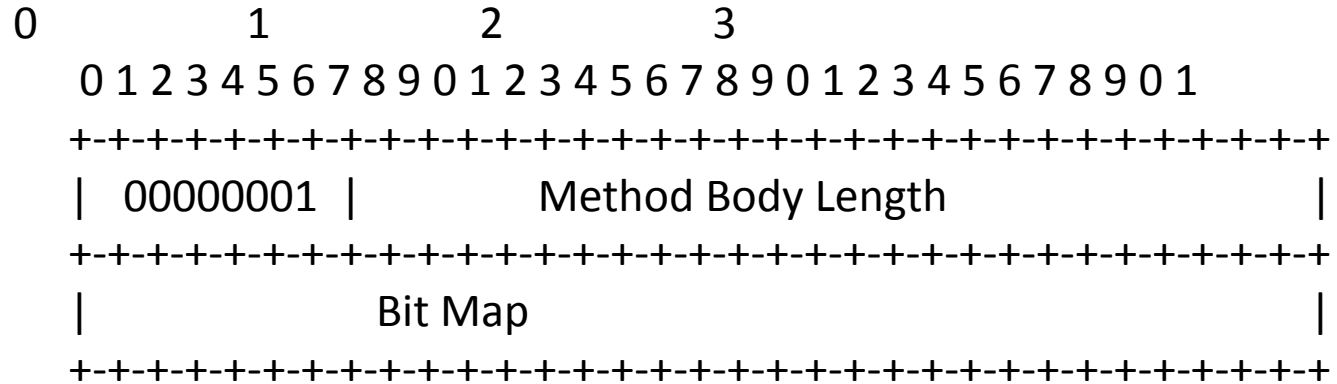
(Repeated for one or more peers)

***** Data Transfer *****

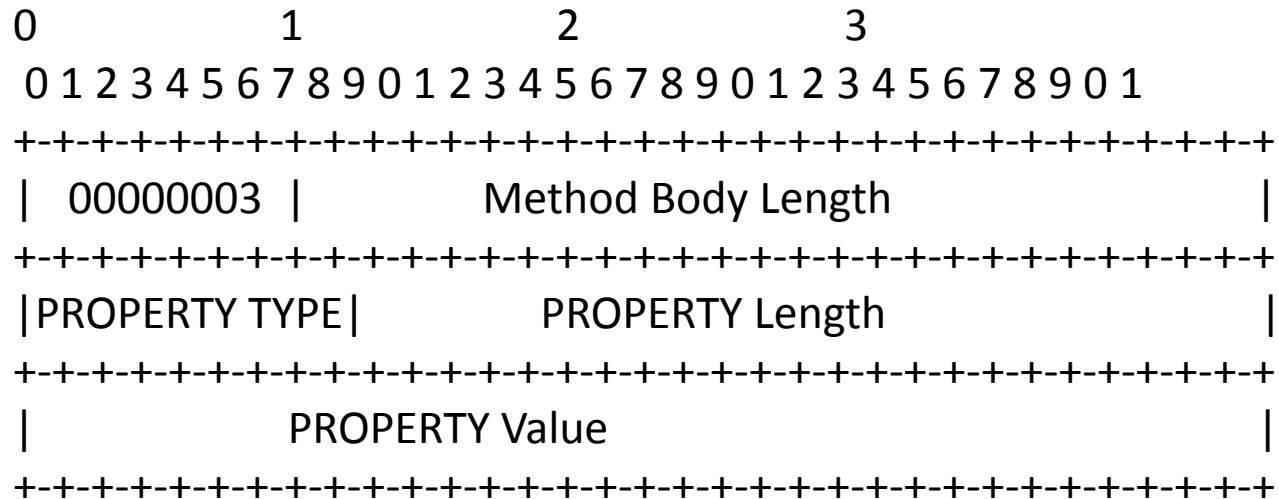
Method Body

Method types	Code	Method Body
DATA_AVAILABILITY	0x01	Yes
DATA_AVIAL_QUERY	0x02	No
PROPERTY_PROVISION	0x03	Yes
PROPERTY_QUERY	0x04	No
PEERLIST_PROVISION	0x05	No
PEERLIST_QUERY	0x06	Yes
TRANSPORT_PARAMETER	0x07	No
TRANSPORT_MANDATORY	0x08	Yes

Data Availability



Property provision



To Do

- One mandatory transport protocol
- & Several optional transport protocols
- Security considerations