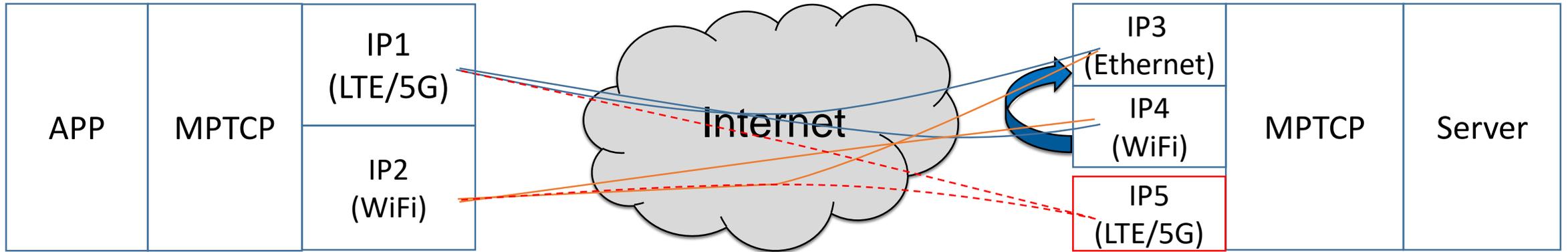# Accurate Data Scheduling by Server in MPTCP

draft-kang-tcpm-accurate-data-scheduling-by-server-00

Jiao Kang, Qiandeng Liang

IETF-108, TCPM WG, July, 2020

Use Cases

Scenario 1: Network fault prevention

Server hopes to switch the traffic to a network interface with better key performance indicators (KPI).

Scenario 2: A new network interface is added on server during a MPTCP session

Operator hopes to reduce the load on some subflows and lead them to the additional subflow, such as for test. This is the trial operation scenario for new network.

Scenario 3: Value-added services

For VIP users, it should be possible for operator to switch their traffic to network interface with better KPI.
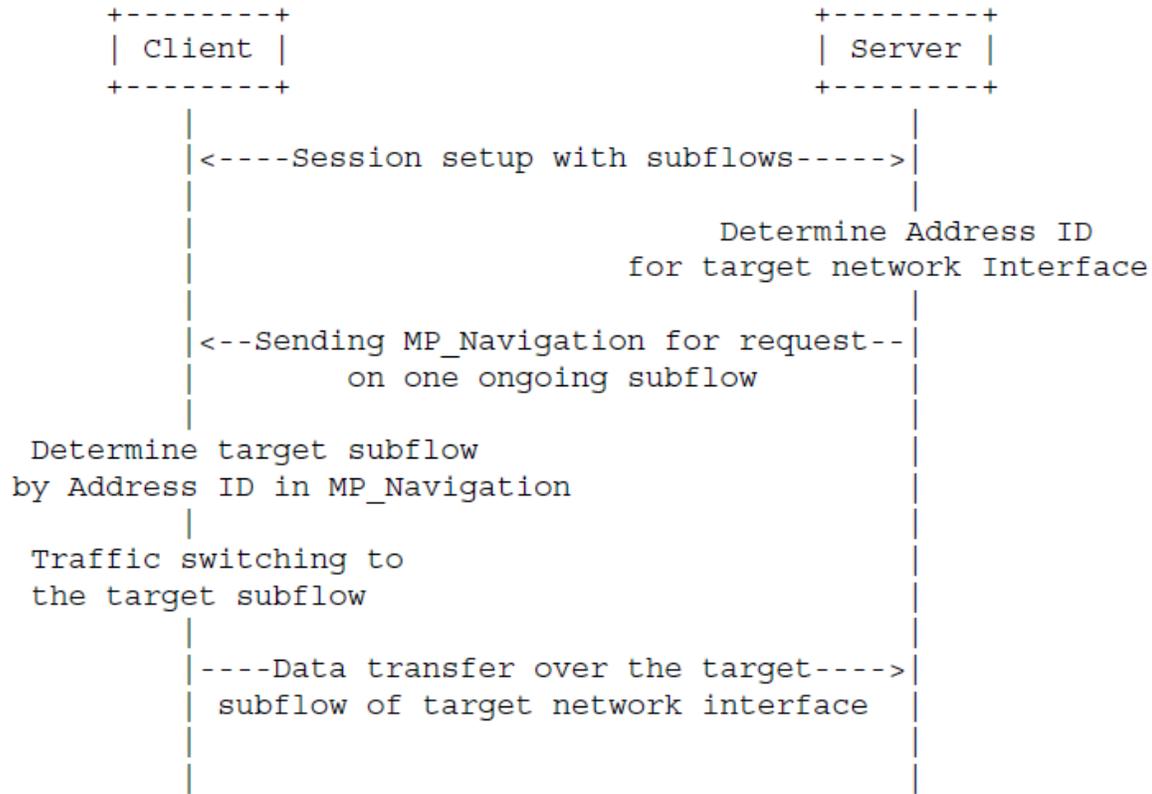
Implementation and Interoperability

```
+---------+                      +--------+
| Client  |                      | Server |
+---------+                      +--------+
     |                               |
     |<----Session setup with subflows----->|
     |                               |
     |              Determine Address ID
     |           for target network Interface
     |                               |
     |<--Sending MP_Navigation for request--|
     |         on one ongoing subflow
     |                               |
Determine target subflow            |
by Address ID in MP_Navigation      |
     |                               |
Traffic switching to                |
the target subflow                  |
     |                               |
     |----Data transfer over the target---->|
     | subflow of target network interface
     |                               |
     |                               |
```

Figure 1: Server request client to perform traffic switching

```
+--------+                      +-------+
| Client |                      | Server |
+--------+                      +-------+
    |                               |
    |<---Subflow with diverted traffic --->|
    |              is still kept alive
    |                               |
    |             Determine to cancel MP_Navigation
    |                 for target network Interface
    |                               |
    |<----Sending MP_Navigation on the-----|
    |         subflow with diverted traffic
    |              for cancellation
    |                               |
Cancel traffic switching to         |
target network interface            |
on the MP_Navigation                |
    |                               |
    |-----Continue data transfer over----->|
    |        the subflow with diverted traffic
    |                               |
    |                               |
```
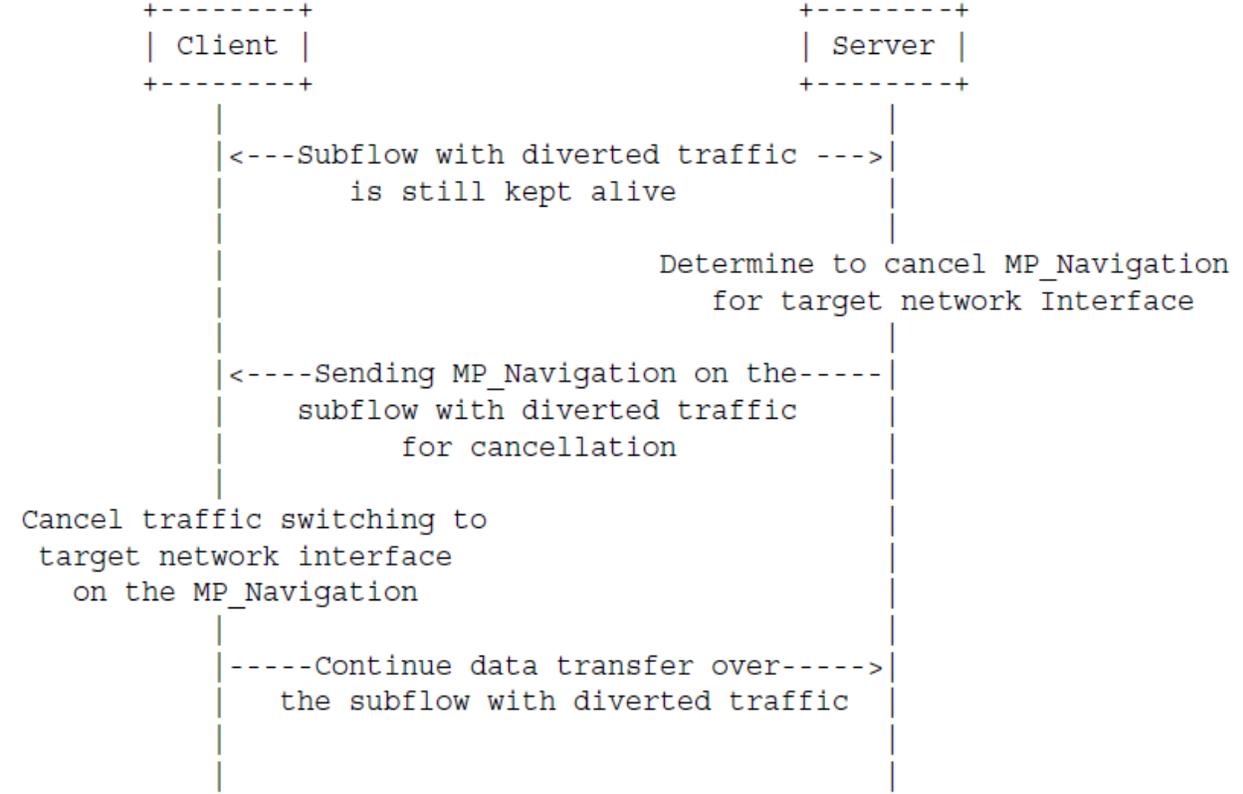
Figure 2: Server sends a request to client to cancel previous navigation setting
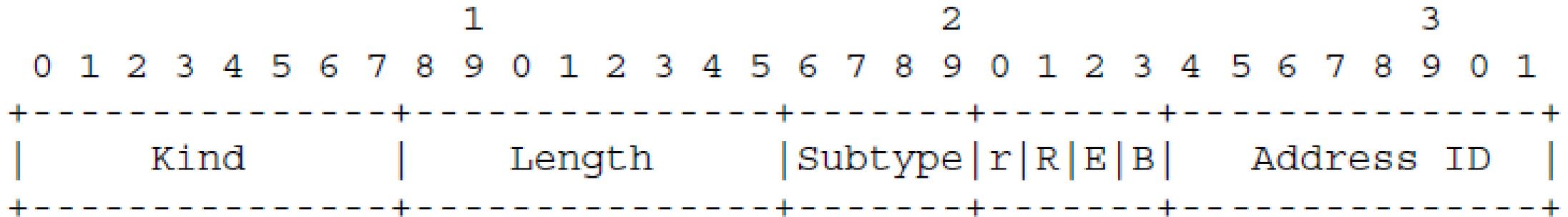
MP_Navigation Option

```
                   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
+---------------------+---------------------+-------+------+------+---------------+
|        Kind         |       Length        |Subtype|r|R|E|B|    Address ID  |
+---------------------+---------------------+-------+------+------+---------------+

                     Figure 3: MP_Navigation Option
```

Subtype: a new subtype should be allocated to indicate MP_Navigation Option.

Address ID: the address ID of target network Interface.

Flag 'r': reserved.

Flag 'R':
  • value = 0, server requests client to perform traffic switching.
  • value = 1, server requests to cancel previos navigation setting.

Flag 'E': exists to provide reliability for this option.

Flag 'B': indicates whether the subflow over which the option is received is a backup one.

Next Steps

1. Will be considered in MPTCP protocol?

2. Any comments welcome