MPTCP Version Negotiation
vs
MPTCP SubType Capability Exchange

draft-kang-tcpm-subtype-capability-exchange-in-mptcp-00.txt

Jiao Kang, Qiandeng Liang

IETF-110, TCPM WG, March, 2021

MPTCP Version Negotiation

Some underlying principles:

1. MPTCP v0 connection will likely be preferred over a TCP connection.

2. Currently, in a definite version, all subtype messages are mandatory and fixed.

Host A (Initiator, v0, v1), Host B(Receiver, v0) → the receiver will signal the version number it wishes to use

Host A (Initiator, v0, v1), Host B(Receiver, v1) → the receiver will signal the version number it wishes to use

Host A (Initiator, v1), Host B(Receiver, v0) → fallback to TCP

Requirements for Scalability and Performance Optimization

Value	Symbol	Name	MPTCPv0	MPTCPv1
0x0	MP_CAPABLE	Multipath Capable	Supported	Supported
0x1	MP_JOIN	Join Connection	Supported	Supported
0x2	DSS	Data Sequence Signal (Data ACK and Data Sequence Mapping)	Supported	Supported
0x3	ADD_ADDR	Add Address	Supported	Supported
0x4	REMOVE_ADDR	Remove Address	Supported	Supported
0x5	MP_PRIO	Change Subflow Priority	Supported	Supported
0x6	MP_FAIL	Fallback	Supported	Supported
0x7	MP_FASTCLOSE	Fast Close	Supported	Supported
0x8	MP_TCPRST	Subflow Reset	/	Supported
0xf	MP_EXPERIMENTAL	Reserved for Private Use	/	Supported

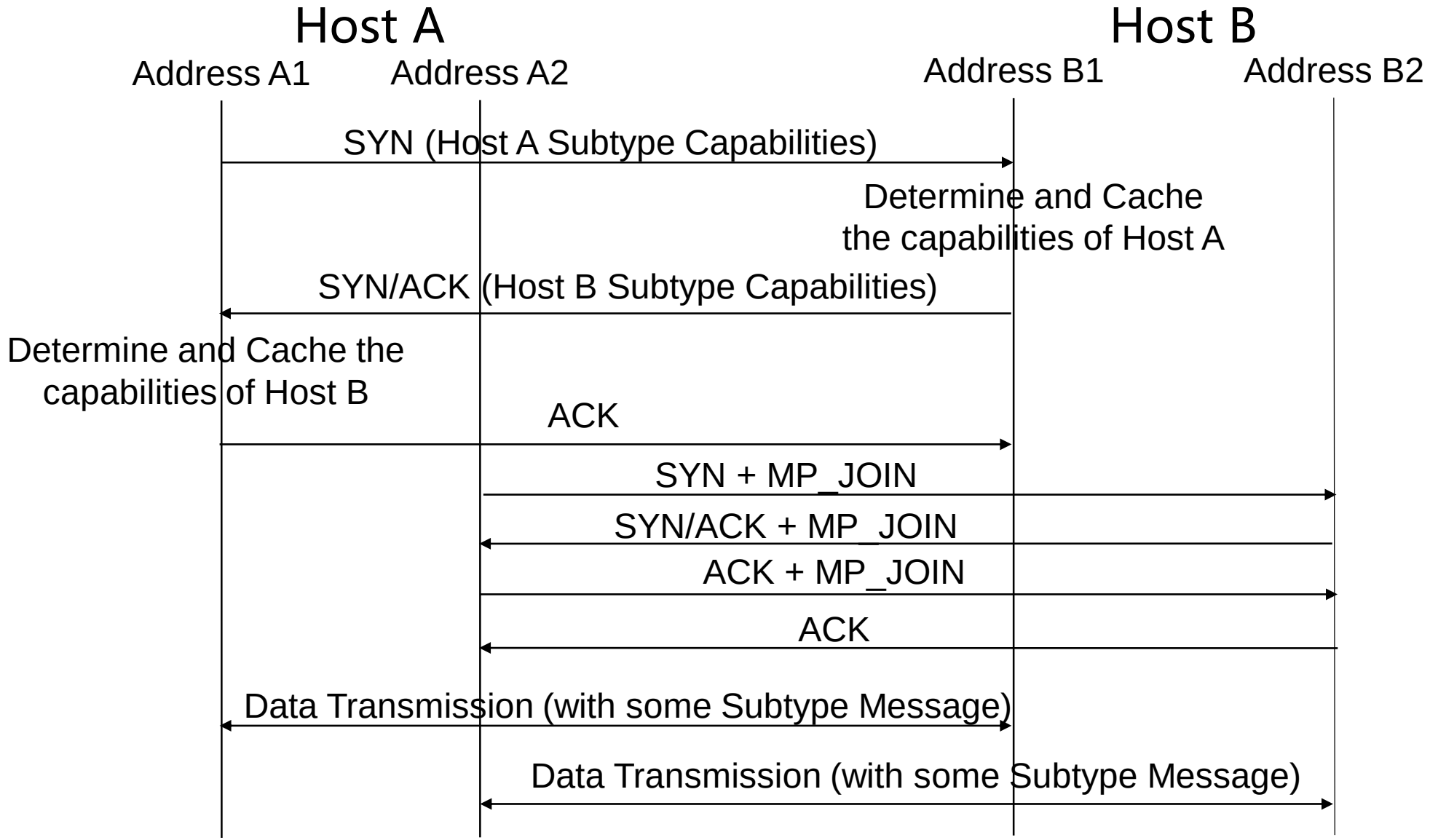
Table 1: Overview MPTCP Subtypes

- A new message type A is added in future extension, a higher version should be released to import it and a new subtype may need to be allocated.
- If a sender does not know the subtypes supported by a receiver in a MPTCP session, as a result, invalid data packets may been sent from the sender during data transmission and the receiver will discard it which causes system overhead on receiver side.

MPTCP Subtype Capability Exchange Scenarios

- MPTCP peers in a session support same MPTCP protocol version including same subtype sets (covered by these slides)
- MPTCP peers in a session support same MPTCP protocol version but with different subtype sets (covered by these slides)
- MPTCP peers in a session support different MPTCP protocol version including same subtype sets (TBD)
- MPTCP peers in a session support different MPTCP protocol version with different subtype sets (TBD)

A typical flow for Subtype Capability Exchange between two endpoints



One Possible Solution on Protocol Design

Carrying Subtype Capabilities in MP_CAPABLE Option

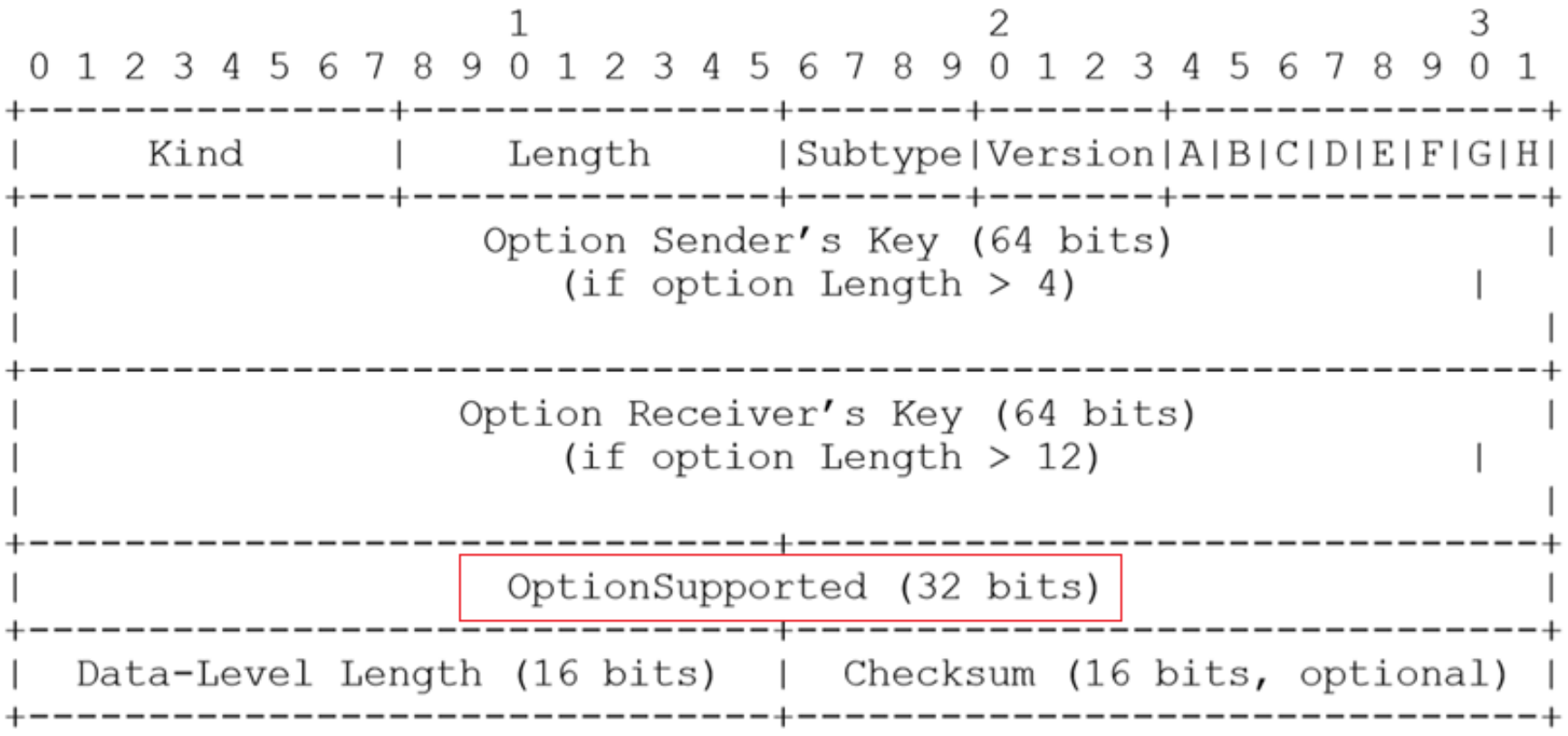


Figure 2: OptionSupported Format

Next

- Is this requirement/scenario interesting and useful?
- If above is yes, go ahead to complete the draft.