

Kemari  
Sender/Receiver protocol  
Version 0.5a (Nov. 17<sup>th</sup>, 2010)

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Yoshiaki Tamura, Kei Ohmura(NTT)

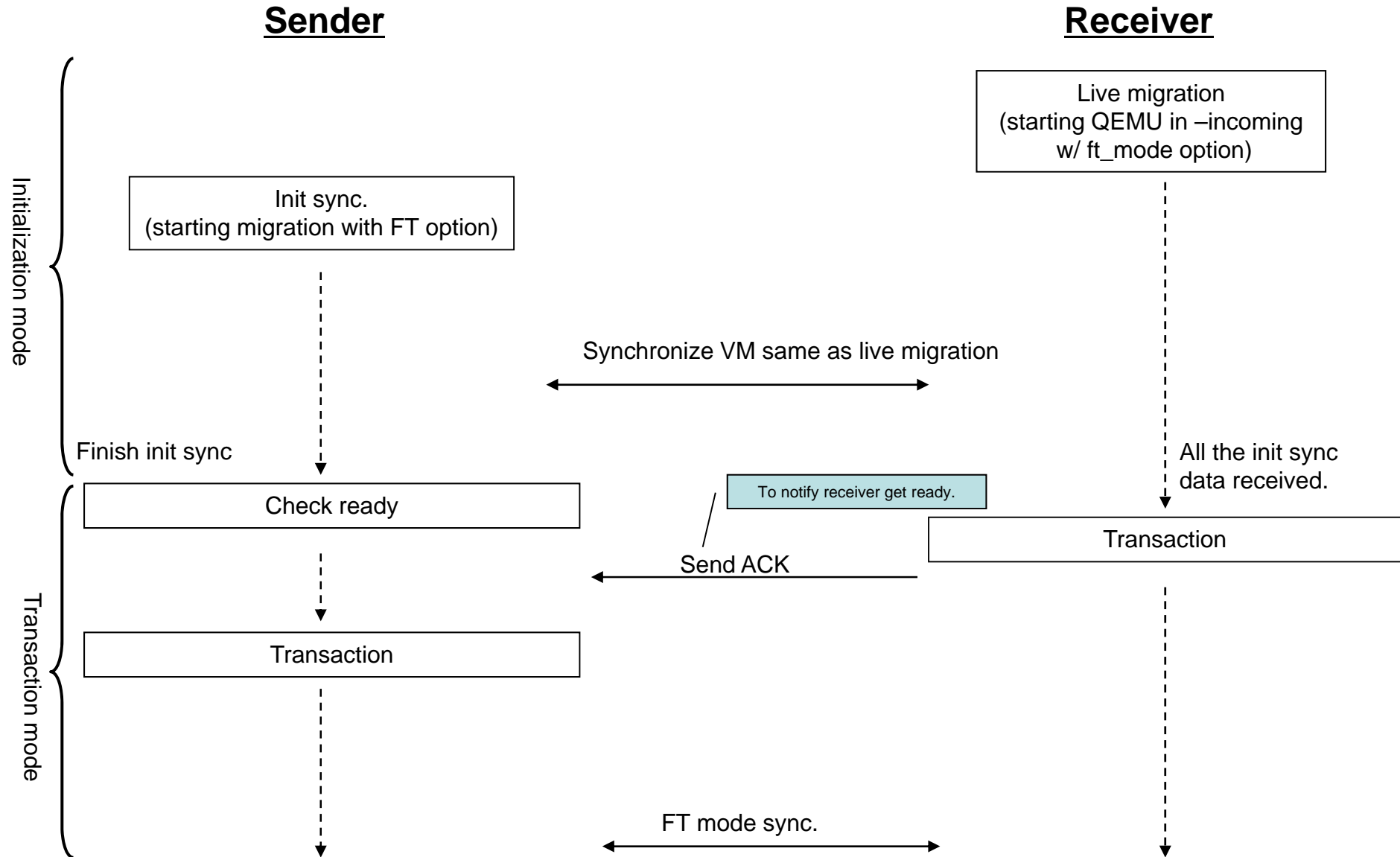
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## Definition of words.

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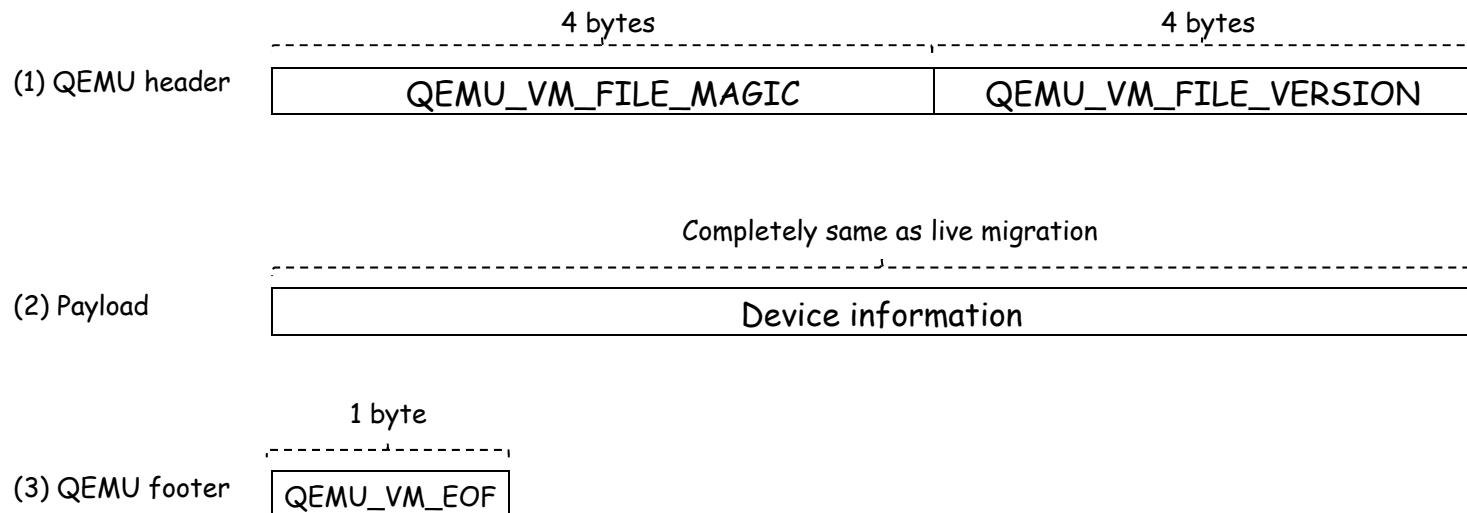
- Sender
  - QEMU that send the snapshot of VM for fault tolerance.
- Receiver
  - QEMU that receive the snapshot of VM for fault tolerance.
- Initialization mode
  - Mode to synchronize all the VM information before starting fault tolerant synchronization. The fault tolerant synchronization is done with transaction mode.
- Transaction mode
  - Mode to send only the difference between events. If this mode started, QEMU will send the difference of VM snapshot only when some events occurs.
- FT mode.
  - Special transfer mode of migration to realize fault tolerance.
  - When sender start migration with this mode option, its state will become initialization mode and transaction mode, accordingly.

# Message sequence chart and state transitions of sender and receiver



# Data format from sender to receiver. (Initialization mode)

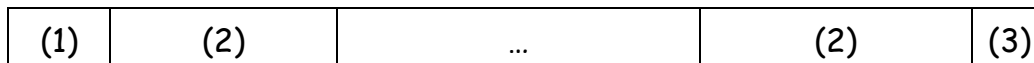
Whole Transferred data



Completely same as live migration.

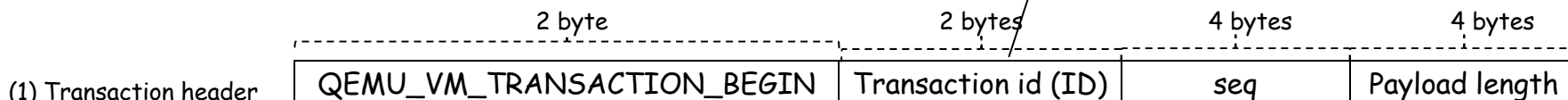
# Data format from sender to receiver. (transaction mode)

Whole Transferred data

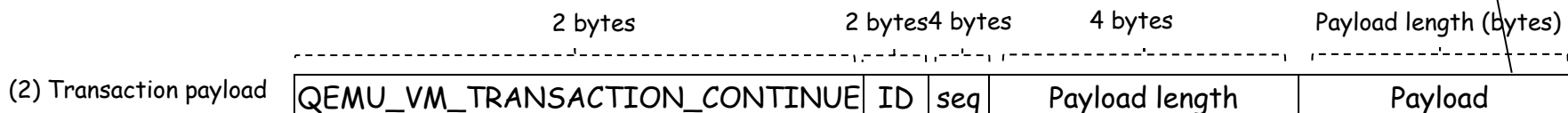


(2) can exist more than once.

Used to distinguish each transaction. Sender has this value as a counter, and will be increased after (1), (A), and (B) are sent.



Payload contains device information, the same as live migration. Conjunction of all payloads of each transaction can be loaded with the loadvm function.

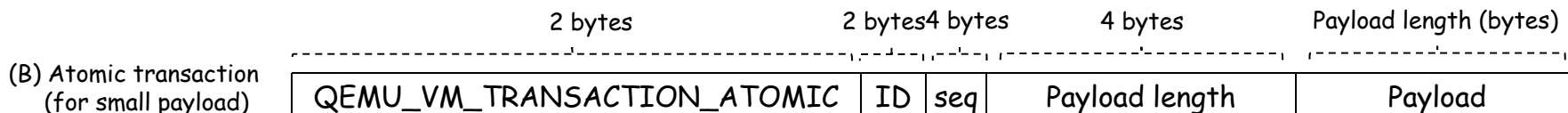
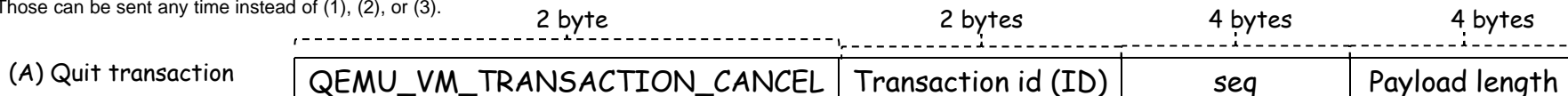


Used to line up series of payload. This value start from 0 in each transaction, and be increased every time (2) is sent.



## Special purpose formats

Those can be sent any time instead of (1), (2), or (3).

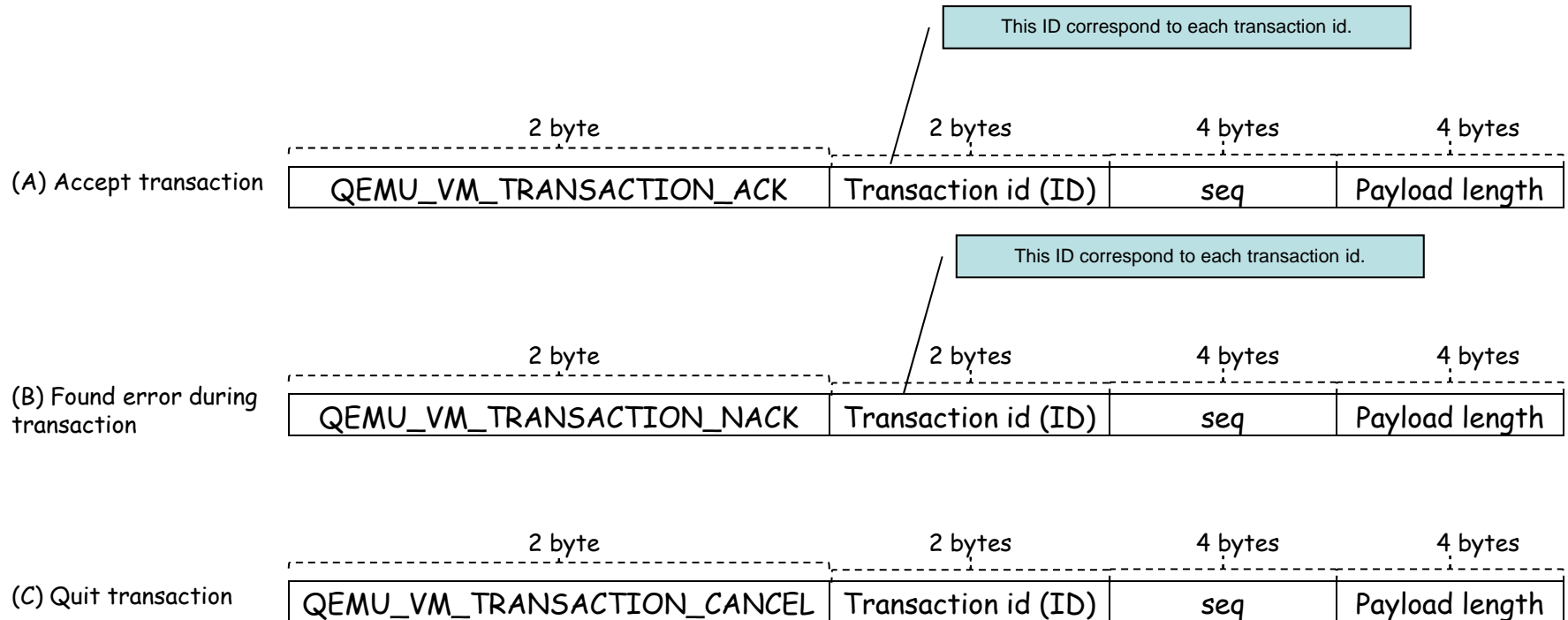


# Data format from receiver to sender.

## Initialization mode

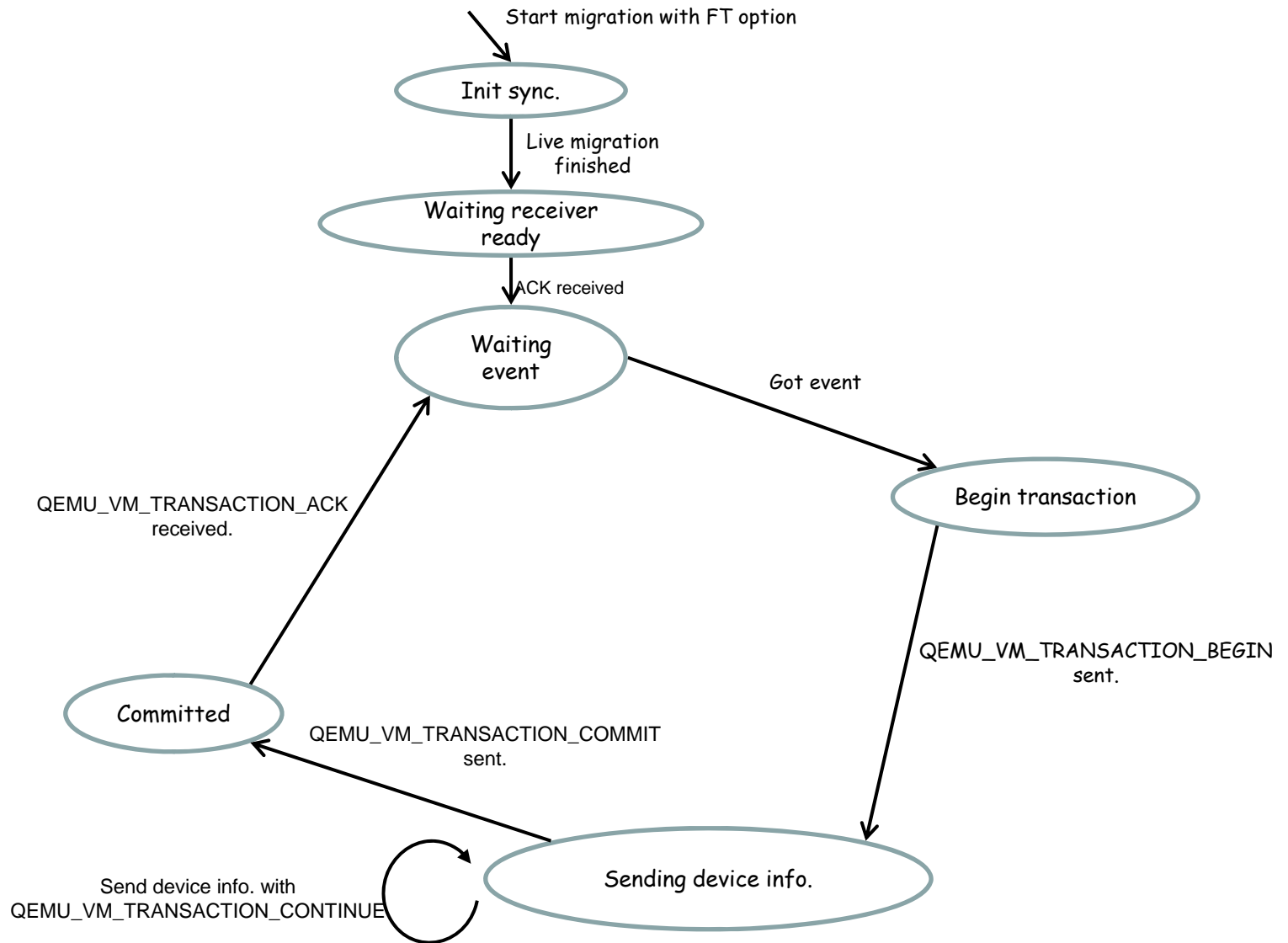
- Nothing will be sent in this mode. Its behavior is the same as live migration.

## Transaction mode

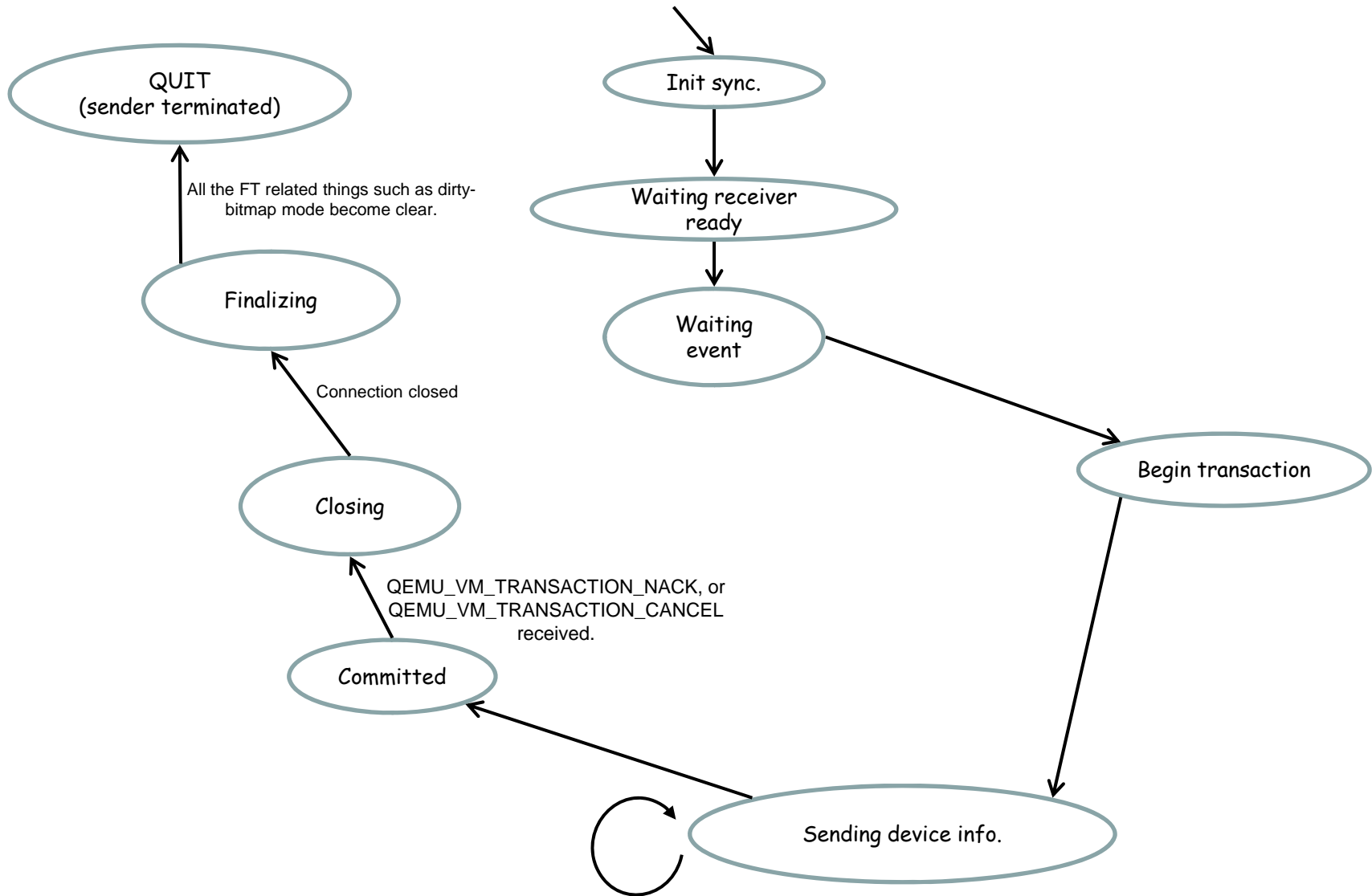


Difference between (B) and (C) is error or not.

# State transition diagram of sender (normally)

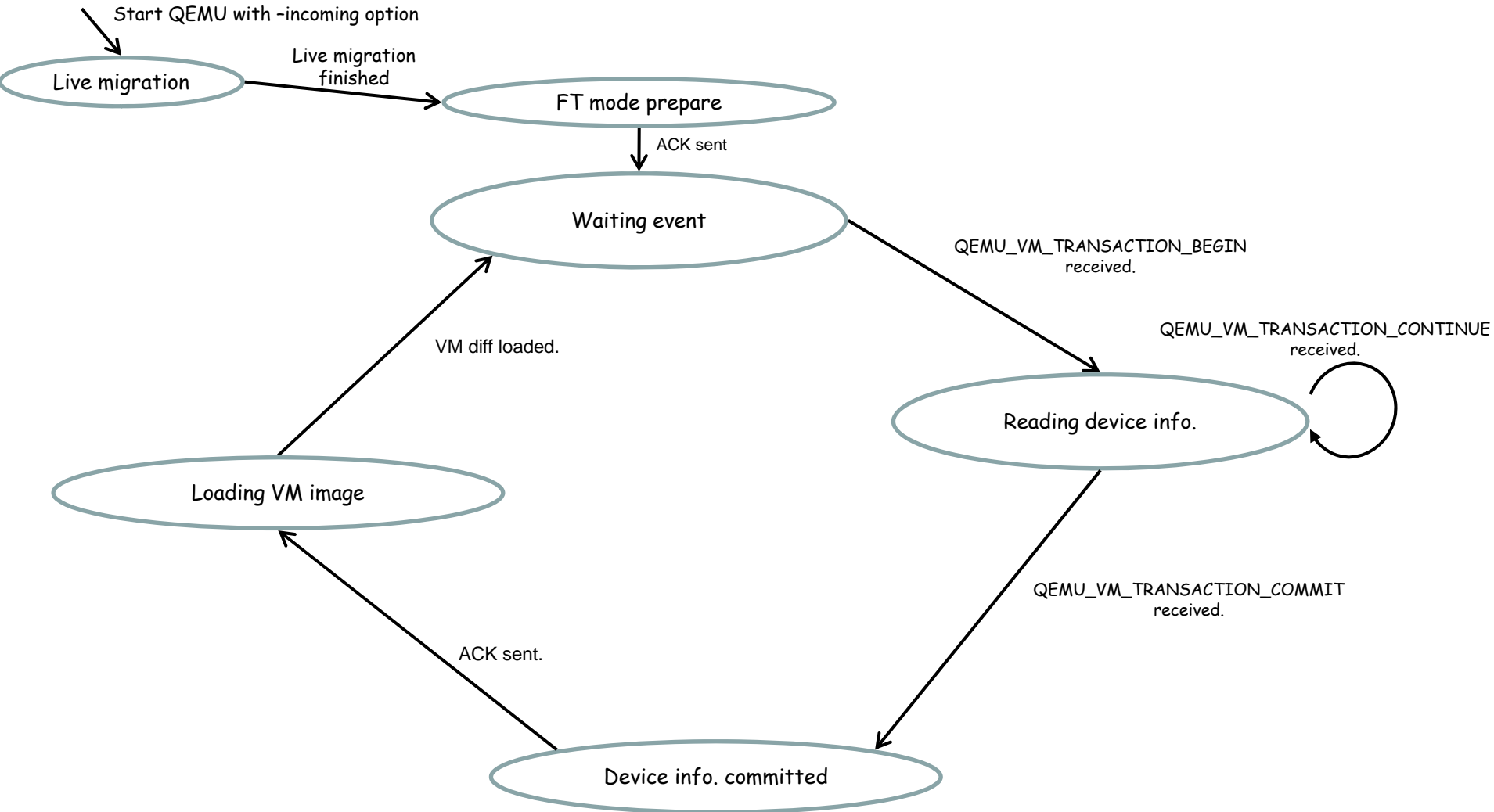


# State transition diagram of sender (error or cancel)





# State transition diagram of Receiver (normally)



# State transition diagram of Receiver (to cancel FT mode)

