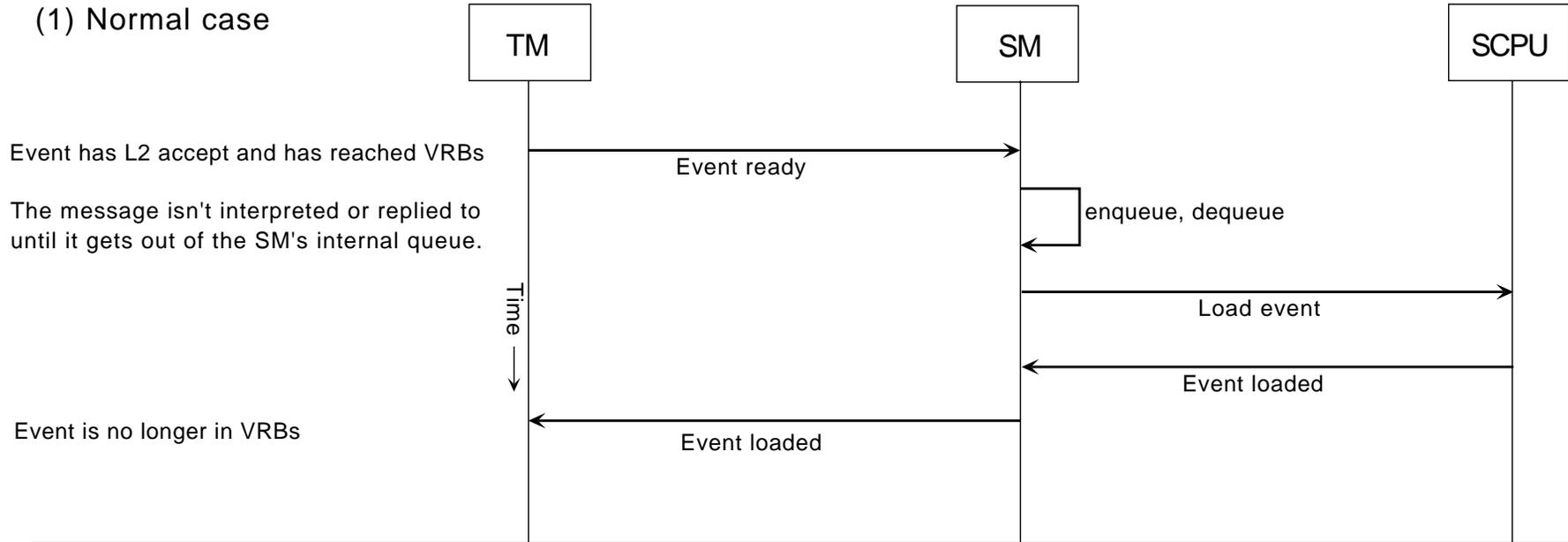
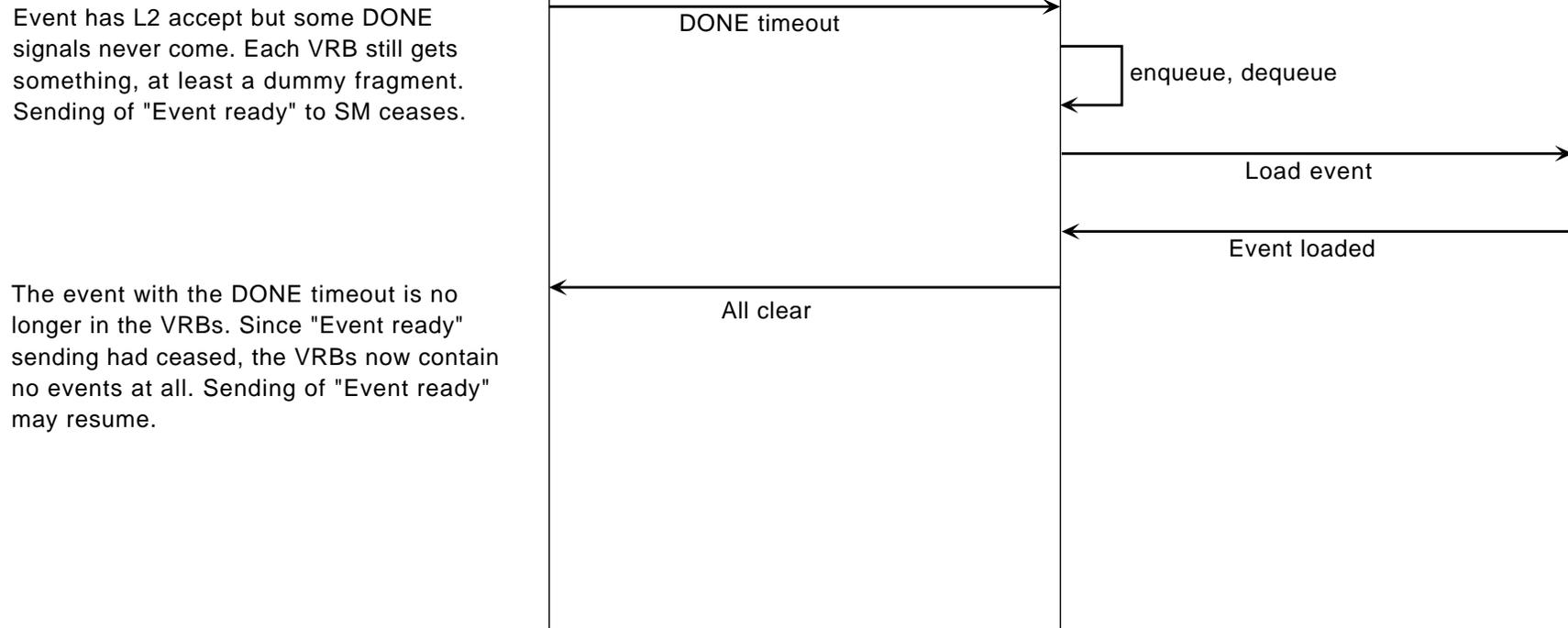


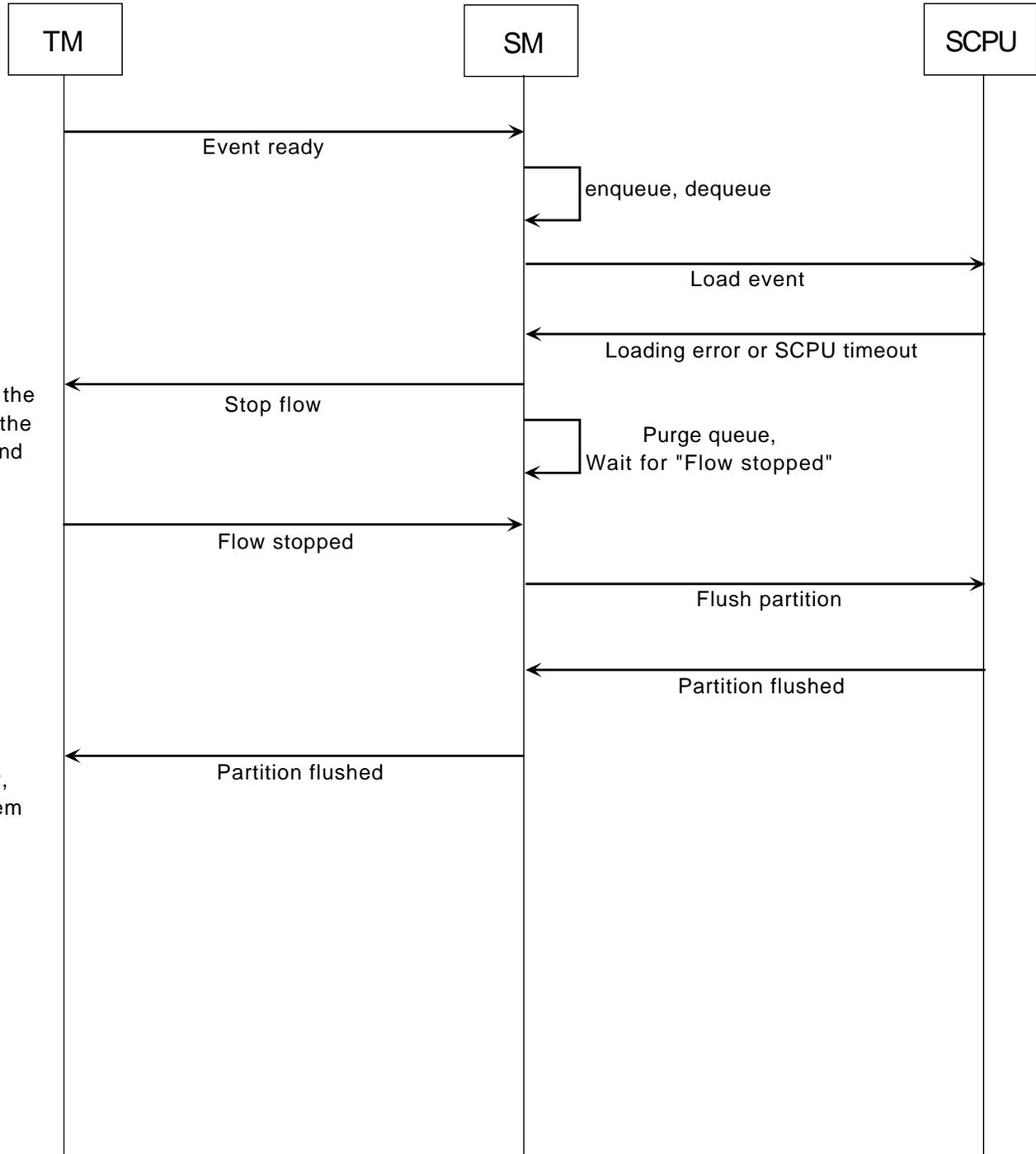
### (1) Normal case



### (2) DONE timeout



(3) SCPU loading error



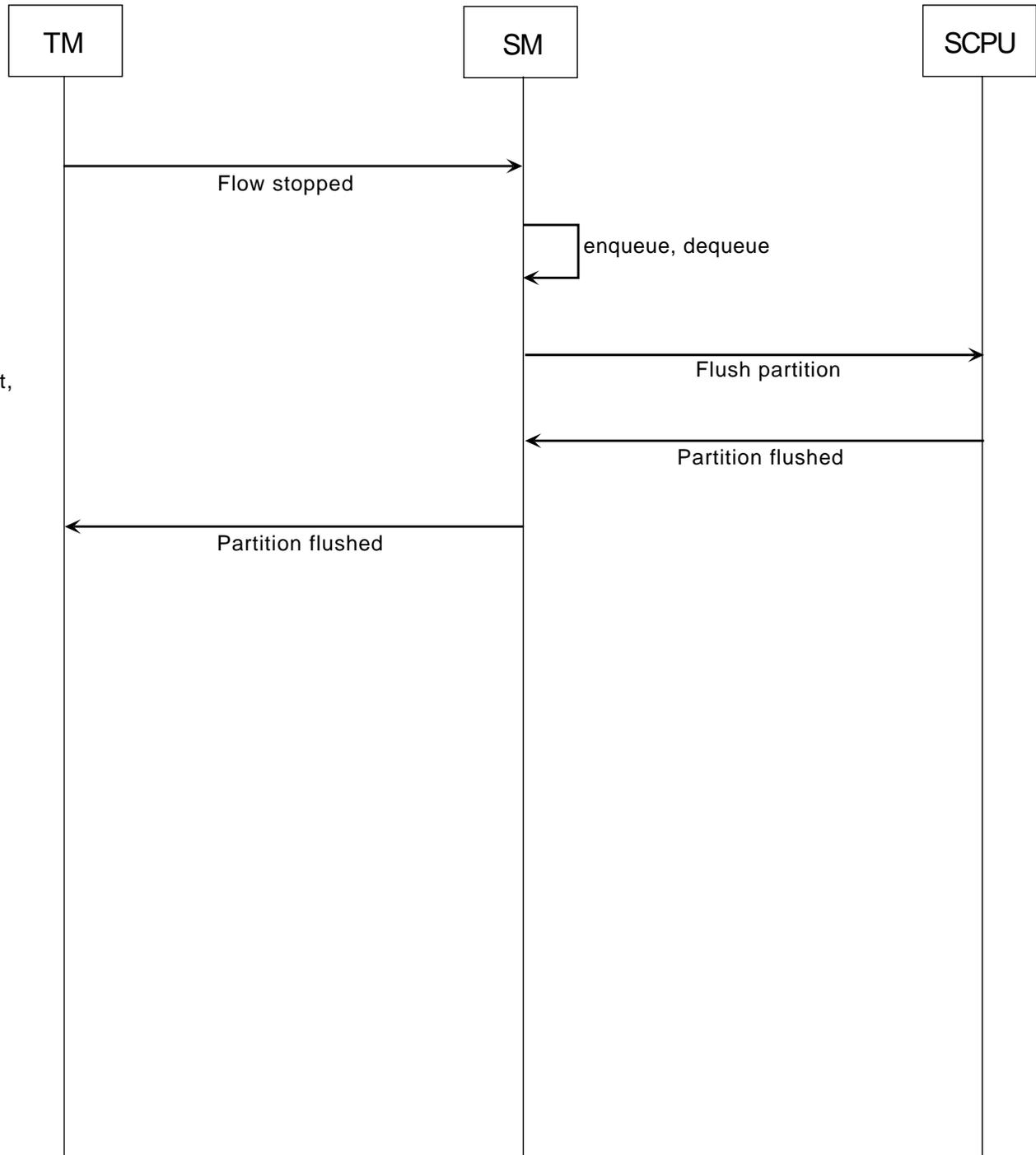
Event data is corrupted or missing, stop the L2 trigger. Until "Flow stopped" arrives, the SM discards any pending TM messages and ignores any which arrive.

Now that the VRBs are no longer being filled, we can flush the data out of them.

Now that the partition's VRBs are empty, the run may be resumed after the problem has been fixed.

(4) TM error detect

The VRBs ought to be empty at this point, but reset them just to make sure.







# Message fields

## Message ID

- |                                 |                       |
|---------------------------------|-----------------------|
| 0 - Illegal, no message in slot | 4 - All clear         |
| 1 - Event ready                 | 5 - Stop flow         |
| 2 - DONE timeout                | 6 - Partition flushed |
| 3 - Event loaded                | 7 - Flow stopped      |

## Partition

0 for partition 1, 1 for partition 2, etc.

## Event ID

The event counter stored in the TS SCAN FIFO

## Message counter

Incremented for each new message, except that replies take their counter from the original message.  
Not used for "Event ready" or "DONE timeout", which used the TS event ID instead.

## Board header

The board header from the TS EVENT DATA

## Bunch ID

Identifies the bunch crossing in which the event occurred, in units of 132 nsec since bunch crossing zero

## Turn counter

Incremented for every bunch crossing zero

## B0

1 if the event occurred in bunch crossing zero, else 0

## BC

??

## IN

Trigger inhibit flag

Continued ...

# Message fields (2)

AB

TS ABORT flag

CA

The L1\_CAL flag, 1 if the event was accepted for use in calibration, else 0

Calibration code

If CA is 1, the type of calibration for which the event was taken

Key

Identifies "key" events when taken "four in a row" (??)

L2buf

Level 2 trigger buffer number

Readout list

# Notes

Separate regions of SCRAMNet memory are used for each direction in a bidirectional link.

Each region is of fixed sized and is divided into a fixed number of message slots organized as a circular buffer.

Each slot is a fixed number of 32-bit words. Words not used in a message should not be written to in order to reduce network traffic.

At DAQ startup time, each node on the SCRAMNet clears only those regions to which it will write messages.

A message that is a reply to a previous message copies all fields of the original messages save the Message ID.

## Original message

Event ready

DONE timeout

Stop flow

Flow stopped

## Reply

Event loaded

All clear

Flow stopped

Partition flushed

In order to avoid overflowing a ring buffer, a sender should keep track of the number of messages sent and replies received.

In order to avoid overflowing the VRBs, the TM should keep track, for each active partition, of the number of "Event ready" and "DONE timeout" messages and the number of "Event loaded" replies. These counters will have to be reset after a partition is flushed.

All SCRAMNet messages must be big-endian. The SCRAMNet module can automatically do any byte swapping, provided that you do all message writing in multiples of 32-bit words. Remember to take into account both the endian-ness of your processor and that of the bus on which the SCRAMNet module sits.

The SM transmits all four words of "Event ready" and "DONE timeout" messages to the SCPUs in the "Load event" message. Each SCPU appends them to the end of its fragment. They are not counted by the event-size word from the VRB.