

Specification of Terminating Reliable Broadcast (TRB)

A distinguished process s (“the sender”) intends to broadcast some message $m \in \mathcal{M}$. Processes know that s intends to broadcast a message, and they can deliver a message in $\mathcal{M} \cup \{SF\}$ (intuitively, “SF” means “Sender is Faulty”). The following properties must be satisfied:

- *Validity*: If the sender s is correct and broadcasts a message m , then it eventually delivers m .
- *Agreement*: If a correct process delivers a message m , then all correct processes eventually deliver m .
- *(Uniform) Integrity*: Every process delivers at most one message, and it delivers a message $m \neq SF$ only if m was previously broadcast by the sender s .
- *Termination*: Every correct process eventually delivers a message.

TRB Algorithm for General-Omission Failures

Sender s in round 1:

send m to all; deliver m ; halt

Every receiver $p \neq s$ in round i , $1 \leq i \leq t + 1$:

do

if delivered some message m in round $i - 1$ **then** send m to all; halt

 [receive round i messages]

if received some message m in round i **then** deliver m

od

if did not deliver any message yet **then** deliver SF ; halt