

Slotted Aloha

ALOHA can be a multiple access protocol used to transfer knowledge over shared network channels. It operates within the media access control sublayer (MAC sublayer) of the Open Systems Interconnection (OSI) model. With this protocol, multiple data from multiple nodes circulates in various channels for transmission. Each node or station sends a frame without trying to detect whether the channel is idle or busy. On an empty channel, the structure will be transmitted successfully. If two frame plans occupy the track simultaneously, frame collisions will occur so that these frames will be discarded. These stations may prefer to retransmit the damaged frame until the transmission is successful repeatedly.

In the ALOHA system, the node will send it as long as there is data to send. If transmission by another node takes place at the same time, a collision will occur, and the transmitted frame will be lost. However, the node can listen to the intermediate transmission, including its communication, and determine if the fabric has been sent. In pure ALOHA, TRM is continuous. As long as the site has a frame available, it will ship the frame. If there is a collision, the structure is destroyed; as a result, the sender will randomly wait for a while before retransmitting. The slot ALOHA reduces the number of crashes and doubles the capacity of pure ALOHA. The shared channel is divided into various discrete time slots called time slots. A station can only transmit at the beginning of each time slot. However, there may still be conflicts if a station tries to convey at the beginning of the equivalent time slot.

- Slotted Aloha divides the shared channel time into discrete time slots.
- Any station can transmit its data in any time slot.
- The only condition is that the station must start its transmission from the beginning of the time slot.
- If the beginning of the time slot is lost, the station must wait until the beginning of the next time slot.
- A collision will occur if two or more stations try to transmit data at the beginning of the equivalent time slot.

Pure Aloha	Slotted Aloha
In Pure Aloha, any station can transmit data at any time.	In Slotted Aloha, any station can only transmit data at the beginning of any time slot.
In Pure Aloha, time is continuous, not globally synchronized.	In Slotted Aloha, time is discrete and globally synchronized.
Time vulnerable = $2 \times T_t$.	Time vulnerable = T_t .
Probability of successful transmission of the knowledge package = $G \times e^{-2G}$	Probability of successful transmission of the knowledge package = $G \times e^{-G}$
Maximum efficiency = 18.4%.	Maximum yield = 36.8%.
Reduce the number of collisions.	Slotted Aloha cuts the number of collisions in half, doubling the efficiency.

Table 1: Pure VS Slotted Aloha