

Figure 1 – *Single Packet View in Independent observer's timeframe ("absolute time")*

Clock Skew – Difference in sample periods at recorder and player $T_{rec} \neq T_{play}$.

Delay $d_i = a_i - t_i$ incorporates both **clock skew** and variable **network delay**. \hat{d}_i = **average delay**.

Jitter – varying inter-packet delay, i.e. dispersion of d_i around \hat{d}_i .

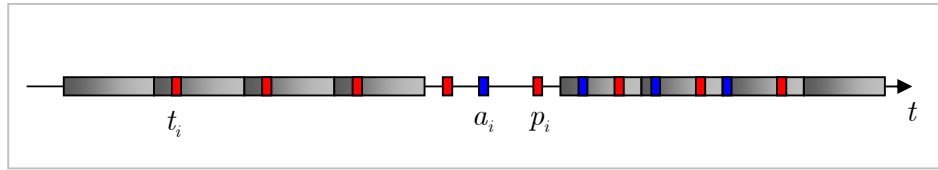


Figure 2 – *Compound View in Independent observer's timeframe ("absolute time")*

Complicated view that can be simplified by spreading elements in 2D:

- per process (sampling, sending, receiving, etc.), or
- per packet (tracking single packet by its sequence number or timestamp)

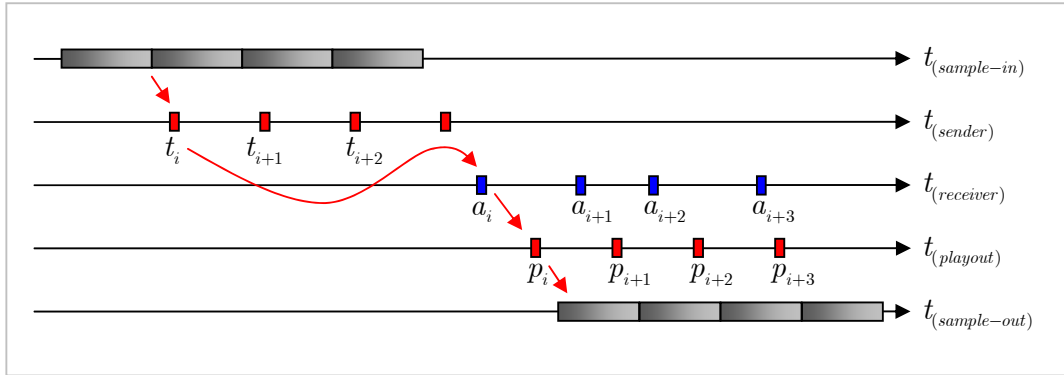


Figure 3 – *Per Process View in Independent observer's timeframe ("absolute time")*

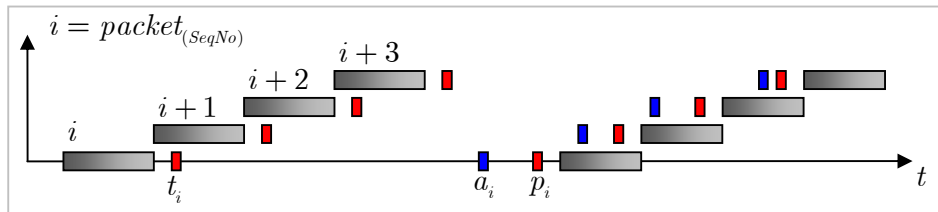


Figure 4 – *Per Packet View in Independent observer's timeframe ("absolute time")*

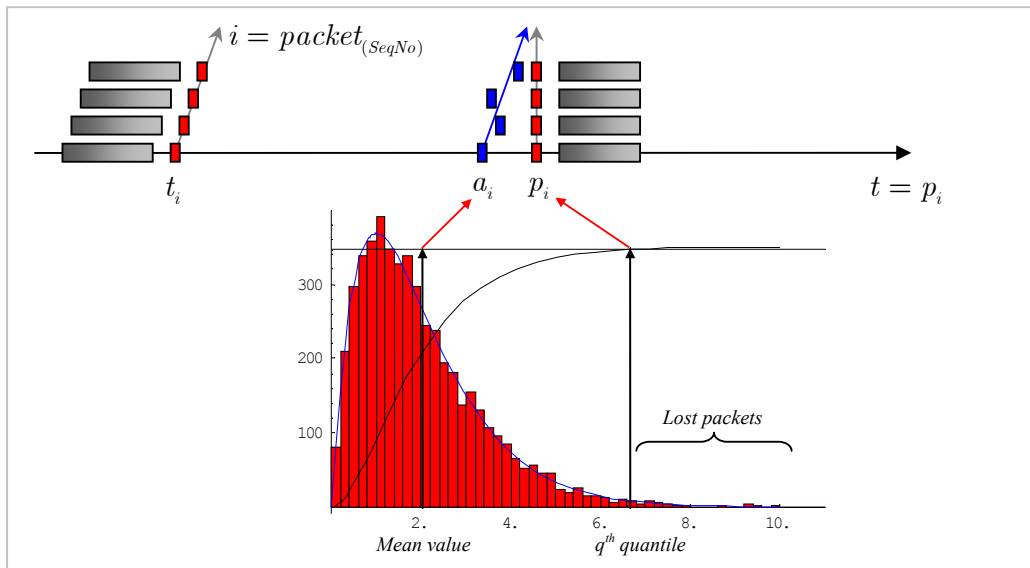


Figure 5 – Per Packet View in Play-out process' timeframe

Clock skew is visible as slow, constant and linear variation in time of delay average \hat{d}_i .

Play-out buffer depth constant is set by the user requiring certain maximum lost packet percentage.

It is adjusted by the system to be as minimum as possible, depending on the current distribution of the network delay and clock skew.

Real-time statistics of the distribution is monitored by the system: population mean (average) and variance (i.e. standard deviation) of the delay.