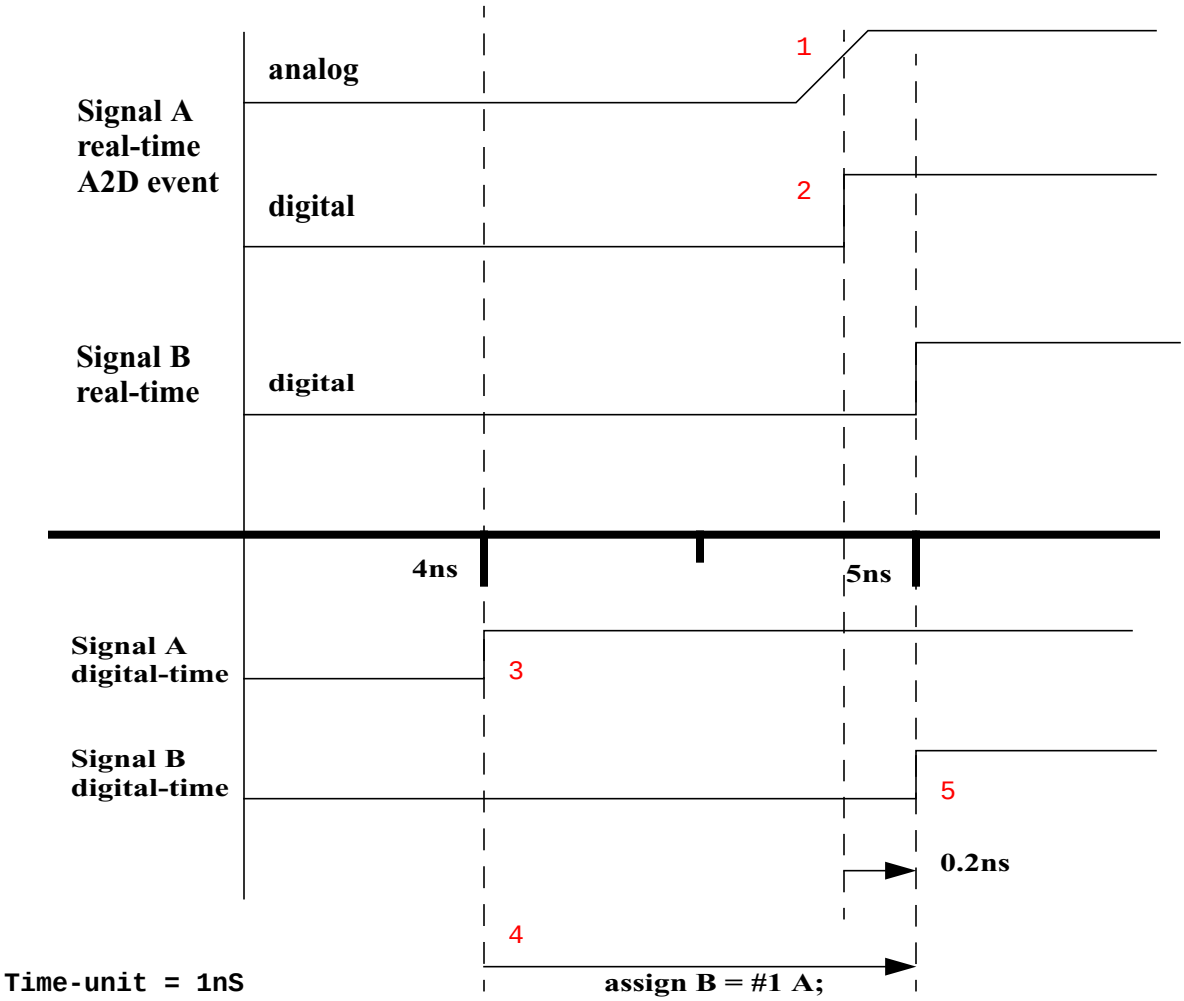
Truncation vs. Rounding in A/D Time Conversion

Truncating to Digital Time:

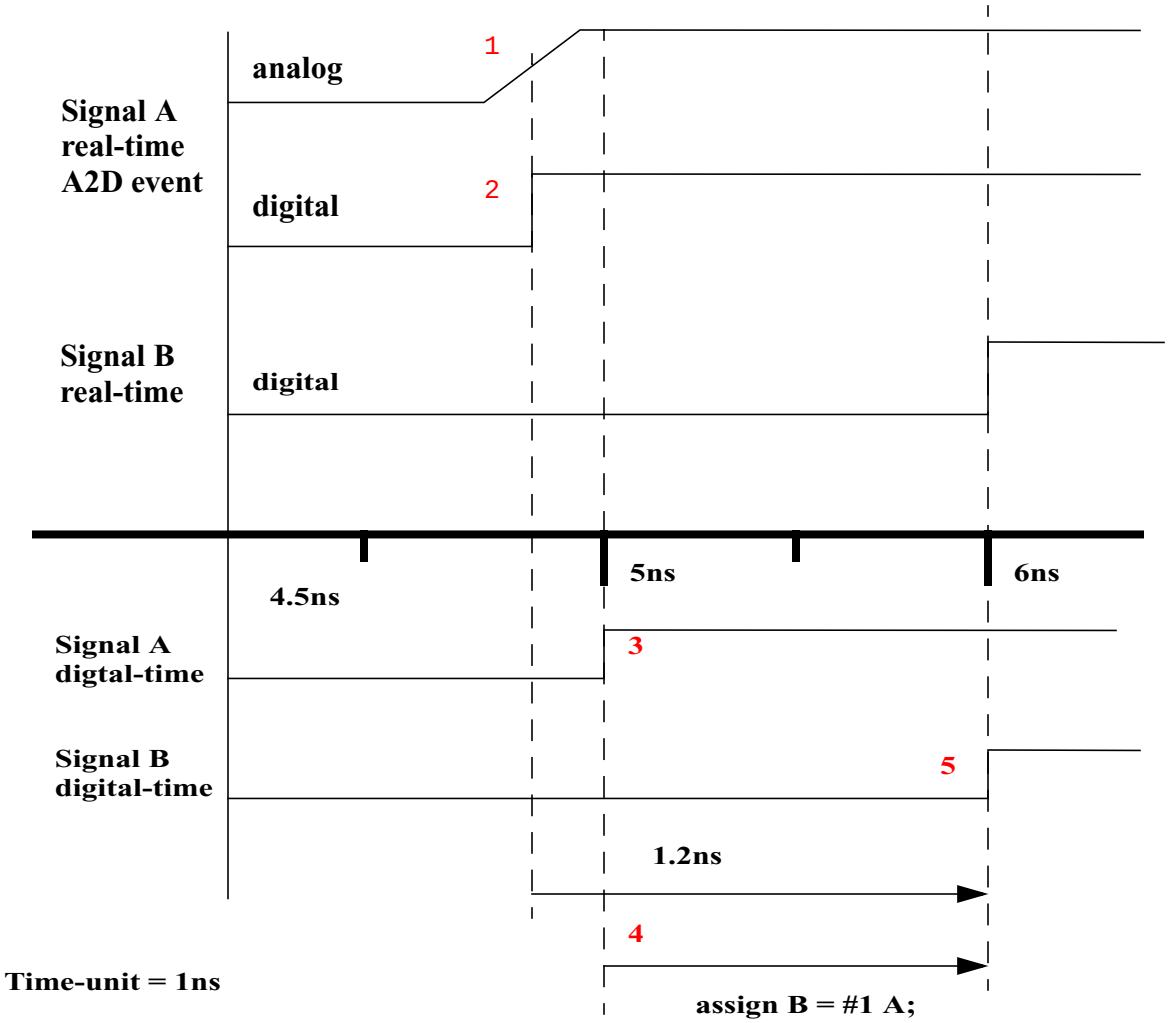


The diagram above describes (as I understand it) the propagation of a signal from analog via an A2D then assigned to a digital signal through a 1 unit delay with truncation of analog time to give digital time:

1. Analog cross
2. D2A creates digital event
3. Event time is truncated
4. Digital event triggers assign
5. Assignment occurs

The time difference in real-time between the analog cross and the final digital event is 0.2ns, which is outside the requested precision (time-unit +/- 50%).

Rounding to Digital Time:



The diagram above shows the process described on the previous page repeated with rounding rather than truncation:

1. Analog cross
2. D2A creates digital event
3. Event time is rounded
4. Digital event triggers assign
5. Assignment occurs

The time difference in real-time between the analog cross and the final digital event is 1.2ns, which is inside the requested precision (time-unit +/- 50%).