

Explain the sequence number prediction attack on TCP (see 'Security Problems in the TCP/IP Protocol Suite' paper). Give detailed steps showing how an attacker might predict the sequence numbers of a server. Assume the following—1) the server increments the sequence number (SN) every second by 10; 2) at the start time, $t = 0$ and $SN = 0$; 3) because the counter increments SN every second by 10, at $t = 1$, $SN = 10$, at $t = 2$, $SN = 20$, at $t = 3$, $SN = 30$, and so on; and 4) the round-trip time between the attacker's computer and the server is exactly 0.5 second. Feel free to make reasonable assumptions to answer this question. State your assumptions.