

Exercise for the lecture
Distributed Systems
 Summer 2014
 Sheet 1

EXERCISE 1:

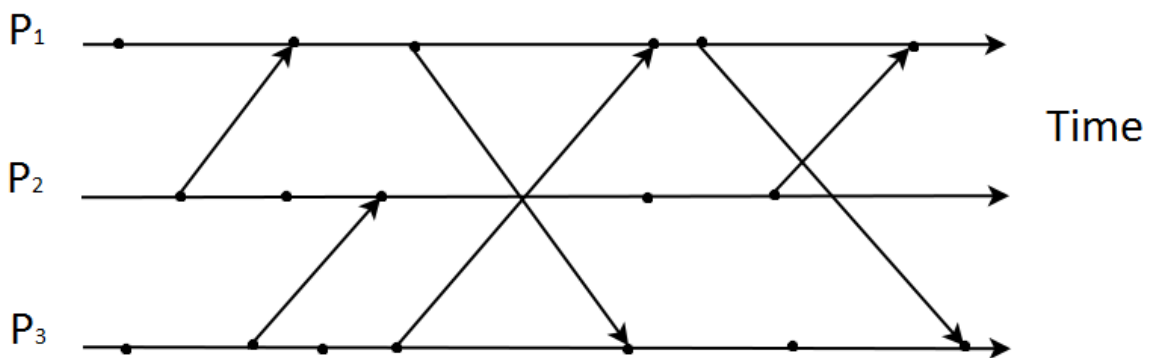
1. Time Synchronization

A client attempts to synchronize with a time server. It records the round-trip times and time-stamps returned by the server in the table below.

Round-trip (ms)	Time (hr:min:sec)
22	10:51:24.674
25	10:51:26.450
20	10:51:29.342

- Which of these times should it use to set its clock? To what time should it set it?
- Estimate the accuracy of the setting with respect to the server's clock. If it is known that the time between sending and receiving a message in the system concerned is at least 8 ms, do your answers change?

2. Logical Clocks



The figure above shows events occurring for each of three processes, P_1 , P_2 and P_3 . Arrows between processes denote message transmission. Add Lamport- and vector clocks to the events.