Thompson on Time

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A few thoughts on time in systems

- A good time to review the issue
  - Early shift to daylight savings in US underscores problems of current implementations
  - You are working on systems that involve time stamps

- This principal is simple enough that this presentation shouldn't be necessary (but it is)
- A substantial number of the systems in the world have it wrong.

Two ways to go

- There are two basic ways to express time in a (communicating) system
  - Local time
    - Local system carries offset from UCT
    - Local system displays time as stored locally
    - Local system converts time stamps received with different offset
    - Local time stamps are location sensitive
  - Global time
    - All time stamps are global, i.e. expressed in UCT
    - Time stamps carry no time zone offset
    - System display process knows offset of display from UCT
    - Local process "interprets" time stamps to local time
    - Local time stamps not location sensitive

Thus

- Global time increases monotonically
- Local time does not (especially if you are moving)

- It is simpler to figure out how you should look at a constant based on your known (or assumed) local conditions than it is to figure out how to look at a distant variable

Conclusion

- Timestamps should all be to a single reference (UCT)

- How to look at timestamps should be a local setting

- I believe Windows has it wrong.