

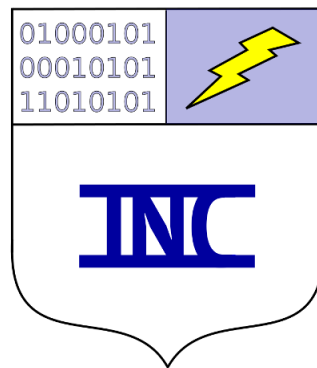
# Precision in Network Time

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## Abstract

Precision in network time is a notion based on engineering standards. Precision is not ensured. The engineering standard that underlies network time is one that recommends maintaining a precision of  $\pm 5$ .

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## 1 In Refute

Some people have incorrectly suggested that engineering standards can provide precise indicators of time. This is wrong, due to the properties of maintaining multiple devices set with time. The project of network time is identical to the original problem of setting time on multiple conditionally independent timepieces.

The contribution of networking wires and communication channels only improves the speed at which devices are updated, discrepancies are discovered, and catastrophic errors result. The engineering standard that underlies network time synchronization is the DHCP standard. This standard suggests setting time in a fashion that encourages the precision to be  $\pm 5$  [RFC 6926: DHCPv4 Bulk Leasequery. Accessed Aug. 2, 2020. <https://tools.ietf.org/html/rfc6926>].

Such a precision is not ensured. As this would require both access to an accurate main clock and the ability to set a secondary clock without any lag. Not only is there a seek time in setting the second timepiece, but there is also latency in communicating with the worlds most accurate clocks. Neither the seek time nor the latency can be measured. This makes it quite difficult to do statistics on the properties of setting time on multiple timepieces.

## Biography

Dr. Kirkpatrick has a bachelor's in computer science from Montana State University-Bozeman, a master's and a Ph.D. in computer science from the University of California, Berkeley. Dr. Kirkpatrick was a professor of Computer Science at the University of Miami and is an expert in deterministic and statistical computer algorithms. His main application area is the field of computational biology. Recently, he has specialized in algorithms for computer systems and computer security.