**Internet Time Synchronization: The Network Time Protocol**

**Abstract:**

The network time protocol (NTP), which is designed to distribute time information in a large, diverse system, is described. It uses a symmetric architecture in which a distributed subnet of time servers operating in a self-organizing, hierarchical configuration synchronizes local clocks within the subnet and to national time standards via wire, radio, or calibrated atomic clock. The servers can also redistribute time information within a network via local routing algorithms and time daemons. The NTP synchronization system, which has been in regular operation in the Internet for the last several years, is described, along with performance data which show that timekeeping accuracy throughout most portions of the Internet can be ordinarily maintained to within a few milliseconds, even in cases of failure or disruption of clocks, time servers, or networks.