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# Network Time Protocol Version 4
# Proposed Changes

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## Abstract

This report describes several changes and additions proposed for the Network Time Protocol Version 4. Previous versions of this protocol have been widely deployed in the Internet and a considerable body of experience has accumulated in their use. The proposed new version contains several improvements to existing algorithms, together with new features designed to support multicast modes of operation, fully distributed peer subnets and automated NTP peer discovery and subnet configuration.

This report describes work in progress and is produced in order to stimulate discussion and refinement of the various algorithms. Some of the algorithms, in particular the work on refining the NTP local clock model, has already been implemented and now in test. Other work, including multicast support, is in the prototype phase, but needs further development and consensus on key management and distribution. Other work is still in the formative stage, including the fully distributed modes of operation and peer discovery and subnet configuration.

It is anticipated that further development in these areas will continue while discussion and consensus is reached on the final form of the protocol and its algorithms. When complete, the final design will be submitted for approval by the Internet standards apparatus.


Keywords: computer clock, time synchronization, network synchronization.

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