

NAME

FFCLOCK - Feed-forward system clock

SYNOPSIS

options FFCLOCK

DESCRIPTION

The `ntpd(8)` daemon has been the dominant solution for system clock synchronisation for many years, which has in turn influenced the design of the system clock. The `ntpd` daemon implements a feedback control algorithm which has been demonstrated to perform poorly in common use cases.

Feed-forward clock synchronisation algorithms implemented by an appropriate daemon, in concert with the **FFCLOCK** kernel support, have been shown to provide highly robust and accurate clock synchronisation. In addition to time keeping, the **FFCLOCK** kernel mechanism provides new timestamping capabilities and the ability to use specialised clocks. Feed-forward synchronisation is also very well suited for virtualised environments, reducing the overhead of timekeeping in guests and ensuring continued smooth operation of the system clock during guest live migration.

The **FFCLOCK** kernel support provides feed-forward timestamping functions within the kernel and system calls to support feed-forward synchronisation daemons (see `ffclock(2)`).

Kernel Options

The following kernel configuration options are related to **FFCLOCK**:

FFCLOCK Enable feed-forward clock support.

Configuration

When feed-forward clock support is compiled into the kernel, multiple system clocks become available to choose from. System clock configuration is possible via the `kern.sysclock` `sysctl(8)` tree which provides the following variables:

kern.sysclock.active

Name of the current active system clock which is serving time. Set to one of the names in *kern.sysclock.available* in order to change the default active system clock.

kern.sysclock.available

Lists the names of available system clocks (read-only).

Feed-forward system clock configuration is possible via the `kern.sysclock.ffclock` `sysctl` tree which provides the following variables:

kern.sysclock.ffclock.version

Feed-forward clock kernel version (read-only).

kern.sysclock.ffclock.ffcounter_bypass

Use reliable hardware timecounter as the feed-forward counter. Will eventually be useful for virtualised environment like xen(4), but currently does nothing.

SEE ALSO

clock_gettime(2), ffclock(2), bpf(4), timecounters(4), sysctl(8)

HISTORY

Feed-forward clock support first appeared in FreeBSD 10.0.

AUTHORS

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