

NAME

adjkerntz - adjust the local time CMOS clock to reflect time zone changes and keep the current timezone offset for the kernel

SYNOPSIS

adjkerntz -i

adjkerntz -a [-s]

DESCRIPTION

The **adjkerntz** utility maintains the proper relationship between the kernel clock, which is always set to UTC and the CMOS clock, which may be set to local time. The **adjkerntz** utility also informs the kernel about machine timezone shifts in order to maintain proper timestamps for local time file systems such as the MS-DOS file system. The main purpose of maintaining these timestamps properly is to keep the timestamps of a FreeBSD MS-DOS file system and an MS-DOS operating system synchronized when they are installed on the same system rather than fixing broken MS-DOS file timestamps. If the file */etc/wall_cmos_clock* exists, it means that the CMOS clock keeps local time (MS-DOS and MS-Windows compatible mode). If that file does not exist, it means that the CMOS clock keeps UTC time. The **adjkerntz** utility passes this state to the *machdep.wall_cmos_clock* kernel variable.

Adjustments may be needed at system startup and shutdown, and whenever a time zone change occurs. To handle these different situations, **adjkerntz** is invoked in two ways:

- i** This form handles system startups and shutdowns. The **adjkerntz** utility is invoked with this option from */etc/rc* on entry to multi-user mode, before any other daemons have been started. The **adjkerntz** utility puts itself into the background. Then, for a local time CMOS clock, **adjkerntz** reads the local time from it and sets the kernel clock to the corresponding UTC time. The **adjkerntz** utility also stores the local time zone offset in the *machdep.adjkerntz* kernel variable, for use by subsequent invocations of '*adjkerntz -a*' and by local time file systems.

For a local time CMOS clock '*adjkerntz -i*' pauses and remains inactive as a background daemon until it receives a SIGTERM. The SIGTERM will normally be sent by init(8) when the system leaves multi-user mode (usually, because the system is being shut down). After receiving the SIGTERM, **adjkerntz** reads the UTC kernel clock and updates the CMOS clock, if necessary, to ensure that it reflects the current local time zone. Then **adjkerntz** exits.

-a [-s]

This form is used to update the local time CMOS clock and kernel *machdep.adjkerntz* variable when time zone changes occur, e.g., when entering or leaving daylight savings time. The **adjkerntz** utility uses the kernel clock's UTC time, the previously stored time zone offset, and the changed time zone rule to calculate a new time zone offset. It stores the new offset into the

machdep.adjkerntz kernel variable and updates the wall CMOS clock to the new local time. If *'adjkerntz -a'* was started at a nonexistent time (during a timezone change), it exits with a warning diagnostic unless the **-s** option was used, in which case **adjkerntz** sleeps 30 minutes and tries again.

This form should be invoked from root's crontab(5) every half hour between midnight and 5am, when most modern time zone changes occur. Warning: do not use the **-s** option in a crontab(5) command line, or multiple *'adjkerntz -a'* instances could conflict with each other.

The **adjkerntz** utility clears the kernel timezone structure and makes the kernel clock run in the UTC time zone. Super-user privileges are required for all operations.

ENVIRONMENT

TZ Time zone change rule, see tzset(3); not needed when tzsetup(8) or zic(8) is used.

FILES

/etc/localtime Current zoneinfo file, see tzsetup(8) and zic(8).

/etc/wall_cmos_clock Empty file. Its presence indicates that the machine's CMOS clock is set to local time, while its absence indicates a UTC CMOS clock.

DIAGNOSTICS

No diagnostics. If an error occurs, **adjkerntz** logs an error message via syslog(3) and exits with a nonzero return code.

SEE ALSO

tzset(3), crontab(5), mount_msdosfs(8), rc(8), sysctl(8), tzsetup(8), zic(8)

HISTORY

The **adjkerntz** utility appeared in FreeBSD 1.0.

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