NAME

adjtime − correct the time to synchronize the system clock

LIBRARY

Standard C library (*libc*, *−lc*)

SYNOPSIS

#include <sys/time.h>

int adjtime(const struct timeval ****delta*, struct timeval ****olddelta***);**

Feature Test Macro Requirements for glibc (see **feature_test_macros**(7)):

```
adjtime():
    Since glibc 2.19:
        _DEFAULT_SOURCE
    glibc 2.19 and earlier:
        _BSD_SOURCE
```

DESCRIPTION

The **adjtime**() function gradually adjusts the system clock (as returned by **gettimeofday**(2)). The amount of time by which the clock is to be adjusted is specified in the structure pointed to by *delta*. This structure has the following form:

```
struct timeval {
    time_t      tv_sec;     /* seconds */
    suseconds_t tv_usec;    /* microseconds */
};
```

If the adjustment in *delta* is positive, then the system clock is speeded up by some small percentage (i.e., by adding a small amount of time to the clock value in each second) until the adjustment has been completed. If the adjustment in *delta* is negative, then the clock is slowed down in a similar fashion.

If a clock adjustment from an earlier **adjtime**() call is already in progress at the time of a later **adjtime**() call, and *delta* is not NULL for the later call, then the earlier adjustment is stopped, but any already completed part of that adjustment is not undone.

If *olddelta* is not NULL, then the buffer that it points to is used to return the amount of time remaining from any previous adjustment that has not yet been completed.

RETURN VALUE

On success, **adjtime**() returns 0. On failure, −1 is returned, and *errno* is set to indicate the error.

ERRORS

EINVAL

The adjustment in *delta* is outside the permitted range.

EPERM

The caller does not have sufficient privilege to adjust the time. Under Linux, the **CAP_SYS_TIME** capability is required.

ATTRIBUTES

For an explanation of the terms used in this section, see **attributes**(7).

Interface	**Attribute**	**Value**
adjtime()	Thread safety	MT-Safe

STANDARDS

4.3BSD, System V.

NOTES

The adjustment that **adjtime**() makes to the clock is carried out in such a manner that the clock is always monotonically increasing. Using **adjtime**() to adjust the time prevents the problems that can be caused for certain applications (e.g., **make**(1)) by abrupt positive or negative jumps in the system time.

adjtime() is intended to be used to make small adjustments to the system time. Most systems impose a limit on the adjustment that can be specified in *delta*. In the glibc implementation,*delta* must be less than or equal to (INT_MAX / 1000000 − 2) and greater than or equal to (INT_MIN / 1000000 + 2) (respectively 2145 and −2145 seconds on i386).

BUGS

A longstanding bug meant that if *delta* was specified as NULL, no valid information about the outstanding clock adjustment was returned in *olddelta*. (In this circumstance,**adjtime**() should return the outstanding clock adjustment, without changing it.) This bug is fixed on systems with glibc 2.8 or later and Linux kernel 2.6.26 or later.

SEE ALSO

adjtimex(2), **gettimeofday**(2), **time**(7)