

NAME

gethostbyname, gethostbyaddr, sethostent, gethostent, endhostent, h_errno, herror, hstrerror, gethostbyaddr_r, gethostbyname2, gethostbyname2_r, gethostbyname_r, gethostent_r - get network host entry

SYNOPSIS

```
#include <netdb.h>
extern int h_errno;

struct hostent *gethostbyname(const char *name);

#include <sys/socket.h> /* for AF_INET */
struct hostent *gethostbyaddr(const void *addr,
    socklen_t len, int type);

void sethostent(int stayopen);

void endhostent(void);

void herror(const char *s);

const char *hstrerror(int err);

/* System V/POSIX extension */
struct hostent *gethostent(void);

/* GNU extensions */
struct hostent *gethostbyname2(const char *name, int af);

int gethostent_r(
    struct hostent *ret, char *buf, size_t buflen,
    struct hostent **result, int *h_errnop);

int gethostbyaddr_r(const void *addr, socklen_t len, int type,
    struct hostent *ret, char *buf, size_t buflen,
    struct hostent **result, int *h_errnop);

int gethostbyname_r(const char *name,
    struct hostent *ret, char *buf, size_t buflen,
    struct hostent **result, int *h_errnop);

int gethostbyname2_r(const char *name, int af,
    struct hostent *ret, char *buf, size_t buflen,
    struct hostent **result, int *h_errnop);
```

Feature Test Macro Requirements for glibc (see [feature_test_macros\(7\)](#)):

gethostbyname2(), gethostent_r(), gethostbyaddr_r(), gethostbyname_r(), gethostby-
name2_r():

 _BSD_SOURCE || _SVID_SOURCE

herror(), hstrerror():

 Since glibc 2.8:

 _BSD_SOURCE || _SVID_SOURCE

 Before glibc 2.8:

 none

h_errno:

 Since glibc 2.12:

 _BSD_SOURCE || _SVID_SOURCE || (_POSIX_C_SOURCE < 200809L &&
 _XOPEN_SOURCE < 700)

Before glibc 2.12:

none

DESCRIPTION

The `gethostbyname*`(*3*), `gethostbyaddr*`(*3*), `herror`(*3*), and `hstrerror`(*3*) functions are obsolete. Applications should use `getaddrinfo`(*3*), `getnameinfo`(*3*), and `gai_strerror`(*3*) instead.

The `gethostbyname`(*3*) function returns a structure of type *hostent* for the given host *name*. Here *name* is either a hostname, or an IPv4 address in standard dot notation (as for `inet_addr`(*3*)), or an IPv6 address in colon (and possibly dot) notation. (See RFC 1884 for the description of IPv6 addresses.) If *name* is an IPv4 or IPv6 address, no lookup is performed and `gethostbyname`(*3*) simply copies *name* into the *h_name* field and its *struct in_addr* equivalent into the *h_addr_list*[*0*] field of the returned *hostent* structure. If *name* doesn't end in a dot and the environment variable **HOSTALIASES** is set, the alias file pointed to by **HOSTALIASES** will first be searched for *name* (see `hostname`(*7*) for the file format). The current domain and its parents are searched unless *name* ends in a dot.

The `gethostbyaddr`(*3*) function returns a structure of type *hostent* for the given host address *addr* of length *len* and address type *type*. Valid address types are **AF_INET** and **AF_INET6**. The host address argument is a pointer to a struct of a type depending on the address type, for example a *struct in_addr* *(probably obtained via a call to `inet_addr`(*3*)) for address type **AF_INET**.

The `sethostent`(*3*) function specifies, if *stayopen* is true (1), that a connected TCP socket should be used for the name server queries and that the connection should remain open during successive queries. Otherwise, name server queries will use UDP datagrams.

The `endhostent`(*3*) function ends the use of a TCP connection for name server queries.

The (obsolete) `herror`(*3*) function prints the error message associated with the current value of *h_errno* on *stderr*.

The (obsolete) `hstrerror`(*3*) function takes an error number (typically *h_errno*) and returns the corresponding message string.

The domain name queries carried out by `gethostbyname`(*3*) and `gethostbyaddr`(*3*) use a combination of any or all of the name server **named**(*8*), a broken out line from */etc/hosts*, and the Network Information Service (NIS or YP), depending upon the contents of the *order* line in */etc/host.conf*. The default action is to query **named**(*8*), followed by */etc/hosts*.

The *hostent* structure is defined in `<netdb.h>` as follows:

```
struct hostent {
    char *h_name; /* official name of host */
    char **h_aliases; /* alias list */
    int h_addrtype; /* host address type */
    int h_length; /* length of address */
    char **h_addr_list; /* list of addresses */
}
#define h_addr h_addr_list[0] /* for backward compatibility */
```

The members of the *hostent* structure are:

h_name

The official name of the host.

h_aliases

An array of alternative names for the host, terminated by a null pointer.

h_addrtype

The type of address; always **AF_INET** or **AF_INET6** at present.

h_length

The length of the address in bytes.

h_addr_list

An array of pointers to network addresses for the host (in network byte order), terminated by a null pointer.

h_addr The first address in *h_addr_list* for backward compatibility.

RETURN VALUE

The `gethostbyname()` and `gethostbyaddr()` functions return the *hostent* structure or a null pointer if an error occurs. On error, the *h_errno* variable holds an error number. When non-NULL, the return value may point at static data, see the notes below.

ERRORS

The variable *h_errno* can have the following values:

HOST_NOT_FOUND

The specified host is unknown.

NO_ADDRESS or NO_DATA

The requested name is valid but does not have an IP address.

NO_RECOVERY

A nonrecoverable name server error occurred.

TRY_AGAIN

A temporary error occurred on an authoritative name server. Try again later.

FILES

/etc/host.conf

resolver configuration file

/etc/hosts

host database file

/etc/nsswitch.conf

name service switch configuration

CONFORMING TO

POSIX.1-2001 specifies `gethostbyname()`, `gethostbyaddr()`, `sethostent()`, `endhostent()`, `gethostent()`, and *h_errno*; `gethostbyname()`, `gethostbyaddr()`, and *h_errno* are marked obsolescent in that standard. POSIX.1-2008 removes the specifications of `gethostbyname()`, `gethostbyaddr()`, and *h_errno*, recommending the use of `getaddrinfo(3)` and `getnameinfo(3)` instead.

NOTES

The functions `gethostbyname()` and `gethostbyaddr()` may return pointers to static data, which may be overwritten by later calls. Copying the *struct hostent* does not suffice, since it contains pointers; a deep copy is required.

In the original BSD implementation the *len* argument of `gethostbyname()` was an *int*. The SUSv2 standard is buggy and declares the *len* argument of `gethostbyaddr()` to be of type *size_t*. (That is wrong, because it has to be *int*, and *size_t* is not. POSIX.1-2001 makes it *socklen_t*, which is OK.) See also `accept(2)`.

The BSD prototype for `gethostbyaddr()` uses *const char ** for the first argument.

System V/POSIX extension

POSIX requires the `gethostent()` call, that should return the next entry in the host data base. When using DNS/BIND this does not make much sense, but it may be reasonable if the host data base is a file that can be read line by line. On many systems a routine of this name reads from the file */etc/hosts*. It may be available only when the library was built without DNS support. The glibc version will ignore ipv6 entries. This function is not reentrant, and glibc adds a

reentrant version **gethostent_r()**.

GNU extensions

Glibc2 also has a **gethostbyname2()** that works like **gethostbyname()**, but permits to specify the address family to which the address must belong.

Glibc2 also has reentrant versions **gethostent_r()**, **gethostbyaddr_r()**, **gethostbyname_r()** and **gethostbyname2_r()**. The caller supplies *ahostent* structure *ret* which will be filled in on success, and a temporary work buffer *buf* of size *buflen*. After the call, *result* will point to the result on success. In case of an error or if no entry is found *result* will be NULL. The functions return 0 on success and a nonzero error number on failure. In addition to the errors returned by the nonreentrant versions of these functions, if *buf* is too small, the functions will return **ERANGE**, and the call should be retried with a larger buffer. The global variable *h_errno* is not modified, but the address of a variable in which to store error numbers is passed in *h_errnop*.

BUGS

gethostbyname() does not recognize components of a dotted IPv4 address string that are expressed in hexadecimal.

SEE ALSO

[getaddrinfo\(3\)](#), [getnameinfo\(3\)](#), [inet\(3\)](#), [inet_ntop\(3\)](#), [inet_pton\(3\)](#), [resolver\(3\)](#), [hosts\(5\)](#), [nss-witch.conf\(5\)](#), [hostname\(7\)](#), [named\(8\)](#)

COLOPHON

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