

**NAME**

gethostbyname, gethostbyaddr, sethostent, gethostent, endhostent, h\_errno, herror, hstrerror, gethostbyname\_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()**, **gethostbyname2\_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*`(), `gethostbyaddr*`(), `herror`(), and `hstrerror`() functions are obsolete. Applications should use `getaddrinfo(3)`, `getnameinfo(3)`, and `gai_strerror(3)` instead.

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

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

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

The domain name queries carried out by `gethostbyname`() and `gethostbyaddr`() 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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