



Rocky Enterprise Linux 9.2 Manual Pages on command 'gethostbyname.3'

\$ man gethostbyname.3

GETHOSTBYNAME(3) Linux Programmer's Manual GETHOSTBYNAME(3)

NAME

gethostbyname, gethostbyaddr, sethostent, gethostent, endhostent, h_er?

rno, herror, hstrerror, gethostbyaddr_r, gethostbyname2, gethostby?

name2_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():

 Since glibc 2.19:

 _DEFAULT_SOURCE

 Glibc versions up to and including 2.19:

 _BSD_SOURCE || _SVID_SOURCE

herror(), hstrerror():

 Since glibc 2.19:

 _DEFAULT_SOURCE

 Glibc 2.8 to 2.19:

 _BSD_SOURCE || _SVID_SOURCE

 Before glibc 2.8:

 none

h_errno:

 Since glibc 2.19

 _DEFAULT_SOURCE || _POSIX_C_SOURCE < 200809L

 Glibc 2.12 to 2.19:

 _BSD_SOURCE || _SVID_SOURCE || _POSIX_C_SOURCE < 200809L

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)`). If name is an IPv4 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()`

byaddr() rely on the Name Service Switch (nsswitch.conf(5)) configured sources or a local name server (named(8)). The default action is to query the Name Service Switch (nsswitch.conf(5)) configured sources, failing that, a local name server (named(8)).

Historical

The nsswitch.conf(5) file is the modern way of controlling the order of host lookups.

In glibc 2.4 and earlier, the order keyword was used to control the order of host lookups as defined in /etc/host.conf (host.conf(5)).

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_DATA

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

Another type of request to the name server for this domain may return an answer. The constant `NO_ADDRESS` is a synonym for `NO_DATA`.

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

ATTRIBUTES

For an explanation of the terms used in this section, see at?

tributes(7).

??

?Interface ? Attribute ? Value ?

??

?gethostbyname() ? Thread safety ? MT-Unsafe race:hostbyname env ?

? ? ? locale ?

??

gethostbyaddr()	?	Thread safety	?	MT-Unsafe	race: hostbyaddr	env	?
?	?	?	locale	?			
sethostent()	?	Thread safety	?	MT-Unsafe	race: hostent	env	?
endhostent()	?	?	locale	?			
gethostent_r()	?	?	?	?			
herror()	?	Thread safety	?	MT-Safe			
hstrerror()	?	?	?	?			
gethostent()	?	Thread safety	?	MT-Unsafe	race: hostent		?
?	?	?	race: hostentbuf	env	locale		?
gethostbyname2()	?	Thread safety	?	MT-Unsafe	race: hostbyname2		?
?	?	?	env	locale			?
gethostbyaddr_r()	?	Thread safety	?	MT-Safe	env	locale	?
gethostbyname_r()	?	?	?	?			
gethostbyname2_r()	?	?	?	?			

In the above table, hostent in race:hostent signifies that if any of the functions sethostent(), gethostent(), gethostent_r(), or endhostent() are used in parallel in different threads of a program, then data races could occur.

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, which 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 a hostent 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 non-reentrant 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), nsswitch.conf(5), hostname(7), named(8)

COLOPHON

This page is part of release 5.10 of the Linux man-pages project. A description of the project, information about reporting bugs, and the latest version of this page, can be found at <https://www.kernel.org/doc/man-pages/>.

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