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Red Hat Enterprise Linux Release 9.2 Manual Pages on 'gethostbyname.3' command

\$ 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)`, `getname?`

info(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()` 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)`).

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:

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 to try 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, `ret` will point to the result on success. In case of an error or if no entry is found, `ret` 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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