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

$ man h_errno.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() func? tions 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 ad? dress, 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 exam? ple 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. Oth? erwise, 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 gethost?

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 or? der 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 net? work 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).

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?Interface ? Attribute ? Value ?

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?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 endhos?tent() 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(), gethost?byaddr(), and h_errno are marked obsolescent in that standard.

POSIX.1-2008 removes the specifications of gethostbyname(), gethost?byaddr(), and h_errno, recommending the use of getaddrinfo(3) and get?nameinfo(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 en? 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 li? brary was built without DNS support. The glibc version will ignore ipv6 entries. This function is not reentrant, and glibc adds a reen? trant 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 hos? tent 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 re? sult will be NULL. The functions return 0 on success and a nonzero er? ror number on failure. In addition to the errors returned by the non? reentrant versions of these functions, if buf is too small, the func? tions 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

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