NAME top

inet_pton - convert IPv4 and IPv6 addresses from text to binary form

SYNOPSIS top

```
#include <arpa/inet.h>

int inet_pton(int af, const char *src, void *dst);
```

DESCRIPTION top

This function converts the character string *src* into a network address structure in the *af* address family, then copies the network address structure to *dst*. The *af* argument must be either **AF_INET** or **AF_INET6**. *dst* is written in network byte order.

The following address families are currently supported:

AF_INET
: *src* points to a character string containing an IPv4 network address in dotted-decimal format, "*ddd.ddd.ddd.ddd*", where *ddd* is a decimal number of up to three digits in the range 0 to 255. The address is converted to a *struct in_addr* and copied to *dst*, which must be *sizeof(struct in_addr)* (4) bytes (32 bits) long.

AF_INET6
: *src* points to a character string containing an IPv6 network address. The address is converted to a *struct in6_addr* and copied to *dst*, which must be *sizeof(struct in6_addr)* (16) bytes (128 bits) long. The allowed formats for IPv6 addresses follow these rules:

1. The preferred format is *x:x:x:x:x:x:x:x*. This form consists of eight hexadecimal numbers, each of which expresses a 16-bit value (i.e., each *x* can be up to 4 hex digits).

2. A series of contiguous zero values in the preferred format can be abbreviated to *::*. Only one instance of *::* can occur in an address. For example, the loopback address

0:0:0:0:0:0:0:1 can be abbreviated as *::1*. The wildcard address, consisting of all zeros, can be written as *::*.

3. An alternate format is useful for expressing IPv4-mapped IPv6 addresses. This form is written as *x:x:x:x:x:x:d.d.d.d*, where the six leading *x*s are hexadecimal values that define the six most-significant 16-bit pieces of the address (i.e., 96 bits), and the *d*s express a value in dotted-decimal notation that defines the least significant 32 bits of the address. An example of such an address is *::FFFF:204.152.189.116*.

See RFC 2373 for further details on the representation of IPv6 addresses.

RETURN VALUE top

inet_pton() returns 1 on success (network address was successfully converted). 0 is returned if *src* does not contain a character string representing a valid network address in the specified address family. If *af* does not contain a valid address family, -1 is returned and *errno* is set to **EAFNOSUPPORT**.

ATTRIBUTES top

For an explanation of the terms used in this section, see attributes(7).

Interface	Attribute	Value
inet_pton()	Thread safety	MT-Safe locale

CONFORMING TO top

POSIX.1-2001, POSIX.1-2008.

NOTES top

Unlike inet_aton(3) and inet_addr(3), **inet_pton**() supports IPv6 addresses. On the other hand, **inet_pton**() accepts only IPv4 addresses in dotted-decimal notation, whereas inet_aton(3) and inet_addr(3) allow the more general numbers-and-dots notation (hexadecimal and octal number formats, and formats that don't require all four bytes to be explicitly written). For an interface that handles both IPv6 addresses, and IPv4 addresses in numbers-and-dots notation, see getaddrinfo(3).

BUGS top

AF_INET6 does not recognize IPv4 addresses. An explicit IPv4-mapped IPv6 address must be supplied in *src* instead.

EXAMPLE top

The program below demonstrates the use of **inet_pton**() and inet_ntop(3). Here are some example runs:

```
$ ./a.out i6 0:0:0:0:0:0:0:0
::
$ ./a.out i6 1:0:0:0:0:0:0:8
1::8
$ ./a.out i6 0:0:0:0:0:FFFF:204.152.189.116
::ffff:204.152.189.116
```

Program source

```
#include <arpa/inet.h>
#include <stdio.h>
#include <stdlib.h>
#include <string.h>

int
main(int argc, char *argv[])
{
    unsigned char buf[sizeof(struct in6_addr)];
    int domain, s;
    char str[INET6_ADDRSTRLEN];

    if (argc != 3) {
        fprintf(stderr, "Usage: %s {i4|i6|<num>} string\n", argv[0]);
        exit(EXIT_FAILURE);
    }

    domain = (strcmp(argv[1], "i4") == 0) ? AF_INET :
             (strcmp(argv[1], "i6") == 0) ? AF_INET6 : atoi(argv[1]);

    s = inet_pton(domain, argv[2], buf);
    if (s <= 0) {
        if (s == 0)
            fprintf(stderr, "Not in presentation format");
        else
            perror("inet_pton");
        exit(EXIT_FAILURE);
    }

    if (inet_ntop(domain, buf, str, INET6_ADDRSTRLEN) == NULL) {
        perror("inet_ntop");
        exit(EXIT_FAILURE);
    }

    printf("%s\n", str);
```

```
        exit(EXIT_SUCCESS);
    }
```

SEE ALSO top

getaddrinfo(3), inet(3), inet_ntop(3)

COLOPHON top

This page is part of release 5.03 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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Pages that refer to this page: getent(1), getaddrinfo(3), gethostbyname(3), getipnodebyname(3), inet(3), inet_ntop(3), systemd.network(5)
