

▷ HackPro KP

IP Address

IPv4



Unique Numeric Identifier

Given Moment

↳ Can Be changed Easily

32 Bits

logical Address

Each 8 Bits

Dotted Decimal Notation

xxx.xxx.xxx.xxx
 A 1. B 2. C 3. D 4.

4 octets

Binary Notation

$0 \leq A, B, C, D \leq 255$

0.0.0.0 to 255.255.255.255

00000000 00000000 00000000 00000000 to 11111111 11111111 11111111 11111111

Address Space $\rightarrow 32 \rightarrow 40 \text{ or } 32 \text{ Bits (IPv4)}$

2 or 4,294,967,296 (More than 4 Billion) Already Used!! *

Two Devices on the Internet can never have the same address at the same time

★ Classes of IPv4 Addresses

Starts with	First byte	Second byte	Third byte	Fourth byte
Class A	0	.	.	.
Class B	10	.	.	.
Class C	110	.	.	.
Class D	1110			
Class E	1111			

a. Binary notation

Starts with	First byte	Second byte	Third byte	Fourth byte
Class A	0-127	.	.	.
Class B	128-191	.	.	.
Class C	192-223	.	.	.
Class D	224-239			
Class E	240-255			

b. Dotted-decimal notation

- Host Portion
- Network Portion

$$\text{Class A} \rightarrow 2^7 (2^{24}) - 2$$

$$\text{Class B} \rightarrow 2^{14} (2^{16}) - 2$$

$$\text{Class C} \rightarrow 2^{21} (2^8) - 2$$

Default Subnet

Class A $\rightarrow 255.0.0.0$

Class B $\rightarrow 255.255.0.0$

Class C $\rightarrow 255.255.255.0$

N	H	H	H
N	N	H	H
N	N	N	H

Private IP Address

Used to communicate within the same network host that do not require access to Internet can use Private Address.

* Note: Devices connected with Private IP Addresses can still connect to the Internet, via NAT or Proxy.
 $\rightarrow 10.0.0.0$ to $10.255.255.255$ ($10.0.0.0/8$)
 $\rightarrow 172.16.0.0$ to $172.31.255.255$ ($172.16.0.0/12$)
 $\rightarrow 192.168.0.0$ to $192.168.255.255$ ($192.168.0.0/16$)

★ Special Use IP Address

- Network and Broadcast Address
 - First
 - Last
- Loopback Address $127.0.0.1$
 - Direct traffic to itself
- Link-local address $169.254.0.0$ ($169.254.0.0/16$)
 - $169.254.0.0$
 - $169.254.0.255$
- TEST-NET Address (Network Learning)
 - $192.0.2.0$ ($192.0.2.0/24$)
 - $192.0.2.255$
- Experimental Address (reserved)
 - $240.0.0.0$ - $255.255.255.254$

Public IP Address

Public IP address is used to communicate outside the Network
 Public IP address is basically assigned by Internet Service (ISP)