IP ADDRESS STRUCTURE:

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Note: the terms multicast address and MSB are explained at the end.

Every station on a PSN (packet switched network) that is based on the TCP/IP protocol (your computer is one, for example. Yes, we're referring to a host that is connected to the net) must have an IP address, so it can be identified, and information can be relayed and routed to it in an orderly fashion.

An IP address consists of a 32 bit logical address. The address is divided into two fields:

1) The network address:

Assigned by InterNIC (Internet Network Information Center).
In fact most ISPs (internet service providers) purchase a number of addresses and assign them individually.

2) The host address:

An address that identifies the single nodes throughout the network. It can be assigned by the network manager, by using protocols for it such as DHCP, or the workstation itself.

[The IP networking protocol is a logically routed protocol, meaning that address 192.43.54.2 will be on the same physical wire as address 192.43.54.3 (of course this is not always true. It depends on the

subnet mask of the network, but all of that can fill a text of its own)

IP address structure:

---.---.---.---

```
  ^           ^
  |           |
network   |   host
```

Every " --- " = 8 bits.
The first bits ===> network address
The last bits ===> host address.
with 8 bits you can present from 0-255 . (binary=(2 to the power of 8)-1)

Example:
11000010.01011010.00011111.01001010 (binary)
194.90.31.74 (decimal)
IP address CLASSES :
We can classify IP addreses to 5 groups. You can distinguish them by comparing the "High Order" bits (the first four bits on the
left of the address):

type	model	target groups	MSB	addr.range	bit number net./hosts	max.stations
A	N.h.h.h	ALL ACCEPT HUGE CORPS	0	1.0.0.0 to 127.0.0.0	24/7	16,777,214
B	N.N.h.h	TO ALL LARGE CORPS	10	128.1.00 to 191.254.00	16/14	65,543
C	N.N.N.h	TO ALOT OF SMALL CORPS	110	192.0.1.0 to 223.225.254	8/22	254
D	NONE	MULTI-CA ST ADDR. RFC-1112	1110	224.0.0.0 to 239.255.255.255	NOT FOR USUAL USE	UNKNOWN
E	NOT FOR USE	EXPERIME NTAL ADDR.	1,1,1,1	240.0.0.0 to 254.255.255.255	NOT FOR USE	NOT FOR USE

N=NETWORK , h=HOST .

Notice the address range 127.X.X.X.
These addresses are assigned to internal use to the network device, and are
used as an application tool only. For example: 127.0.0.1, the most common one,
is called the loopback address - everything sent here goes directly back to
you, without even traveling out on the wire.
Also, some IPs are reserved for VPNs - Virtual Private Networks. These are

local area networks over wide area networks that use the Internet Protocol to communicate, and each computer inside the network is assigned with an IP address. So, suppose a certain computer wants to send a data packet to another host on the network with the IP 'x', but there's also another host on the Internet that has the same IP - what happens now? So this is why you cannot use these and other forms of reserved IPs on the Internet.

EXTRA:

Distinguishing different groups:

You have to compare the first byte on the left in the address as follows:

Type	First byte in decimal	MSB
A	1-127	0
B	128-191	10
C	192-223	110
D	224-239	1110
E	240-254	1111

NOTES: Yes, we know, we've left A LOT of things unexplained in this text. With time, we will write more tutorials to cover these and other subjects. So in the meantime, I suggest that you go to http://blacksun.box.sk, find the tutorials page and see if there's anything else that's interesting to you. And remember - we also have a message board, so if you have any questions, feel free to post them there.

weird shit (newbie note):

1) Multicast: (copied from RFC 1112)

IP multicasting is the transmission of an IP datagram to a "host group", a set of zero or more hosts identified by a single IP destination address. A multicast datagram is delivered to all members of its destination host group with the same "best-efforts" reliability as regular unicast IP datagrams, i.e., the datagram is not guaranteed to arrive intact at all members of the destination group or in the same order relative to other datagrams.

The membership of a host group is dynamic; that is, hosts may join and leave groups at any time. There is no restriction on the location or number of members in a host group. A host may be a member of more than one group at a time. A host need not be a member

of a group to send datagrams to it.

A host group may be permanent or transient. A permanent group has a well-known, administratively assigned IP address. It is the address, not the membership of the group, that is permanent; at any time a permanent group may have any number of members, even zero. Those IP multicast addresses that are not reserved for permanent groups are available for dynamic assignment to transient groups which exist only as long as they have members.

Internetwork forwarding of IP multicast datagrams(ip packets)is handled by "multicast routers" which may be co-resident with, or separate from, internet gateways. A host transmits an IP multicast datagram as a local network multicast which reaches all immediately-neighboring members of the destination host group. If the datagram has an IP time-to-live greater than 1, the multicast router(s) attached to the local network take responsibility for forwarding it towards all other networks that have members of the destination group. On those other member networks that are reachable within the IP time-to-live, an attached multicast router completes delivery by transmitting the datagram(ip packet) as a local multicast.

*if you donot understand the above do not worry, it is complicated and dry but reread it and read it again get a dictionary if it helps.
Hacking is not easy.

2) MSB: Most Significent Bit:
In set numbers the first number on the left is the most important because it holds the highest value as opposed to the LSB=> least significent bit, it always holds the the smallest value.