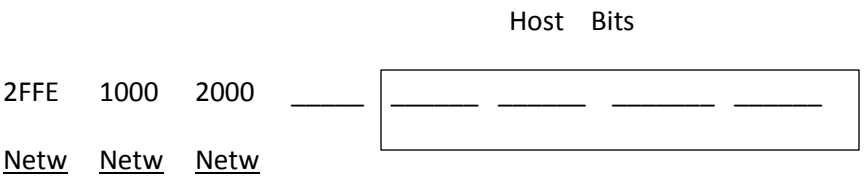
16	16	16	16	16	16	16	16

Each field is 16 bits separated by colons instead of doted notation as we have in ipv4

Lets say that we had the Acme corporation and they are assigned a prefix (portion of the address) of 2ffe:1000:2000. If you add that up it would be 16+16+16 = 48

So it would be written up as Acme received 2FFE:1000:2000/48

What does that mean to us? It would be like receiving a class B address. For example, if I received an Class B address 139.10 …….the first 16 bits I could not change it, but I could anything I wanted to with the last 16 bits. Well its very similar in IPV6 where if I was assigned the first 48 bits, that first 48 bits would be the network portion of the address. Leaving the company to do what ever they want with the last 5 fields.



In a Ipv6 network we are going to reserve the last 64 bits as the host bits.

So basically we have the first 3 fields for the network and the last 4 fields for the host.

What do we have left……we have the 4th field which is basically what we use for subnetting.

What are the possible subnets you can assign. You basically have a wide range because Ipv6 is written in Hexadecimal so it is basically no longer binary all hex. My first subnet can be all zeroes

My first subnet can be	0000	
My next subnet can be	0001	
	0002	
	0003	
All the way to	FFFF	Allowing me to have more than 65,000 subnets

For a typical enterprise company 65000 subnet should be more than enough to assign throughout the enterprise.

The key thing here is that for each subnet we can have 2^{64} of hosts.

A **unicast address** is as it sounds in that it provides **one-to-one communication between two devices at either a Local-link level, Unique-link level and the Global-link level.**

Identify the IPv6 address as either a link-local, multicast, or global IP just by viewing its prefix

Link local - operates in the local network only (nodes on the same subnet) similar to APIPA 169.254.0.0

The **Link local address starts with the global ID FE80::/10**

In a computer network, a **link-local address** is a network address that is intended and valid only for communications within a network segment (a single network link, or often: one broadcast domain) that a host is connected to.

Link-local addresses for IPv4 are defined in the address block 169.254.0.0/16, in CIDR notation. In IPv6, they are assigned with the fe80::/64 prefix.

Unique-local level OR SITE LOCAL - operates at the site level and always begin with FD00::/8 as its global ID. The site local is the organisations private address. Equivalent to IPV4 private address 10.0.0.0/8,172.16.0.0/12,192.168.0.0/16.

Global level **- equivalent of a public IP address as it allows one-to-one communications between two external devices. (IPV6 internet addresses)**

global ID is called the "Global routing prefix" as it identifies what country it is representing. This always begins with a 2000::/3