**Meshack Mumo Mutisya,**

**Online Cyber security class.**

**Assignment.**

Difference between ipv4 and ipv6.

1. One of the differences between IPv4 and IPv6 is the appearance of the IP addresses. IPv4 uses four 1 byte decimal numbers, separated by a dot (i.e. 192.168. 1.1), while IPv6 uses hexadecimal numbers that are separated by colons (i.e. fe80::d4a8:6435:d2d8:d9f3b11 ).
2. IPv4 has a 32-bit address length while IPv6 has a 128-bit address length
3. IPv4 Supports Manual and DHCP address configuration while IPv6 supports Auto and renumbering address configuration
4. In IPv4 end to end, connection integrity is Unachievable while IPv6 end to end, connection integrity is Achievable
5. IPv4 can generate 4.29×109 address space while address space of IPv6 is quite large it can produce 3.4×1038 address space
6. The Security feature is dependent on application in IPv4 while IPSEC is an inbuilt security feature in the IPv6 protocol
7. Address representation of IPv4 is in decimal while address Representation of IPv6 is in hexadecimal
8. Fragmentation performed by Sender and forwarding routers in IPv4 while in IPv6 fragmentation performed only by the sender
9. In IPv4 Packet flow identification is not available while in IPv6 packet flow identification are Available and uses the flow label field in the header
10. In IPv4 checksum field is available while in IPv6 checksum field is not available
11. IPv4 has broadcast Message Transmission Scheme while in IPv6 multicast and any cast message transmission scheme is available
12. In IPv4 Encryption and Authentication facility not provided while in IPv6 Encryption and Authentication are provided
13. IPv4 has a header of 20-60 bytes while IPv6 has header of 40 bytes fixed

Difference between proxy and VPN.

* A proxy sever works as a gateway between the internet and users while a VPN is similar to a proxy server in that it makes internet traffic appear to be coming from a remote IP address.
* Proxy servers may hide your identity from websites, but they do not encrypt your connection while VPNs are a secure solution because they encrypt data before sending it to the client, hiding your identity from the web and your ISP in the process.
* While both a VPN and a proxy server will hide the user’s IP address, they handle data in different ways. Proxy servers serve as a "middleman" between a user and the web. They hide the user's IP address from a web server the user visits, but it does not secure the data that is sent and received while A VPN takes this process a step further. It hides the user’s IP address and location so they cannot be identified.
* A proxy is a single server that may be used by many people at one time. This can result in delays in connection speed. A free proxy connection can prove even slower. VPN servers that are far from the user’s location can also result in a slower connection speed. However, if you use a VPN provider with the right technology and maintenance protocols, any delays will be unnoticeable.