ECSE-6600: Internet Protocols

Informal Quiz #10

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IPv6:
Informal Quiz

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- ☐ ☐ IPv6 is merely IPv4 with larger (128-bit) addresses
- ☐ ☐ NATs are similar to ALGs in that they restrict end-to-end addressing transparency (I.e. we lose global addressibility)
- ☐ ☐ NAT deployment is likely to intensify with IPv4 address space shortage
- ☐ ☐ Prior to CIDR, Class C address blocks were the the most popular in terms of being allocated.
- ☐ ☐ IPv6 was originally designed to support at least 10^{12} end systems.
- ☐ ☐ The colon-hex notation is less convenient than dotted-decimal notation to represent IPv6 addresses
- ☐ ☐ The header length field is retained in IPv6
- ☐ ☐ The protocol type field in IPv6 is replaced by the “next header” field.
- ☐ ☐ Flow label is a field both in IPv4 and IPv6 headers
- ☐ ☐ IPv6 uses the idea of extension headers to implement options (the base header is fixed length).
- ☐ ☐ IPv6 attempts to reduce header processing time by reducing and redefining header fields.
- ☐ ☐ IPv6 views fragmentation as an optional (I.e. infrequently used) feature, and therefore relegates it to the extension headers.

- Aggegatable global unicast addresses in IPv6 allow better routing scalability because aggregation is based on topology defined by providers
- IPv4 allows automated re-numbering of IP addresses throughout an enterprise
- Link local addresses, multicast and neighbor discovery are key components in IPv6 which allow plug-and-play.
- Link local addresses is a stateless auto-configuration method while DHCP is a stateful auto-configuration method.
- Flow classification cannot be done when the authentication header is used.
- The scoping of multicast transmission is not a part of the IPv6 address.
- Neighbor discovery captures IGMP functionality
- Neighbor discovery subsumes ARP and router discovery functionality
- The H ratio is usually 0.3 when networks expand their address spaces
- The 128 bit address space in IPv6 simplifies auto-configuration, network renumbering and routing
- The purported security and QoS advantages of IPv6 have been reasonably engineered in the context of IPv4 itself.

- The growth of wireless IP devices and peer-to-peer applications appear to be principal drivers for IPv6 today.
- Neighbor discovery generalizes the ARP functionality, and allows multiple default routers and multiple prefixes per interface.
- IPv6's prefix lifetime and multiple addresses per interface features simplify renumbering of an AS, as it transitions from one provider to another.
- The 6-over-4 transition scheme views IPv4 as a link (I.e. subnet) of IPv6, and allows automated tunneling
- The 6-to-4 transition scheme views IPv4 as a link (I.e. subnet) of IPv6, and allows automated tunneling
- The 6-to-4 transition scheme derives the IPv6 address directly from the IPv4 address by mapping it to the site prefix field of the IPv6 address