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11/24/2021

Hw 11

Comp Net

21.9: If an ISP assigned you a /28 IPv6 address block, how many computers could be assigned an address from the block?

ANS: 32-28 = 4

2^4 – 2 = 16 -2

= 14 computers

21.20: Does IPv6 use broadcast addresses? Explain

ANS: In IPv6, broadcast addresses are not supported, hence multicast addresses are used instead. There are 16 different types of address scopes supported by multicast addresses, including node, link, site, organization, and global scope.

23.21: What is the chief purpose of NAT?

ANS: It's a technique for masking a private IP network behind a public IP address in IPv4 networks.

23.22: Many NAT devices choose the 10.0.0.0/8 address block from Figure 23.11 because it provides the most generality. Explain why.

ANS: The Class A private address block, 10.0.0.0/8, provides the most addresses for devices.

23.23: In Figure 23.12, the ISP has assigned one IP address to the site. Which is the assigned address?

ANS: The IP address allocated to site is 198.133.219.25, to which the host is sending a page request.

23.24: Expand Figure 23.14 to show the mappings that will be used if a third application also attempts to reach the same web server.

ANS: 192.168.0.3: 30000 -> 128.10.24.6: 40003 (out)

128.10.24.6: 40003 -> 192.168.0.3: 30000 (in)

23.25: Create a NAPT translation table for a case where three computers at a site have TCP connections to three separate web servers in the Internet.

ANS: Sample IP addresses will be used

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Destination Address | Port | Public Address | Port | Private Address | Port |
| 99.12.18.6 | 21 | 220.16.16.5 | 400 | 192.168.50.6 | 8931 |
| 98.10.10.5 | 80 | 220.16.16.5 | 3300 | 192.168.50.6 | 22986 |
| 98.10.10.5 | 80 | 220.16.16.5 | 3000 | 192.168.50.50 | 12002 |

23.29: Modify Figure 23.12 and the table in Figure 23.14 to use an IPv6 address example.

ANS:

32.7: List the characteristics of IEEE’s 802.15.4 wireless standard.

ANS:

-Data rates of 250 kbps, 40 kbps, and 20 kbps.

-Two addressing modes; 16-bit short and 64-bit IEEE addressing.

-Support for critical latency devices, such as joysticks.

-CSMA-CA channel access.

-Automatic network establishment by the coordinator.

-Fully handshaked protocol for transfer reliability.

32.8: If a wireless node receives a stronger signal from Router 1 than Router 2, should the

node use Router 1 as its path to the Internet? Explain.

ANS: If a wireless node receives a strong signal from router one, the router to the node should utilize router one as its Internet connection since mesh routing will select the optimum way. The optimum path in mesh routing is determined by the link quality as well as the number of hops.