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**CS 4480 - Homework Assignment 6**

**P17**

1. Following are the network addresses for the subnets with hosts (supporing at least 250 clients for A, 120 clients for B, and 120 clients for C):  
     
    A: 214.97.254.0/24   
    B: 214.97.255.0/25  
    C: 214.97.255.128/25  
     
   And following are the network addresses for the subnets between routers (supporting a minimum of two interfaces):  
     
    D: 214.97.255.248/29  
    E: 214.97.255.252/30  
    F: 214.97.255.254/31
2. Following are the forwarding tables (using longest prefix matching) for each of the three routers:

|  |  |
| --- | --- |
| R1 Forwarding Table | |
| Prefix Match | Link Interface |
| 11010110 01100001 11111110 | A |
| 11010110 01100001 11111111 11111 | D |
| 11010110 01100001 11111111 1111111 | F |

|  |  |
| --- | --- |
| R2 Forwarding Table | |
| Prefix Match | Link Interface |
| 11010110 01100001 11111111 1 | C |
| 11010110 01100001 11111111 111111 | E |
| 11010110 01100001 11111111 1111111 | F |

|  |  |
| --- | --- |
| R3 Forwarding Table | |
| Prefix Match | Link Interface |
| 11010110 01100001 11111111 0 | B |
| 11010110 01100001 11111111 11111 | D |
| 11010110 01100001 11111111 111111 | E |

**P21**

1. The addresses for the three host interfaces will become...  
     
    192.168.1.1  
    192.168.1.2  
    192.168.1.3  
     
   ...and the address for the LAN interface of the router will become:  
     
    192.168.1.4
2. Here's one possibility for the NAT table:

|  |  |
| --- | --- |
| WAN side | LAN side |
| 24.34.112.235, 5001 | 192.168.1.1, 3345 |
| 24.34.112.235, 5002 | 192.168.1.1, 3346 |
| 24.34.112.235, 5003 | 192.168.1.2, 3345 |
| 24.34.112.235, 5004 | 192.168.1.2, 3346 |
| 24.34.112.235, 5005 | 192.168.1.3, 3345 |
| 24.34.112.235, 5006 | 192.168.1.3, 3346 |

**P26**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **step** | **N'** | **D(v),p(v)** | **D(w),p(w)** | **D(y),p(y)** | **D(z),p(z)** | **D(u),p(u)** | **D(t),p(t)** |
| 0 | x | 3,x | 6,x | 6,x | 8,x | ∞ | ∞ |
| 1 | xv |  | 6,x | 6,x | 8,x | 6,v | 7,v |
| 2 | xvw | 3,x |  | 6,x | 8,x | 6,v | 7,v |
| 3 | xvwy | 3,x | 6,x |  | 8,x | 6,v | 7,v |
| 4 | xvwyu | 3,x | 6,x | 6,x | 8,x |  | 7,v |
| 5 | xvwyut | 3,x | 6,x | 6,x | 8,x | 6,v |  |
| 6 | xvwyutz | 3,x | 6,x | 6,x |  | 6,v | 7,v |

**P28**

Following is the distance table for node z at each iteration of the distance-vector algorithm that affects node z:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **node z table (iteration 0)** | | | | | | |
| **from** |  | cost to | | | | |
|  | u | v | x | y | z |
| u | ∞ | ∞ | ∞ | ∞ | ∞ |
| v | ∞ | ∞ | ∞ | ∞ | ∞ |
| x | ∞ | ∞ | ∞ | ∞ | ∞ |
| y | ∞ | ∞ | ∞ | ∞ | ∞ |
| z | ∞ | 6 | 2 | ∞ | 0 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **node z table (iteration 1)** | | | | | | |
| **from** |  | cost to | | | | |
|  | u | v | x | y | z |
| u | ∞ | ∞ | ∞ | ∞ | ∞ |
| v | 1 | 0 | 3 | ∞ | 6 |
| x | ∞ | 3 | 0 | 3 | 2 |
| y | ∞ | ∞ | ∞ | ∞ | ∞ |
| z | ∞ | 6 | 2 | ∞ | 0 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **node z table (iteration 2)** | | | | | | |
| **from** |  | cost to | | | | |
|  | u | v | x | y | z |
| u | ∞ | ∞ | ∞ | ∞ | ∞ |
| v | 1 | 0 | 3 | 3 | 5 |
| x | 4 | 3 | 0 | 3 | 2 |
| y | ∞ | ∞ | ∞ | ∞ | ∞ |
| z | 6 | 5 | 2 | 5 | 0 |

**P37**

OSPF, RIP, eBGP, iBGP

**P38**

forwarding tables

**P40**

network topology

**P42**

peering and routes