**Lucrare de laborator nr.4**

**Nume:** Moscalu Daniel Vladimir

**Varianta:** k=15

1. **Elaborati o schema de subnetare:**

**Sw1 = 26 – k => 11**

**Sw2 = 32 – k => 17**

**Sw3 = 36 – k => 21**

**Sw4 = 41 – k => 26**

**Tabelul de subretele pentru reteaua 192.168.20.0/24**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Subretele**  **configurate** | **Nr de host-uri** | **Adresa rețelei/CIDR** | **Prima adresă utilizabilă** | **Ultima adresă utilizabilă** | **Adresa de broadcast** |
| Router2-Sw4 | 26 | 255.255.255.224/27 | 192.168.20.1 | 192.168.20.30 | 192.168.20.31 |
| Router2-Sw3 | 21 | 255.255.255.224/27 | 192.168.20.33 | 192.168.20.62 | 192.168.20.63 |
| Router1-Sw2 | 17 | 255.255.255.224/27 | 192.168.20.65 | 192.168.20.94 | 192.168.20.95 |
| Router1-Sw1 | 11 | 255.255.255.240/28 | 192.168.20.97 | 192.168.20.110 | 192.168.20.111 |
| Router2-Router1 | 2 | 255.255.255.252/30 | 192.168.20.113 | 192.168.20.114 | 192.168.20.115 |

**Tabelul de subretele pentru reteaua 172.16.19.0/20**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Subretele**  **configurate** | **Nr de host-uri** | **Adresa rețelei/CIDR** | **Prima adresă utilizabilă** | **Ultima adresă utilizabilă** | **Adresa de broadcast** |
| Router2-Sw4 | 26 | 255.255.255.224/27 | 172.16.19.1 | 172.16.19.30 | 172.16.19.31 |
| Router2-Sw3 | 21 | 255.255.255.224/27 | 172.16.19.33 | 172.16.19.62 | 172.16.19.63 |
| Router1-Sw2 | 17 | 255.255.255.224/27 | 172.16.19.65 | 172.16.19.94 | 172.16.19.95 |
| Router1-Sw1 | 11 | 255.255.255.240/28 | 172.16.19.97 | 172.16.19.110 | 172.16.19.111 |
| Router2-Router1 | 2 | 255.255.255.252/30 | 172.16.19.113 | 172.16.19.114 | 172.16.19.115 |

**Tabelul de subretele pentru reteaua 10.10.31.0/18**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Subretele**  **configurate** | **Nr de host-uri** | **Adresa rețelei/CIDR** | **Prima adresă utilizabilă** | **Ultima adresă utilizabilă** | **Adresa de broadcast** |
| Router2-Sw4 | 26 | 255.255.255.224/27 | 10.10.31.1 | 10.10.31.30 | 10.10.31.31 |
| Router2-Sw3 | 21 | 255.255.255.224/27 | 10.10.31.33 | 10.10.31.62 | 10.10.31.63 |
| Router1-Sw2 | 17 | 255.255.255.224/27 | 10.10.31.65 | 10.10.31.94 | 10.10.31.95 |
| Router1-Sw1 | 11 | 255.255.255.240/28 | 10.10.31.97 | 10.10.31.110 | 10.10.31.111 |
| Router2-Router1 | 2 | 255.255.255.252/30 | 10.10.31.113 | 10.10.31.114 | 10.10.31.115 |

* Router2 configuration:

int gig0/2

ip address

ip address 192.168.20.1 255.255.255.224

no shutdown

int gig0/1

ip add

ip address 192.168.20.33 255.255.255.224

no shutdown

int gig0/0

ip add

ip address 192.168.20.113 255.255.255.252

no shutdown

ip route 0.0.0.0 0.0.0.0 gig0/0

end

* Router1 configuration:

int gig0/2

ip address

ip address 192.168.20.65 255.255.255.224

no shutdown

int gig0/1

ip add

ip address 192.168.20.97 255.255.255.240

no shutdown

int gig0/0

ip add

ip address 192.168.20.114 255.255.255.252

no shutdown

ip route 0.0.0.0 0.0.0.0 gig0/0

end

* PC configuration:

Am setat ultimile adrese de host utilizabile pentru fiecare PC in dependenta de subreteaua unde se afla.

1. **Atribuiti dispozitivelor de retea IP adresele stabilite la punctul a):**

• Router2 configuration:

en

conf ter

int gig0/2

ip address 192.168.20.1 255.255.255.224

no shutdown

int gig0/1

ip address 192.168.20.33 255.255.255.224

no shutdown

int gig0/0

ip address 192.168.20.113 255.255.255.252

no shutdown

ip route 0.0.0.0 0.0.0.0 gig0/0

end

• Router1 configuration:

en

conf ter

int gig0/2

ip address 192.168.20.65 255.255.255.224

no shutdown

int gig0/1

ip address 192.168.20.97 255.255.255.240

no shutdown

int gig0/0

ip address 192.168.20.114 255.255.255.252

no shutdown

ip route 0.0.0.0 0.0.0.0 gig0/0

end

• PC’s configuration:

4gateway: 192.168.20.1

4ipv4: 192.168.20.30

4mask: 255.255.255.224

3gateway: 192.168.20.33

3ipv4: 192.168.20.62

3mask: 255.255.255.224

2gateway: 192.168.20.65

2ipv4: 192.168.20.94

2mask: 255.255.255.224

1gateway: 192.168.20.97

1ipv4: 192.168.20.110

1mask: 255.255.255.240

1. **Elaborati o schema de subnetare cu urmatorul numar de host:**

**Sw1 = 24 – k => 9**

**Sw2 = 33 – k => 18**

**Sw3 = 48 – k => 33**

**Sw4 = 78 – k => 63**

**Tabelul de subretele pentru reteaua 192.168.20.0/24**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Subretele**  **configurate** | **Nr de host-uri** | **Adresa rețelei/CIDR** | **Prima adresă utilizabilă** | **Ultima adresă utilizabilă** | **Adresa de broadcast** |
| Router2-Sw4 | 63 | 255.255.255.128/25 | 192.168.20.1 | 192.168.20.126 | 192.168.20.127 |
| Router2-Sw3 | 33 | 255.255.255.192/26 | 192.168.20.129 | 192.168.20.190 | 192.168.20.191 |
| Router1-Sw2 | 18 | 255.255.255.224/27 | 192.168.20.193 | 192.168.20.222 | 192.168.20.223 |
| Router1-Sw1 | 9 | 255.255.255.240/28 | 192.168.20.225 | 192.168.20.238 | 192.168.20.239 |
| Router2-Router1 | 2 | 255.255.255.252/30 | 192.168.20.241 | 192.168.20.242 | 192.168.20.243 |

**Tabelul de subretele pentru reteaua 172.16.19.0/20**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Subretele**  **configurate** | **Nr de host-uri** | **Adresa rețelei/CIDR** | **Prima adresă utilizabilă** | **Ultima adresă utilizabilă** | **Adresa de broadcast** |
| Router2-Sw4 | 63 | 255.255.255.128/25 | 172.16.19.1 | 172.16.19.126 | 172.16.19.127 |
| Router2-Sw3 | 33 | 255.255.255.192/26 | 172.16.19.129 | 172.16.19.190 | 172.16.19.191 |
| Router1-Sw2 | 18 | 255.255.255.224/27 | 172.16.19.193 | 172.16.19.222 | 172.16.19.223 |
| Router1-Sw1 | 9 | 255.255.255.240/28 | 172.16.19.225 | 172.16.19.238 | 172.16.19.239 |
| Router2-Router1 | 2 | 255.255.255.252/30 | 172.16.19.241 | 172.16.19.242 | 172.16.19.243 |

**Tabelul de subretele pentru reteaua 10.10.31.0/18**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Subretele**  **configurate** | **Nr de host-uri** | **Adresa rețelei/CIDR** | **Prima adresă utilizabilă** | **Ultima adresă utilizabilă** | **Adresa de broadcast** |
| Router2-Sw4 | 63 | 255.255.255.128/25 | 10.10.31.1 | 10.10.31.126 | 10.10.31.127 |
| Router2-Sw3 | 33 | 255.255.255.192/26 | 10.10.31.129 | 10.10.31.190 | 10.10.31.191 |
| Router1-Sw2 | 18 | 255.255.255.224/27 | 10.10.31.193 | 10.10.31.222 | 10.10.31.223 |
| Router1-Sw1 | 19 | 255.255.255.240/28 | 10.10.31.225 | 10.10.31.238 | 10.10.31.239 |
| Router2-Router1 | 2 | 255.255.255.252/30 | 10.10.31.241 | 10.10.31.242 | 10.10.31.243 |

1. **Atribuiti dispozitivelor de retea IP adresele stabilite la punctul c):**

Au fost efectuati aceeasi pasi ca si in punctul **b)** doar utilizand datele din punctul **c)**

1. **Atât pentru schema de subnetare de la punctul a), cât și în cea de la punctul c) precizați valorile ce caracterizează spațiul de adrese nealocat (rezervă):**

**✓ IP adresele care nu au fost atribuite.**

**✓ raportul (în procente) dintre numărul de IP adrese care nu au fost atribuite dispozitivelor din rețea la numărul total de adrese disponibile inițial.**