**Rezolvare de Probeleme**

**Fie este definita tipologia unei retele de calculatoare**



**Sa se:**

1. **Calculeze MASCA pentru fiecare subretea;**
2. **Sa se repartizeze spatiul de adrese IP pentru fiecare subretea mentionindu-se destinatia acesteia;**
3. **Sa se elaboreze Tabela de rutare pentru fiecare Router in parte;**
4. **Sa se demonstreze functionalitatea configuratiilor egectuate.**

**Formula de calcul:**

**N=]log2(max{m1, m2, m3, ..mn}+2)[,**

**Unde: m1,m2 … - numarul de Host-uri in fiecare subretea;**

**Max – valoarea maximala din sirul de numere;**

**Log2 – logarifm in baza 2;**

**]…[ - rotungire pina la numarul intreg mai mare.**

**In baza topologiei se formuleaza egalitatea:**

**N=]log2(max{11, 9, 8, 14}+2)[ = ]log2(16)[ = 4.**

**N=4 – indica numarul de zerouri in masca subretelei si 2\*\*4 – indica numarul maximal de adrese in subretea.**

**Masca tuturor subretelelor este:**

**11111111.11111111.11111111.11110000 – in cod binar**

**255.255.255.240 in cod zecimal.**

**Modul de calcul:**

**255.255.255.255-**

**000.000.000.15**

**----------------------------**

**255.255.255.240.**

**Pentru calcul se ea Adresa care este definita in intervalul de 16 adrese. 0.1.2.3.4.5.6.7.8.9.10.11.12.13.14.15 = 16 adrese.**

**Masca = 255.255.255.240 = 198.202.110.0/28 ->**

**32 - 4 = 28 – masca.**

|  |  |  |  |
| --- | --- | --- | --- |
| **SN** | **IP SN** | **SN Masc** | **Destinatie** |
| LAN1 | 198.202.110.0198.202.110.1…..198.202.110.15 | 255.255.255.240 | SN IP AddressBroadcast IP Address |
| LAN2 | 198.202.110.16198.202.110.17…..198.202.110.31 | 255.255.255.240 | SN IP AddressBroadcast IP Address |
| LAN3 | 198.202.110.32198.202.110.33…..198.202.110.47 | 255.255.255.240 | SN IP AddressBroadcast IP Address |
| LAN4 | 198.202.110.48198.202.110.49…..198.202.110.63 | 255.255.255.240 | SN IP AddressBroadcast IP Address |

**Marcarea porturilor pentru Routere**



|  |  |  |  |
| --- | --- | --- | --- |
| **Router** | **IP SN** | **SN Masca** | **Ethernet port** |
| R1 | 198.202.110.0198.202.110.16198.202.110.32198.202.110.48\*.\*.\*.\* | 255.255.255.240255.255.255.240255.255.255.240255.255.255.2400.0.0.0 | Eth1Eth1Eth1Eth1Eth0 |
| R2 | 198.202.110.0198.202.110.16198.202.110.32198.202.110.48\*.\*.\*.\* | 255.255.255.240255.255.255.240255.255.255.240255.255.255.2400.0.0.0 | Eth0Eth1Eth1Eth1Eth0 |
| R3 | 198.202.110.0198.202.110.16198.202.110.32198.202.110.48\*.\*.\*.\* | 255.255.255.240255.255.255.240255.255.255.240255.255.255.2400.0.0.0 | Eth0Eth1Eth1Eth1Eth0 |
| R4 | 198.202.110.0198.202.110.16198.202.110.32198.202.110.48\*.\*.\*.\* | 255.255.255.240255.255.255.240255.255.255.240255.255.255.2400.0.0.0 | Eth0Eth0Eth2Eth1Eth1 |
| R5 | 198.202.110.0198.202.110.16198.202.110.32198.202.110.48\*.\*.\*.\* | 255.255.255.240255.255.255.240255.255.255.240255.255.255.2400.0.0.0 | Eth0Eth0Eth0Eth0Eth1 |

**Marcarea adreselor IP pentru fiecare port si SN**



**Exemplu de parcugere a traseului din IP:198.202.110.7 -> IP:198.202.110.37**



**Calculam adresa IP a SN pentru IP:198.202.110.7 si IP:198.202.110.37:**

198.202.110.7 **AND 198.202.110.37 AND**

255.255.255.240 **255.255.255.240**

198.202.110.0  **198.202.110.32**

**Traseul de transfer a pachetelor:**

198.202.110.7/28 -> 198.202.110.2/28 ->198.202.110.17/28 -> **198.202.110.16/28**

**->** 198.202.110.19/28 -> 198.202.110.33/28 -> **198.202.110.37/28**