

LOCAL AREA NETWORK (LAN)

! DE jos în sus,

METROPOLITAN A.N. (MAN)

DE LA ST. LA DR

WIDE A.N. (WAN)

WIRELESS WAN (WWAN)

IP = INTERNET PROTOCOL | IP 04 : 192.168.10.10/24

| IP 06 : 2001:DB8:ACAD:99::1/64

NORME / STANDARDE : T568A

T568B (COASUL CULORII)

• DACĂ LA CAPETE AVEM ALB PORTOCALIU

ALB VERDE

NORME ΔΙΤ. ⇒ CROSSOVER. PORTOCALIU

VERDE

• DACĂ LA CAPETE AVEM ALB VERDE

ALB PORTOCALIU

ACELASI NORME ⇒ STRAIGHT-TRUE. ALBASTRU

ALBASTRU

FIRE TORSADATE
||

ALB ALBASTRU

ALB ALBASTRU

ÎNCRUCISATE
||

VERDE

PORTOCALIU

ALB MARO

ALB MARO

MARO

MARO

PROTOCOALE: IANA = INTERNET ASSIGNED NUMBERS AUTHORITY

URL = UNIFORM RESOURCE LOCATOR

DNS = DOMAIN NAME SYSTEM ⇒ TRANSLATEAZĂ TEXTUL ÎN IP

PDU = PROTOCOL DATA UNIT ⇒ UNITATEA DE COMUNICARE ÎNTR-

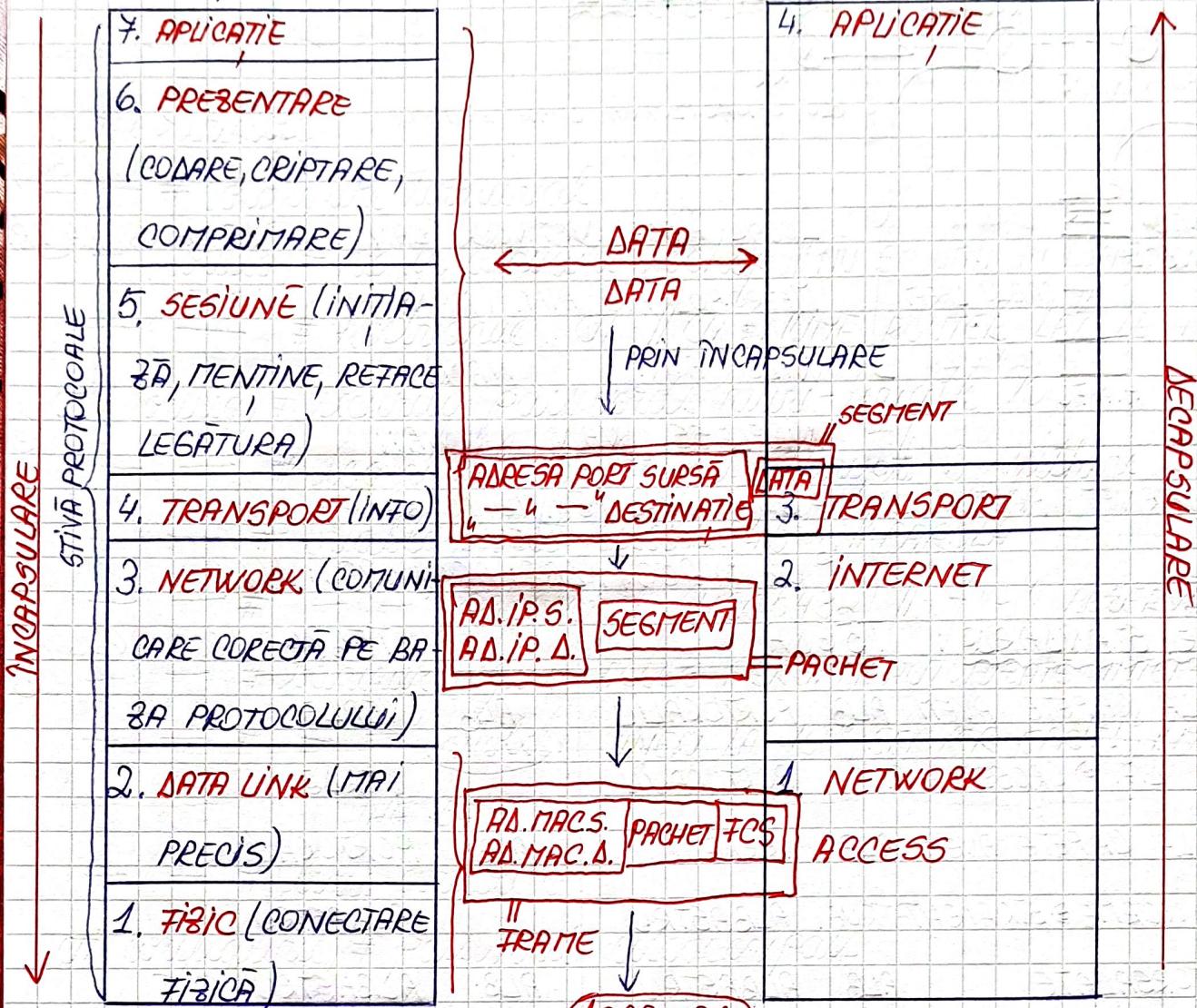
RETELE

ARP = ADDRESS RESOLUTION PROTOCOL ⇒ CÂND Încep să legă ECHIPAMENTE

D. GW = DEFAULT GATEWAY = POARTĂ ÎNTRARE / IESIRE IMPLICITĂ

OPEN SYSTEM INTERCONNECTION

TRANSMISSION CONTROL PROTOCOL



SURSA = SENDER = INITIATOR

COMUNICAREA

DESTINATIE = RECEIVER

PLACA DE RETEA
FACE CONVERSIA

• FCS = FRAME CHECK SUM

MEDIU COMUNICATIE

COAXIAL

UTP

FIBRA OPTICA

ETER

MÉTHODE COM. :

ELECTRIC

SEMNAL LUMINOS

UNAC

NIVEL 4: ADRESARE NUMERICĂ:

- 0 - 1023 → PORTURI BINECUNOSCUTE
- 1024 - 49151 → -> INREGISTRATE (GRAD MIN. SECURITATE)
- 49152 - 65535 → PT. TESTE

NIVEL 3: ADRESARE LOGICĂ: (SE SCHIMBĂ IP)

CLASE: A. 0 - 127/8

0.0.0.0 - 127.255.255.255 / 255.0.0.0

B. 128 - 191/16

C. 192 - 223/24 (PT. PUBLIC)

D. 224 - 239/ N.A. (PT. TESTE) → NEALOCAT

E. 240 - 255/ N.A. (PT. EXPERIMENTE)

PARE ⇒ ADR. DE REȚEA IMPARE ⇒ ADR. BROADCAST

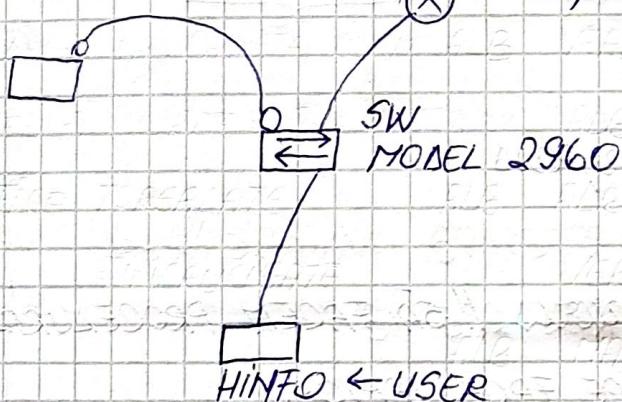
NU POT FI ATRIBUITE ECHIPAMENTELOR

NIVEL 2: ADRESARE FIZICĂ: (ADR. MAC RĂMÂNE PE PLACA DE REȚEA)

48 BITI

MAC = MEDIA/MEDIUM ACCESS CONTROL

R(2911)



P1: DAU NUME UNIC

P2: SCHIMB PLACĂ REȚEA

P3: ASIGUREZ IP

P4: CONFIGUREZ MAIL

1 min

26.02.2020

=Lab 2=

PLACĂ REȚEA: GBE = CISCO GB ETHERNET

DNS = MAIL INPUT/OUTPUT

@INFO.RO → 123456

LAPTOP SERVICE: RS232 ; PE SWITCH: CONSOLE

ROUTER

ROUTER> enable

"-# configure terminal

"-# interface gigabitethernet 0/0

R... (config-if)# ip address

— 4 — # no shutdown

AICI SET. GW.

SINTAXA GENERALĂ

NU

ROUTER>enable

"# configure terminal

"(config)# no ip domain lookup // NU SE UȚĂ ÎN DOMENIU

"# hostnames CTI // CTI = NUME ROUTER SAT DE NOI

⑩ CTI(config)# security passwords min-length 10

"# login block-for 30 attempts 3 within 20 // NO

"# enable secret cisco12345 // PAROLA

"# password cisco54321 // REZERVĂ

⑧ "# banner login "ACCES PERS. NEAUTORIZATE INTERZIS!"

"# suold "VINERI LA 16⁰⁰, SERVER OFF! // MESS. OF

THE DAY

"# line console 0

CTI(config-line)# password ciscocorpss

"# login

"# logging synchronous // SĂ FACEM PROCEDURILE CONCOMITENT CU CE FACE LAPTOPUL

"# exec-timeout 15 10 // DUPĂ 15 MIN, 10 SEC, DACĂ STAI DEGEABA, TE ÎNTOARCE LA PASS..

"# exit

CTI(config)# line vty 0 15 // CONFIG. LA DISTANȚĂ

CTI(config-line)# password ciscovtypass

"# login

"# logging // LOGGING

"# synchronous

"# exec-timeout 10 15

SAVE
⑩ CTI# copy running-config startup-config // RAM

CTI# clock set 11:29:00 26 FEB 2020 // h:mm:ss

"# configure terminal // CONFIG GLOBAL

```

config# ip domain-name info.ro
    # user name admin privilege 15 secret password
        # line vty 0 15
config# transport input ssh
    # login local
    # exit
config# crypto key generate rsa // CHEIA DE CRIPTARE PE
    : 2048 // BITI

```

MOD GLOBAL # interface gigabitethernet 0/0

(config)# description "Legătură LAN Gigel"

R CONFIGURE TERMINAL # ip address 192.168.100.1 255.255.255.0

red shutdown // REȚIVARE

switch (config)# interface vlan 1

* RETOLUȘE SOLO FIRUL CONSOLA

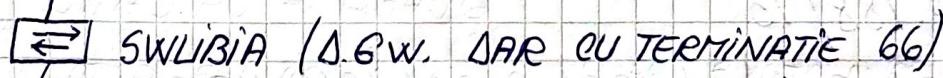
* IN SERVER \Rightarrow SERVICES \Rightarrow NAME: info.ro
ADRESĂ: CEA DNS

= Laborator 4 =

11.03.2020

"SOUP SSH" = DE A PUTEA CONFIURA DE LA DISTANȚĂ.

○ RUBIA (291)

 SWLIBIA (1.6w. SAR OU TERMINATIE 66)

LUBIA

193.250.110.70

255.255.255.224

D.GW: 193.250.110.65 \rightarrow ROUTER 6. 0/0

el ruai ruic din
range pt. ROUTER

DNS: 209.165.201.190 = MAIL INPUT / OUTPUT

CALCUL I.P.:

• PAS 1: 192.204.63.106 / 13 = ip. OARE CARE
 masca de retea (delimitatoare adresa de la adresa de retea)

$$2^7 = 128 \quad 2^6 = 64 \quad 2^5 = 32 \quad 2^4 = 16 \quad 2^3 = 8 \quad 2^2 = 4 \quad 2^1 = 2 \quad 2^0 = 1$$

$$\begin{array}{cccccccccc} 1 & + & 1 & + & 0 & + & 0 & + & 0 & + & 0 & + & 0 = 192 \\ 1 & + & 1 & + & 0 & + & 0 & + & 1 & + & 1 & + & 0 + 0 = 204 \end{array}$$

1100.0000 / 1100.1 100 / 0011.1111 / 0110.1010
192 204 63 106

1111.1111 / 1111.1 000 / 0000.0000 / 0000.0000
13 de "1" = 13 (MASCA RETEA)

1100.0000 / 1100.1 000 / 0000.0000 / 0000.0000
192 200 0 0

$$\boxed{1+1=1}$$

$$\boxed{1+0=0+1=0+0=0}$$

(NETWORK ADDRESS) N.A.: 192.200.0.0 / 13 (NEASIGNABIL)

(BROADCAST, -"") B.A.: 192.207.255.255 / 13 (, -"")

1100.0000 / 1100.1 111 / 1111.1111 / 1111.1111
COPIEZ PRIMII 13 207 255 255

B.A.: PT. ECHIPAMENTE INTERMEDIARE (IMPRIMANTE...)

(RANGE ADDRESS) R.A.: 192.200.0.1 - 192.207.255.254 / 13
N.A. + 1 B.A. - 1

Ex: 1) 197.211.149.188 / 15

1100.0101 / 1101.001 1 / 1001.0101 / 1011.1100

1111.1111 / 1111.111 0 / 0000.0000 / 0000.0000

N.A.: 197.210.0.0 / 15

B.A.: 197.211.255.255 / 15

R.A.: 197.210.0.1 - 197.211.255.254 / 15

2) 194.228.179.203 /27

1100.0010/1110.0100/1011.0011/110/0.1011

1111.1111/1111.1111/1111.1111/111/0.0000

1100.0010/1110.0100/1011.0011/1100.0000

N.A. : 194.228.179.192 /27 → NR. PAR MEREU

B.A. : 194.228.179.223 /27 → NR. IMPAR, -4^{-4}

R.A. : $-4^{-4} \cdot 193 - , -4^{-4} \cdot 222 / 27$

3) Ce tip de i.p. ESTE 169.255.214.79/28?

1010.1001/1111.1111/1101.0110/0100/1111

1111.1111/1111.1111/1111.1111/1111.0000

1010.1001/1111.1111/1101.0110/0100.0000

N.A. : 169.255.214.64 /28

B.A. : $-4^{-4} \cdot 79 / 28$

R.A. : $-4^{-4} \cdot 65 - , -4^{-4} \cdot 78 / 28$

R: Valoarea e de tip broadcast address.

18.03.2020

Laboratorul 5

• PAS 1: 172.159.224.100 /15 32 biti totali

1010.1100/1001.1111/1110.0000/0110.0100 = $4^4 \times 4^4$

1111.1111/1111.1111/0000.0000/0000.0000

N.A.: 172.158.0.0 /15

B.A.: 172.158.255.255 /15

R.A.: 172.158.0.1 - 172.159.255.254 /15

• PAS 2: (ARANJEZ \downarrow)

$$2^n - 2 \geq \underline{\quad}$$

$$2^{12} < 4095 < 2^{13}$$

$$\underbrace{2^1}_{\text{TB, PUSE DE NOI LEGATURILE}} < 2 < 2^2$$

$$2^{11} < 2047 < 2^{12}$$

TB, PUSE DE NOI LEGATURILE

$$2^9 < 1022 < 2^{10}$$

$$2^9 < 511 < 2^{10}$$

$$\text{• PRS } 3_1: \times 4095/2^{13} \Rightarrow 32(\text{biti}) - 13 = 19 (\text{NOUA MASCA})$$

LUCRĂM PE "X", DAR CU MASCA 19

N.A.: 172.158.0.0 /19

B.A.: 172.158. 31.255 /19

R.A.: 172.158.0.1 - 172.158.31.254 /19

$$\times 2047/2^{12} \Rightarrow 32 - 12 = 20$$

N.A.: 172.158. 32.0 /20

B.A.: 172.158. 47. 255 /20 + ① (NU AU VOIE REPETITIE)

R.A.: 172.158. 32.1 - 172.158. 47. 254 /20

$$\times 1022/2^9 \Rightarrow 32 - 10 = 22$$

N.A.: 172.158. 48.0 /22

B.A.: 172.158. 51. 255 /22

$$\times 511/2^9 \Rightarrow 32 - 10 = 22$$

N.A.: 172.158. 52.0 /22

B.A.: 172.158. 55. 255 /22

$$\times 255/2^9 \Rightarrow 32 - 9 = 23$$

N.A.: 172.158. 56.0 /23

B.A.: 172.158. 57. 255 /23

$$\times 254/2^8 \Rightarrow 32 - 8 = 24$$

N.A.: 172.158. 58.0 /24

B.A.: 172.158. 58. 255 /24

= Calcul IP-uri =

- PAS 1: 146.227.144.225/15

1001.0010/1110.0011/1001.0000/1110.0001 → 32 cifre
 1111.1111/1111.1111/0000.0000/0000.0000

N.A.: 146.226.0.0/15

R.A.: 146.226.0.1 - 146.227.255.254/15

- B.A.: 146.227.255.254/15

- PAS 2: 15; 4095; 2047 (Ordonăriu ↓)

$$2^{12} < 4095 < 2^{13}$$

$$2^6 < 2047 < 2^7$$

$$2^4 < 15 < 2^5$$

$$2^1 < 2 < 2^2$$

$$2^1 < 2 < 2^2$$

$$2^1 < 2 < 2^2$$

$$2^{n-1}-2 < X \leq 2^n-2$$

$$\text{NR. DE } "2" = \text{NR. DE } "NR" \text{ OPERATE}$$

$$= \text{NR RETELE}$$

- PAS 3:

$$* 4095 \Rightarrow 32 - 13 = 19$$

N.A.: 146.226.0.0/19 ("START")

B.A.: 146.226.31.255/19 → OBȚINEM DIN N.A.-UL LUI "4095"

146 | 226 | 0000 | 0.0000 | 0
 1 | 1 | 1 | 11 | $2^4 2^3 2^2 2^1 2^0$ | 0

→ 146 | 226 | $2^4 + 2^3 + \dots + 2^0 - 31$ | 255 (normal se calculează)

R.A.: ... /19

$$* 2047 \Rightarrow 32 - 12 = 20$$

+1 → N.A.: 146.226.32.0/20 (= B.A. "4095" + 1)

B.A.: 146.226.47.255/20 (dintr N.A. "2047")

146 | 226 | 0010 | 0000 | 0
 1 | 1 | 1 | 0000 | 0

→ 146 | 226 | $32 + 2^3 + 2^2 + 2^1 + 2^0 = 47$ | 256

$$* 15 \Rightarrow 32 - 5 = 27$$

+1 → N.A.: 146.226.48.0/27

B.A.: 146.226.48.31/27 (dintr N.A. "15")

146 | 226 | 48 | 0000 | 0.0000

$$* 2 \Rightarrow 32 - 2 = 30$$

$$\text{N.A.: } 146.226.48.32 / 30$$

$$\text{B.A.: } 146.226.48.35 / 30$$

$$146.226.48.0010.0000$$

$$* 2$$

$$\text{N.A.: } 146.226.48.36 / 30$$

$$\text{B.A.: } 146.226.48.39 / 30$$

$$* 2$$

$$\text{N.A.: } 146.226.48.40 / 30$$

$$\text{B.A.: } 146.226.48.43 / 30$$

Laboratorul 7

1.04.2020

$$126.157.122.144 / 14$$

$$\begin{array}{cccc} 0111.1110 & | & 1001.1101 & | 0111.1010 & | 1001.0000 \\ 1111.1111 & | & 1111.1100 & | 0000.0000 & | 0000.0000 \end{array}$$

$$\text{N.A.: } 126.156.0.0 / 14$$

$$\text{B.A.: } 126.159.255.255 / 14$$

$$\text{R.A.: } \underline{126.156.0.1} - \underline{126.159.255.254} / \underline{14}$$

SUBNET MASK: $\cancel{14}$ de "1" $\Rightarrow 1111.1111 / 1111.1100 / 010 =$
 $= 255.252.0.0$

A.Gw.: CEL MAI MIC IP DIN R.A. = $\underline{\underline{126.156.0.1}}$

folosin pt. ROUTER \Rightarrow pt. SWITCH = ROUTER + 1 = $\underline{\underline{126.156.0.2}}$

DNS: CEL MAI MARE IP DIN R.A. = $\underline{\underline{126.159.255.254}}$

MAIL INPUT/OUTPUT

$$\left\{ \begin{array}{l} 2^{12} \leq 4095 \leq 2^{13} \\ 2^{11} \leq 2047 \leq 2^{12} \end{array} \right.$$

$$2^6 \leq 63 \leq 2^7$$

$$2^5 \leq 31 \leq 2^6$$

\checkmark (4x) $2^1 \leq 2 \leq 2^2$ (de la route)

• 4095 \Rightarrow 32 - 13 = 19

N.A.: 126.156.0.0 /19

B.A.: 126.156.31.255 /19

• 2047 \Rightarrow 32 - 12 = 20

N.A.: 126.156.32.0 /20

B.A.: 126.156.47.255 /20

• 63 \Rightarrow 32 - 7 = 25

N.A.: 126.156.48.0 /25

B.A.: 126.156.48.127 /25

• 31 \Rightarrow 32 - 6 = 26

N.A.: 126.156.48.128 /26

B.A.: " " ". 191 /26

• 2 \Rightarrow 32 - 2 = 30

N.A.: 126.156.48.192 /30

B.A.: " " ". 195 /30

• 2

N.A.: " " ". 196 /30

B.A.: " " ". 199 /30

• 2

N.A.: " " ". 200 /30

B.A.: " " ". 203 /30

• 2

N.A.: " " ". 204 /30

B.A.: " " ". 207 /30

Ghid Couplit

PAS 1: IP-URI

* PAS 1: 172.159.224.100 / 15 → MASCA RETEA

SORIEM FIECARE GRUPARE ÎN BINAR, SUB FORMĂ DE 8 BITI.

1010.1100 / 1001.1111 / 1110.0000 / 0110.0100
1111.1111 / 1111.1110 / 0000.0000 / 0000.0000

"15" de "1" (= MASCA RETEA)

1010.1100 / 1001.1110 / 0100

→ N.A.: 172.158.0.0 / 15

B.A.: 172.159.255.255 / 15

(COPIERI PRIMII 15 BITI DIN N.A. = REZULTATUL și RESTUL BITI = 1)

R.A.: 172.158.0.1 - 172.159.255.254 / 15

* PAS 2: 511; 2047; 1023; 255; 127; 4095

! MAI SE ADADUȘĂ 2 IP-URI PT. FIECARE LEGĂTURĂ ÎNTRE 2 ROUTERE

și LEGĂTURĂ WI-FI-ROUTER.

$$2^{12} \leq 4095 \leq 2^{13}$$

$$2^9 \leq 2047 \leq 2^{10}$$

$$2^8 \leq 1023 \leq 2^9$$

$$2^7 \leq 511 \leq 2^8$$

$$2^6 \leq 255 \leq 2^7$$

$$2^5 \leq 127 \leq 2^6$$

$$2^4 \leq 63 \leq 2^5$$

$$2^3 \leq 31 \leq 2^4$$

$$2^2 \leq 15 \leq 2^3$$

$$2^1 \leq 7 \leq 2^2$$

LE ORDONAM DESCRESCĂTOR

$$2^{n-1} - 2 \leq x \leq 2^n - 2$$

[COPIERI]

* PAS 3: nume; surub 32 biti

$$- 4095 \leq 2^{13} \Rightarrow 32 - 13 = 19$$

→ N.A.: 172.158.0.0 / 19

B.A.: 172.158.31.255 / 19 (COPIERI PRIMII 19 BITI DIN SI RESTUL)

DELIMITAREA LA ST. PAS. DE RETEA; LA DR. RA. MÂN ANR. PT. IP-URI ASIGURABILE.

R.A.: 172.158.0.1 - 172.158.31.254 /19

$$- 2047 \leq 2^{12} \Rightarrow 32 - 12 = 20$$

N.R.: 172.158.32.0/20 (= B.R. DE LA ANTERIOR, 4095, + 1)

B.R.: 172.158.47.255/20

R.R.: 172.158.32.1 - 172.158.47.254/20

PAS 2: HOST, ROUTER, SWITCH, WI-FI, LAPTOP WiFi, SERVER

CERINTĂ: 167.237.215.164/13

BELGIA - HOSTURI = 4095

BELGIA WiFi: $\begin{cases} \text{NUME: BELGIAWIFI} \\ \text{WPA2 PERSONAL - PAROLĂ: RADIU$PA55} \end{cases}$

BULGARIA - HOSTURI = 2047

BOSNIA - " = 31

- 7ERNA SERVERE (DHCP, DNS, EMAIL, WEB)

IMPLEMENTEZ PAS 1.

167.237.215.164/13

1010.0111/1110.1101/1101.0111/1010.0100
1111.1111/1111.1000 0000.0000 0000.0000

N.R.: 167.232.0.0/13

B.R.: 167.239.255.255/13

$$2^0 \leq 4095 \leq 2^{13}$$

$$2^1 \leq 2047 \leq 2^{12}$$

$$2^5 \leq 31 \leq 2^6$$

$2^1 \leq 2 \leq 2^2$ (BELGIA ROUTER - B. WiFi)

$2^1 \leq 2 \leq 2^2$ (" - " - BULGARIA ROUTER)

$2^1 \leq 2 \leq 2^2$ (BULGARIA R. - BOSNIA R.)

$$- 4095 \leq 2^{13} \Rightarrow 32 - 13 = 19$$

N.A.: 167.232.0.0/19

B.A.: 167.232.31.255/19

$$- 2047 \leq 2^{12} \Rightarrow 32 - 12 = 20$$

N.A.: 167.232.32.0/20

B.A.: 167.232.47.255/20

$$- 31 \leq 2^6 \Rightarrow 32 - 6 = 26$$

N.A.: 167.232.48.0/26

B.A.: 167.232.48.63/26 $-1 = \text{DNS}^*$

$$- 2 \leq 2^2 \Rightarrow 32 - 2 = 30$$

(RBELGIA \rightarrow WiFiBELGIA)

N.A.: 167.232.48.64/30

B.A.: 167.232.48.67/30

$$- 2$$

(RBELGIA \rightarrow RBULGARIA)

N.A.: 167.232.48.68/30

B.A.: 167.232.48.71/30

$$- 2$$

(RBULGARIA \rightarrow RBOSNIA)

N.A.: 167.232.48.72/30

B.A.: — —. 75/30

! RETELELE VOR FI CONSTRUIE IN ORDINEA DIN CERINTA (jos \rightarrow sus)
ST. \rightarrow DR.

* PC = HOST :)

- END DEVICES \rightarrow PC
- NUME: HBELGIA
- CLICK PC \rightarrow OFF (BUTON ROSU) \rightarrow SCOATEM PLACA DE RETEA SI PUNEM PT-HOST-NM-LOGE \rightarrow ON
- DESKTOP \rightarrow IP CONFIGURATION:
 - IP ADDRESS: 167.232.0.15 (N.A. + 15; PT. CA PRIMELE 15 AR. SUNT PT. ROUTER SI SW.)
 - SUBNET MASK: 255.255.224.0 (19 "DE "1"; RESTUL "0")
 - DEFAULT GATEWAY: 167.232.0.1 (N.A. + 1 = PRIMUL IP DIN RA)

! MEREU ACE- \leftarrow - DNS* SERVER: 167.232.48.62 (B.A.-1 = ULTIMUL IP DIN R.A.)
LASI \hookrightarrow LUAN B.A.-1 AL ULTIMEI TARI; INAINTE DE 2; B.A.-1 CEL MAI MARE)

→ CONFIGURE MAIL:

- YOUR NAME: HBELGIA
- MAIL ADDRESS: "HBELGIA" @INFO.RO
- INCOMING/OUTGOING MAIL SERVER: 167.232.48.62 (=DNS)
- USER NAME: HBELGIA
- PASSWORD: 123456
- SAVE

* SWITCH:

- NETWORK DEVICES → SWITCHES → 2960; NUME: SWBELGIA
- LUAM DIN ENS DEVICES → LAPTOP, NUME: SERVICE. IL FOLOSINT SOAR PE ACESTA PT. CONFIGURARI. LUAM DIN CONNECTIONS (FULGERUL ALA) → AL 2- RS-232 LEA FIR (ALBASTRU DESCHIS, CURBAT). LEG FIRUL LA LAPTOP PRIN si LA SWITCH PRIN CONSOLE.

- LAPTOP → DESKTOP → TERMINAL → OK

Scribaxa SW: (NO)

S > ENABLE

S # CONFIGURE TERMINAL

S(config)# NO IP DOMAIN LOOKUP

"# Hostname SWBELGIA /RBELGIA

"# ENABLE SECRET cisco12345

"# password cisco54321

"# banner login "Vineri, la ora 14:00, serverul va intra

in menenanta.

"# line console 0

S(config-line)# password ciscoconsole

"# login

"# logging synchronous

"# exec-timeout 15 10

"# exit

ROUTER

SERVICE PASSWORD-ENCRYPTION

SECURITY PASSWORD
MIN-LENGTH 10

LOGIN BLOCK-FOR 30
ATTEMPTS 3 WITHIN 20

BANNER LOGIN "ACCES PERS. NEAUTORIZATE INTER

```
s(config)# line vty 0 15
      " - line) # PASSWORD cisco12345pass
      " -- " # LOGIN
      " -- " # LOGGING SYNCHRONOUS
      " -- " # EXEC-TIMEOUT 15 10
      " -- " # EXIT
s(config)# EXIT
S# COPY RUNNING-CONFIG STARTUP-CONFIG  $\Rightarrow$  SAVE
S# CLOCK SET 11:29:00 23 MAR 2020
S# CONFIGURE TERMINAL
s(config)# IP DOMAIN NAME INFO.RO
      " # USERNAME ADMIN PRIVILEGE 15 SECRET odruunypass
      " # LINE VTY 0 15
      " - line) # TRANSPORT INPUT SSH
      " -- " # LOGIN LOCAL
      " -- " # EXIT
s(config)# CRYPTO KEY GENERATE RSA
      " 2048 (BITS)
S# ...  $\Rightarrow$  SAVE
S# CONFIGURE TERMINAL
s(config)# INTERFACE VLAN 1
      " # DESCRIPTION "LEGATURA LAN N.A (4095)"
      " # IP ADDRESS 167.232.0.2 255.255.224.0
      "           " " " " " " " " " " " " "
      "           " " " " " " " " " " " " "
      " # NO SHUTDOWN
S# ...  $\Rightarrow$  SAVE
```

- LA FIRE \rightarrow AL 3-LEA (NEGRU) \rightarrow PC PRIN GBE.0 SI SW PRIN

GB.0/2

Tesătură Comunicație:

N.A. +2

- PC → COMMAND PROMPT: ping 167.232.0.2
ssh -l administrator -t → ADMINPASS1

* ROUTER:

- ROUTERS → 2911; NUME: RBELGIA SW → 0/1
R → 0/0
- LAPTOP SERVICE ⇒ CONSOLE IN ROUTER.
- " -t → TERMINAL → OK → NO → ENTER
- CLICK PE ROUTER → OFF → HWIC-2T (IL PUNEM IN SLOTUL CEL MAI DIN DR.) → ON

- LAPTOP → TERMINAL → OK: Scribaxo R = S. SW + ADĂUGIRI

R(config)# INTERFACE GIGABITETHERNET 0/0

DESCRIPTION "LEGATURA CU ..."

IP ADDRESS 167.232.0.1 255.255.254.0

NO SHUTDOWN N.A. (BELGIA)+1

(Acum facem legătura cu wi-fi)

R(config)# INTERFACE GIGA 0/1

DESCRIPTION "LEGATURA CU WIFI"

IP ADDRESS 167.232.48.65 255.255.255.252

" N.A. (PRIMUL 2)+1

NO SH

EXIT

(Legătura 2 Routere) ⇒ AICU BELGIA - BULGARIA

R(config)# INTERFACE SERIAL 0/0/0

DESCRIPTION "LEGATURA CU RBULGARIA"

IP ADDRESS 167.232.48.69 255.255.255.252

" N.A. (II-lea 2)+1

NO SH

EXIT | FIR → SERIAL ATE (ROȘU, FĂRĂ CEAS) → R1 IN SERIAL 0/0/0

• FIRE → AL 3-LEA (NEGRU) → SWBELGIA IN GBE 0/1; R IN G 0/0

BELGIA-BUL: 0/0/0
BUL-BEL: 0/0/0
BUL-BOSNIA: 0/0/1
BOS-BUL: 0/0/1
(BOS-IT: 0/0/0
IT-BOS: 0/0/0)

Router : (Pb. lucare)

RBELGIA (config) # INTERFACE GIGABITETHERNET 0/0
IP ADDRESS 167.232.0.1 255.255.224.0
" D.GW=N.A.(BELGIA)+1 " SUBNET MASK
IP HELPER-ADDRESS 167.232.48.62 = DNS
NO SH
EXIT
IP ROUTE 167.232.32.0 S.M. SERIAL 0/0/0
N.A. BULGARIA
„ — „ 167.232.48.0 „ — „
N.A. BOSNIA
„ — „ 167.232.48.72 „ — „
N.A. RBULGARIA-RBOSNIA

RBULGARIA # ...

IP ADDRESS 167.232.32.1 ...
...
NO SH
EXIT

IP ROUTE 167.232.48.64 S.M. SERIAL 0/0/0

N.A. RBELGIA - WIZIBEL

„ — „ 167.232.0.0 S.M. SERIAL 0/0/0
N.A. BELGIA

„ — „ 167.232.48.0 S.M. SERIAL 0/0/1
N.A. BOSNIA

IDEA BOSNIA → DAR TĂRĂ HELPER CĂ E SERVER

Si INTERFACE GIBA.. 0/1
IP ADDRESS....
NO SH.

... → ...

Switch : Pt. fixare

SWBELGIA(config)# IP DEFAULT-GATEWAY 167.232.0.1
D.GW=N.A(BELGIA)+1

XMAS TWEET: ~~Belgium=167.232.0.1~~

#INTERFACE RANGE 79 0/1-24

SHUTDOWN

IDEML BULGARIA, BOSNIA

• PC → COMMAND PROMPT:
ping 167.232.0.1 = N.A (BELGIA) + 1
ssh -l administrator -u -p ADMINPASS1

* Wi-Fi:

- NETWORK DEVICES → WIRELESS DEVICES → WRT300N; NUME: BELGIWI-FI
- CLICK → GUI → SETUP → INTERNET CONN. TYPE → STATIC IP:
 - IP ADDRESS: 167.232.48.66 = N.A. (PRIMUL 2) + 2
 - S.M.: 255.255.255.252
 - D.GW: 167.232.48.65 = ADR. ROUTER BEL = +1
 - DNS: 167.232.48.62

• SCROLL (ATENTIE SĂ NU SE MODIFICE VAL 1) → NETWORK SETUP → ROUTER
192.168.100.33 - IP ADDRESS: 192.168.15.65 (NE-A DAT-O PROFUL)
(SAU)

- S.M.: 255.255.255.224
- ... → DHCP SERVER SETT:
 - IP ADR. (START): 192.168.0.65
 - MAX NO USERS: 30

• SAVE

• WIRELESS:

- SSID: BELGIWI-FI
- NETWORK MODE: MIXED
- STANDARD CHANNEL: 6 (SAU 11)
- SAVE (SSID → ENABLEN)

• WIRELESS → MAC FILTER: ~~ENABLED~~ → ENABLED

→ PERMIT PCs → — → SAVE

• LAPTOP WiFi → DESKTOP → CMD PROMPT

→ ipconfig /all → WIRED
LESSO, PHYSICAL ADR

• WIRELESS → W. SECURITY → WPA2 - PERSONAL

AES
PASS: RADIUSPA55
SAVE

• FIRE → 4 (---) → WiFi IN INTERNET; ROUTER IN G0/1

* LAPTOP WiFi:

• LAPTOP; NUME: LAP1

• CLICK → OFF → WPC300N (NOUA PLACĂ) → ON

• DESKTOP → PC WIRELESS → PROFILES → NEW: BELGIWI-FI

... → PROFILES → ADVANCED SETUP → NUMELE, —u—, SA FIE →

NEXT → DHCP → NEXT → SECURITY: WPA2-PERSONAL → NEXT → PASS: RADIUS
55 → SAVE → CONNECT TO NETWORK

Test: IN LAP1 → COMMAND P → ping 167.232.48.65 (=IP ROUTER)
" - " — " . 0.1 (=, - u —)

* SERVER:

- END DEVICES → SERVER; NAME: BOSNIASERVER

- CLICK → PHYSICAL → OFF → PT-HOST-NET 100E → ON

- " - " → DESKTOP → IP CONFIGURATION: 167.232.48.62 / =DNS

- STATIC

- IP ADR: ... = DNS

Leg DE SW → 0/2

SERVER → 60/0

- S.M. NAME: BOSNIASERVER

- GW: 167.232.48.1

- DNS: 167.232.48.62

- ... → MAIL:

- NAME: BOSNIASERVER

- MAIL: " - " — " @INFO.RO

- INCOMING/OUT... = 167.232.48.62 (=DNS)

- USERNAME: BOSNIASERVER

- PASS: 123456

- SAVE

- ... → SERVICES → DNS:

- DNS SERVICE ON

- NAME: INFO.RO

- ADR: " - " — " =DNS

- → DHCP: (TOATE RETELE)

- INTERFACE ON

- POOL NAME: BELGIA / BULGARIA / BOSNIA

- A.GW: N.A. BELGIA + 1 / N.A. BUL + 1 / N.A. BOS + 1

- DNS: ...

- START IP ADDR: 1.6.15 - NR. USERS: 2047, 4095, 31

- S.M.: ...

~~254 - 15 = ?~~

→ HTTP : OFF; HTTPS: ON

X → FTP:

- USERNAME: BEL/BUL/BOS
- PASS: 123456

CISCO

CISCO

→ EMAIL:

- DOMAIN NAME: INFO.RO

- USER: BEL/BUL/BOSNIA (SERVER)
PC+LAPTOP

- PASS: 123456