Curs 2

2011/2012

Tehnologii Web

Recapitulare

Fotografii


FLORESCU DAN-CONSTAN
Date:
Grupa 5405 (2008)
Specializarea Tehnologii si sisteme
Marca 3275
Note obtinute
Disciplina Tip Data Descriere Nota Ob
DCMR Dispozitive si circuite de microunde pentru radiocomuni
Nota 19/06/2009 Nota finala 10
Exam 19/06/2009 Examen DCMR 9
Tema 05/06/2009 Proiect DCMR 10


FLORESCU DAN-CONSTA
Date:
Grupa 5405 (2008)
Specializarea Tehnologii si sister
Marca 3275
Detalii
Finantare Buget
Bursa Bursa de Studii
Domiciliu Iasi, judet Iasi
Promovare Promovare Integrala
Credite 60
Media 8.86

Curs 8-10

~~Curs 8-10~~

Curs 3

- urmeaza sa se stabileasca la orar
- **http://www.etti.tuiasi/orar/**
- Posibil
  - Luni, saptamana impara, 12-14, P6
  - Curs 3: Luni, 31.10.2011
  - certificare
    - **http://www.etti.tuiasi/orar/**
    - afisier

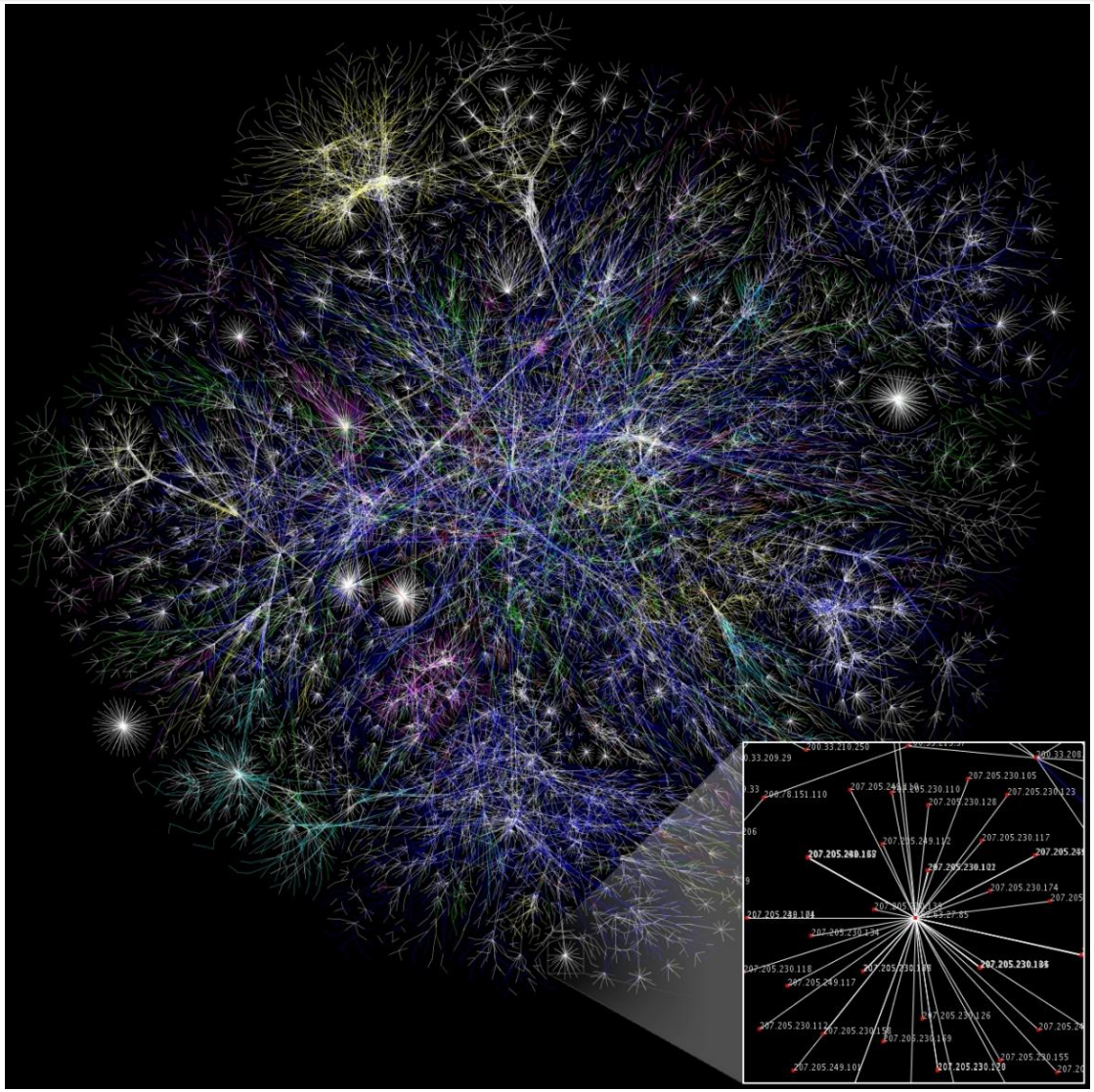
Tema pentru acasa

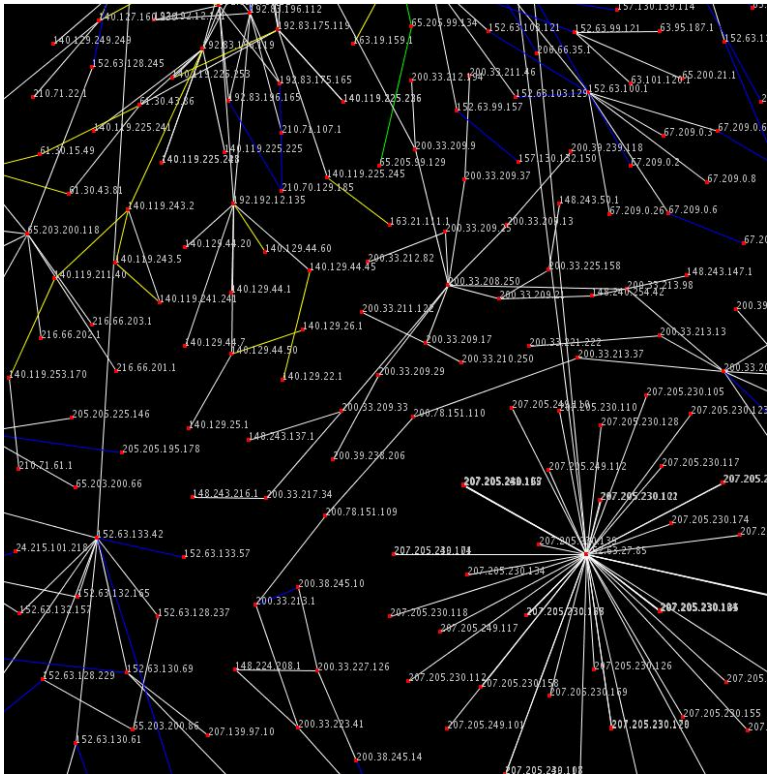
- Tema pentru acasa, curs **2**, 27.10.2011, **prezenta obligatorie**, **25% din nota**
- Ora 9.00-9.15

Impresionant?

- Intel® Itanium® processors (codenamed Tukwila)
- 2 miliarde tranzistoare pe CPU
- >3 miliarde operatii pe secunda
- **Nivel redus de complexitate al operatiilor elementare**

World Wide Web





http://www.opte.org

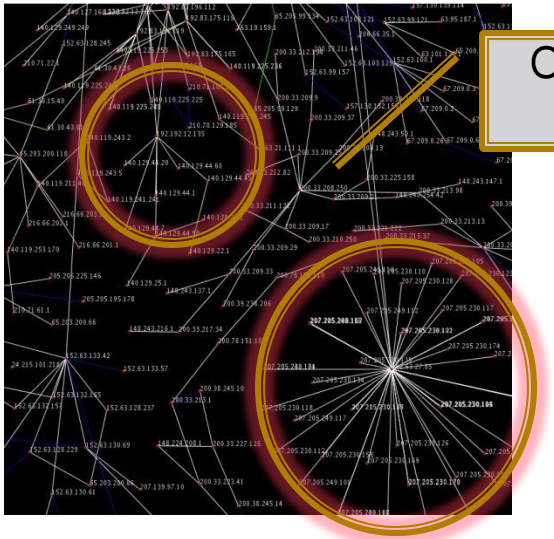
Continuare

TCP/IP

Adresa IP

- **IP = Internet Protocol**
- Adresa Internet Protocol (prescurtat "IP")
- Cod numeric utilizat de IP pentru identificarea unica a calculatoarelor sau dispozitivelor pe Internet
- O succesiune de 4 numere intre 0 si 255 (4 octeti, $256 = 2^8 = 8$ biti) (IPv4 – versiunea 4)
- Combinatii posibile: 4.294.967.296
- 81.180.222.18 = 01010001.10110100.11011110.00010010

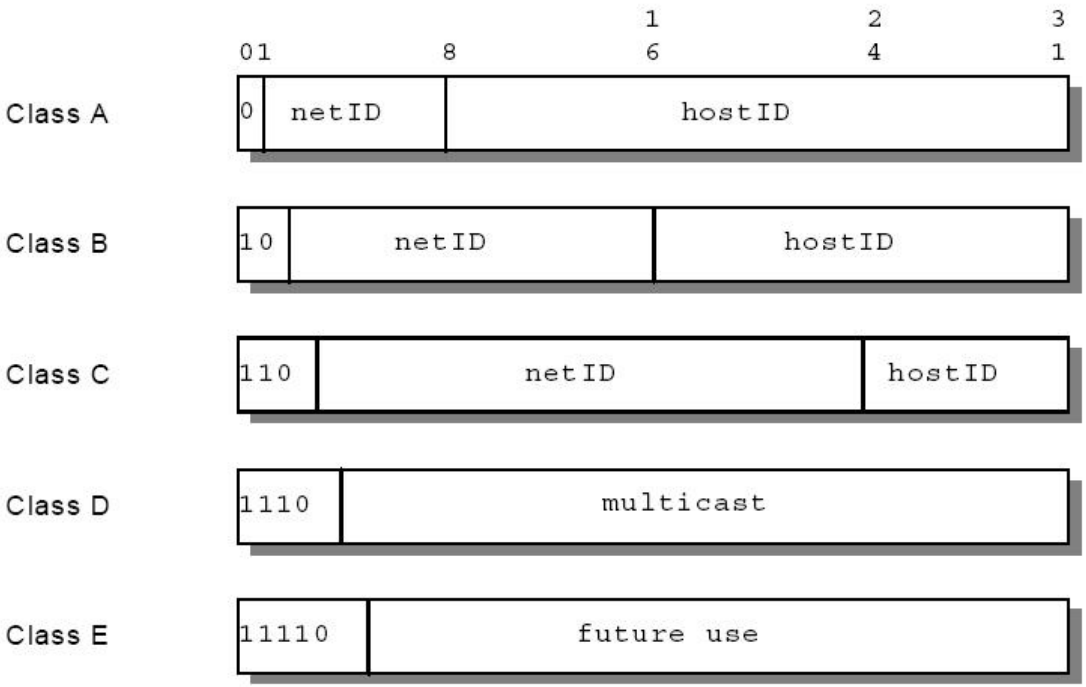
Adresa IP



Organizare - RETELE

Adrese IP: Net | Host

Total: 32 biti = 4 octeti

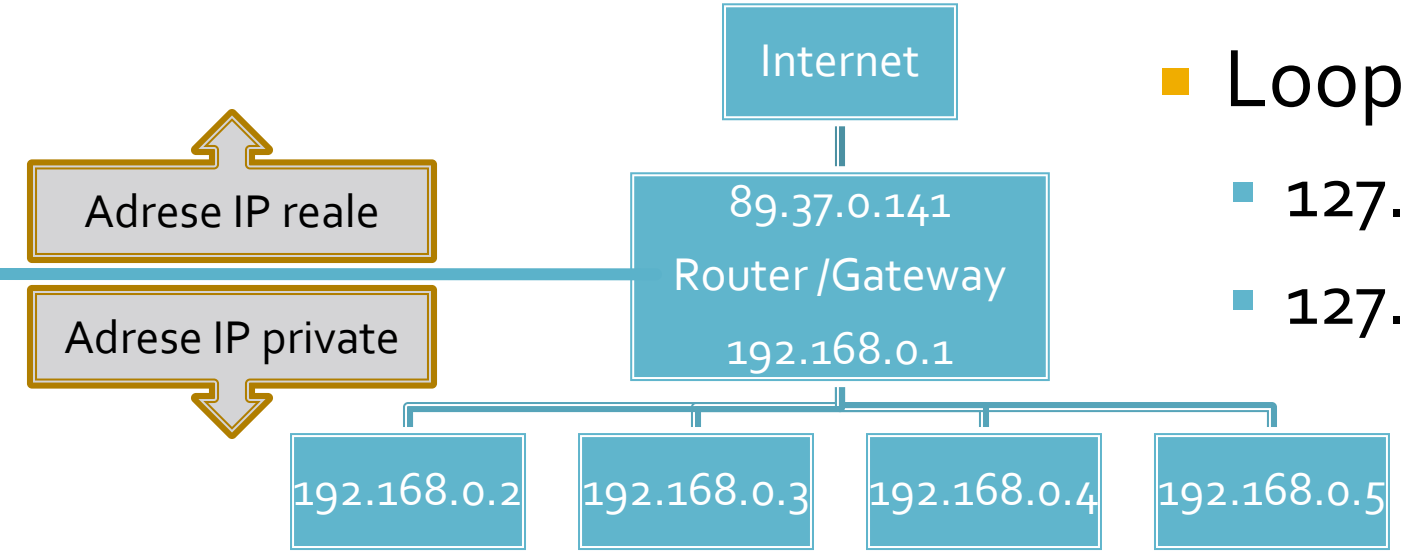


Adresa IP

- Reala (“rutabila”)
  - vizibila din intregul Internet
  - necesara pentru dispozitivele care **ofera** date
- Privata (“nerutabila”, interna)
  - invizibila din exterior
  - suficienta pentru dispozitivele care **primesc** date
  - necesita un dispozitiv cu adresa reala (gateway, router) pentru acces la exterior

Adresa IP

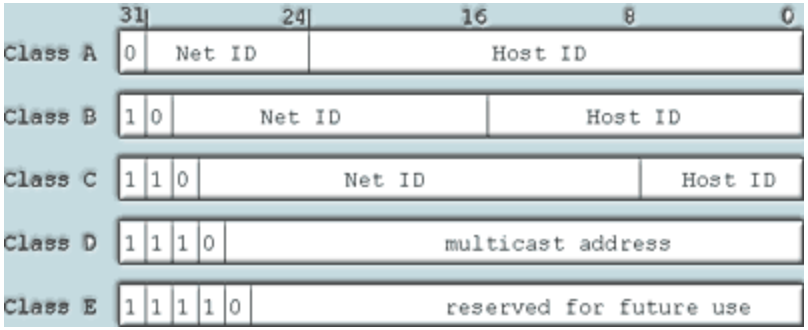
- Clase de adrese private rezervate
  - 10.x.x.x – 1 retea clasa A
  - 172.16.x.x – 172.31.x.x – 16 retele clasa B
  - 192.168.0.x – 192.168.255.x – 256 retele clasa C



- Loopback
  - 127.0.0.0/8
  - 127.0.0.1 = localhost

Adresa IP

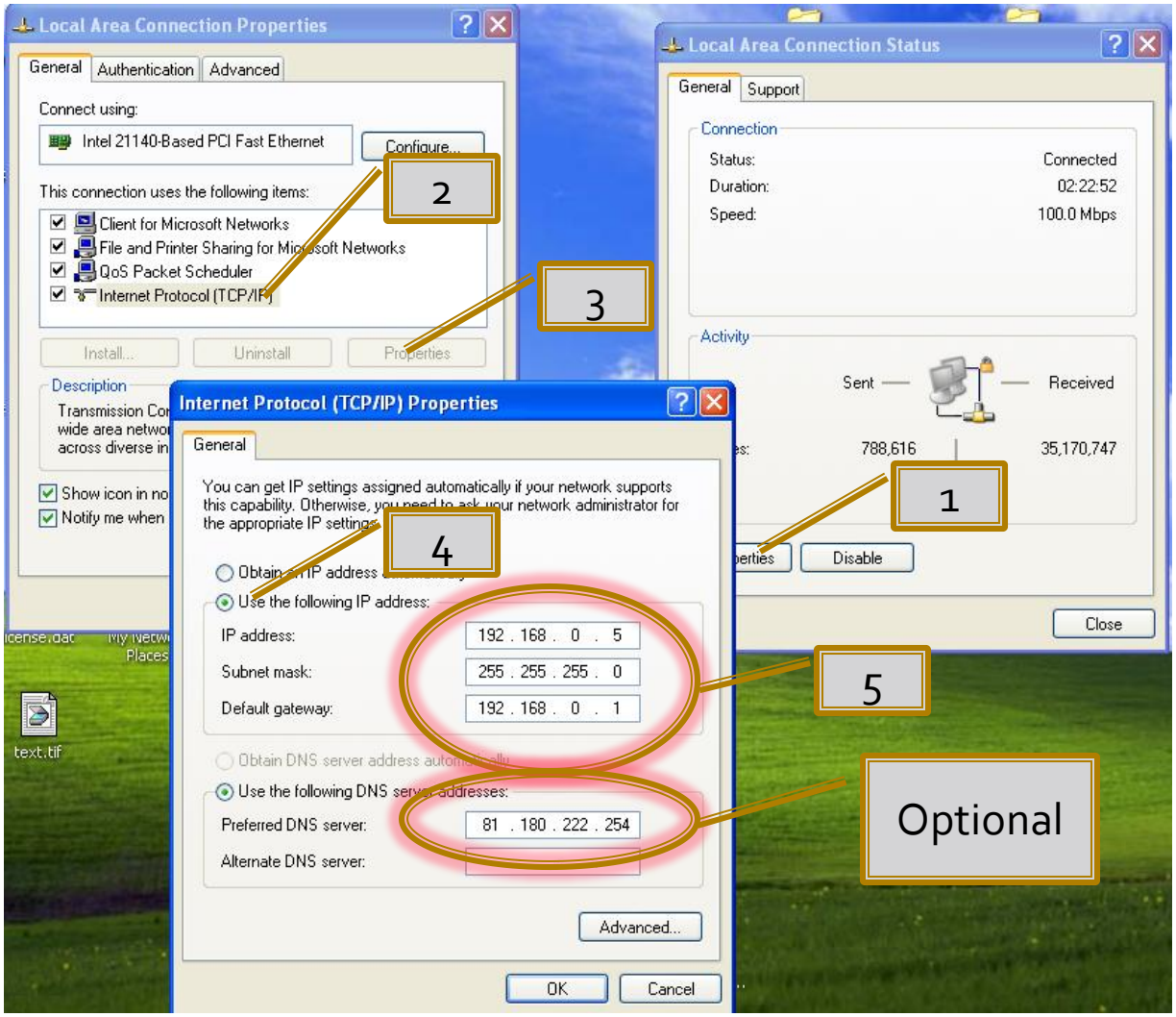
- Adrese IP:
  - Clasa A – 126 retele a 16.777.214 noduri
  - Clasa B – 16.384 retele a 65.534 noduri
  - Clasa C – 2.097.152 retele a 254 noduri
  - Clasa D – multicast
  - Clasa E – rezervate



Configurare TCP/IP

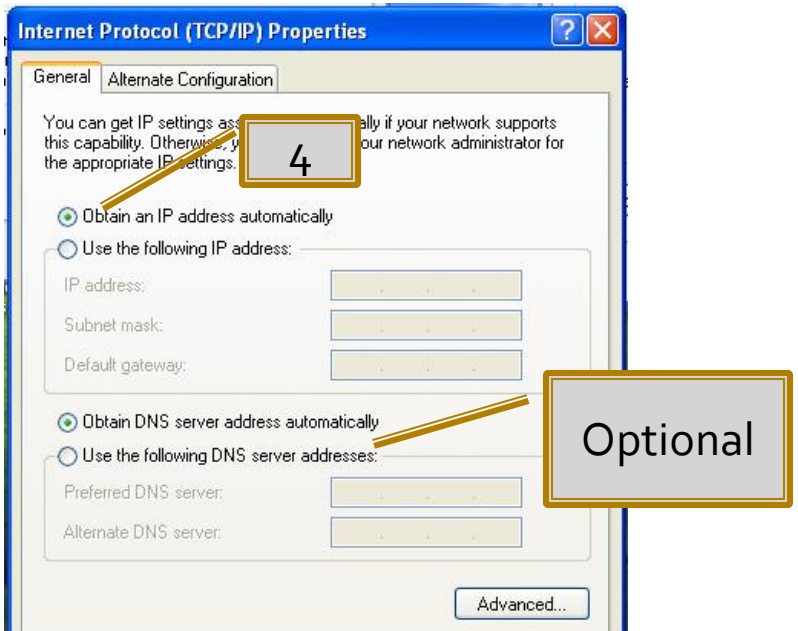
- Date necesare:
  - Adresa IP
  - Subnet Mask
  - Gateway
- Poate fi realizata
  - static
  - dinamic (DHCP)
- DNS – optional

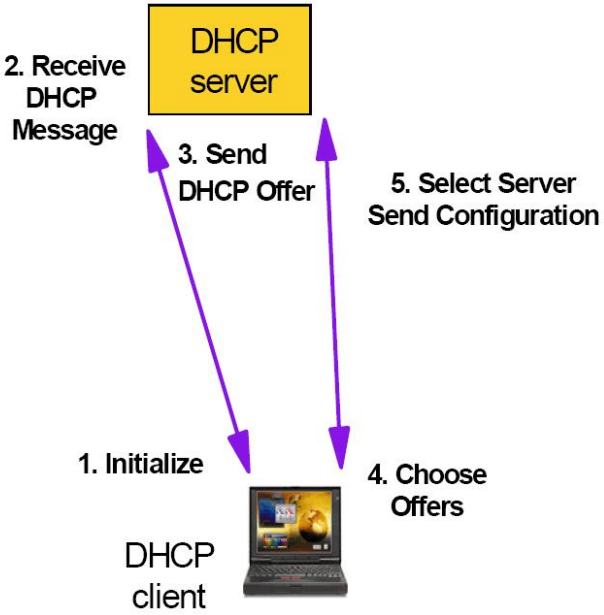
TCP/IP static



DHCP

- **Dynamic Host Configuration Protocol**
  - Permite reutilizarea adreselor IP disponibile
  - Datele necesare se obtin automat
  - Necesitatea unui furnizor al datelor respective in retea: server DHCP





Ipconfig

```
Command Prompt
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\Documents and Settings\Radu>ipconfig /all

Windows IP Configuration

        Host Name . . . . . . . . . . . . : home
        Primary Dns Suffix  . . . . . . . :
        Node Type . . . . . . . . . . . . : Unknown
        IP Routing Enabled. . . . . . . . : No
        WINS Proxy Enabled. . . . . . . . : No

Ethernet adapter Local Area Connection:

        Connection-specific DNS Suffix  . :
        Description . . . . . . . . . . . : Intel 21140 Based PCI Fast Ethernet
Adapter (Generic)
        Physical Address. . . . . . . . . : 00-03-FF-AF-D8-57
        Dhcp Enabled. . . . . . . . . . . : Yes
        Autoconfiguration Enabled . . . . : Yes
        IP Address. . . . . . . . . . . . : 192.168.0.134
        Subnet Mask . . . . . . . . . . . : 255.255.255.0
        Default Gateway . . . . . . . . . : 192.168.0.1
        DHCP Server . . . . . . . . . . . : 192.168.0.1
        DNS Servers . . . . . . . . . . . : 80.96.184.18
                                            192.168.0.1
        Lease Obtained. . . . . . . . . . : Thursday, October 16, 2008 5:12:49 A
M
        Lease Expires . . . . . . . . . . : Thursday, October 23, 2008 5:12:49 A
M

C:\Documents and Settings\Radu>_
```

ipconfig /all – toate

MAC (Media Access Control)

DHCP ?

DHCP- alocare temporara

Stare IP

Achizitionare adrese IP

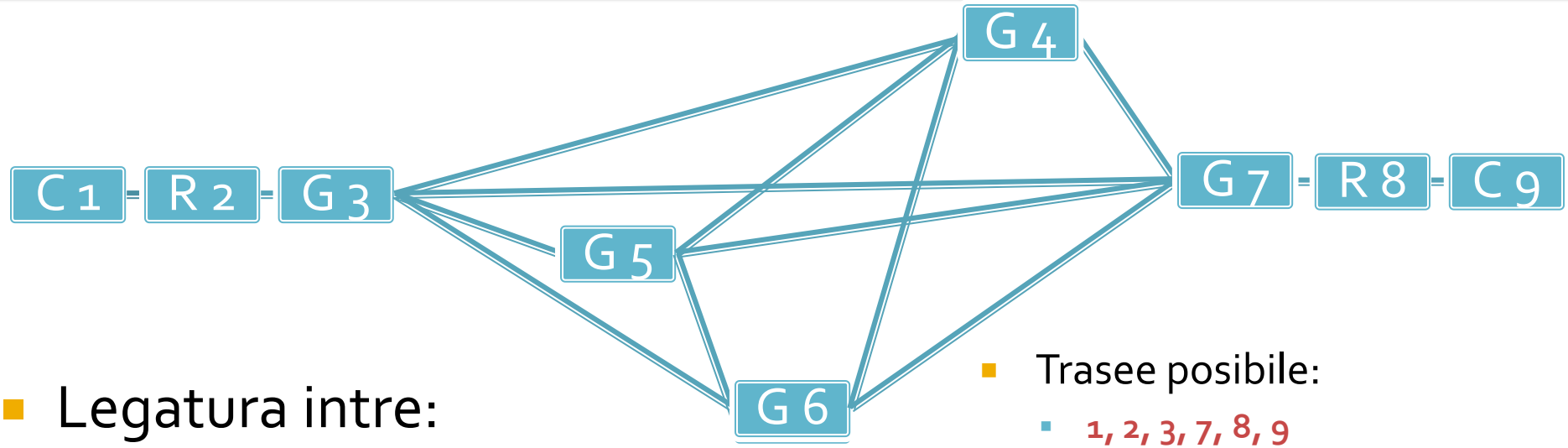
- ICANN – Internet Corporation for Assigned Names and Numbers
  - RIPE – Réseaux IP Européens
    - RoTLD – Romania Top Level Domain **www.rotld.ro**
  - ARIN – American Registry for Internet Numbers
  - APNIC – Asia-Pacific Network Information Center
- Pret fixat, non-profit (numai cheltuieli de intretinere)
- Trecere la IPv6 in curs, pentru rezolvarea limitarilor

Achizitionare adrese IP

TIP BLOC ALOCAT	LUNGIME BLOC	COST USD (FARA TVA)
A	<128	50
B	129-256	75
C	257-512	175
D	513-768	225
E	769-1024	275
F	1025-1536	350
G	1537-2048	400
H	2049-3072	800
I	3073-4096	1200

RpTLD:
"Acesta reprezintă taxa pentru serviciul de alocare şi înregistrare a acestor adrese la RIPE. Adresele IPv4 fiind limitate nu se vând ci se aloca temporar atât timp cât este nevoie (justificatã) de ele. RIPE verificã sistematic aceste alocări."

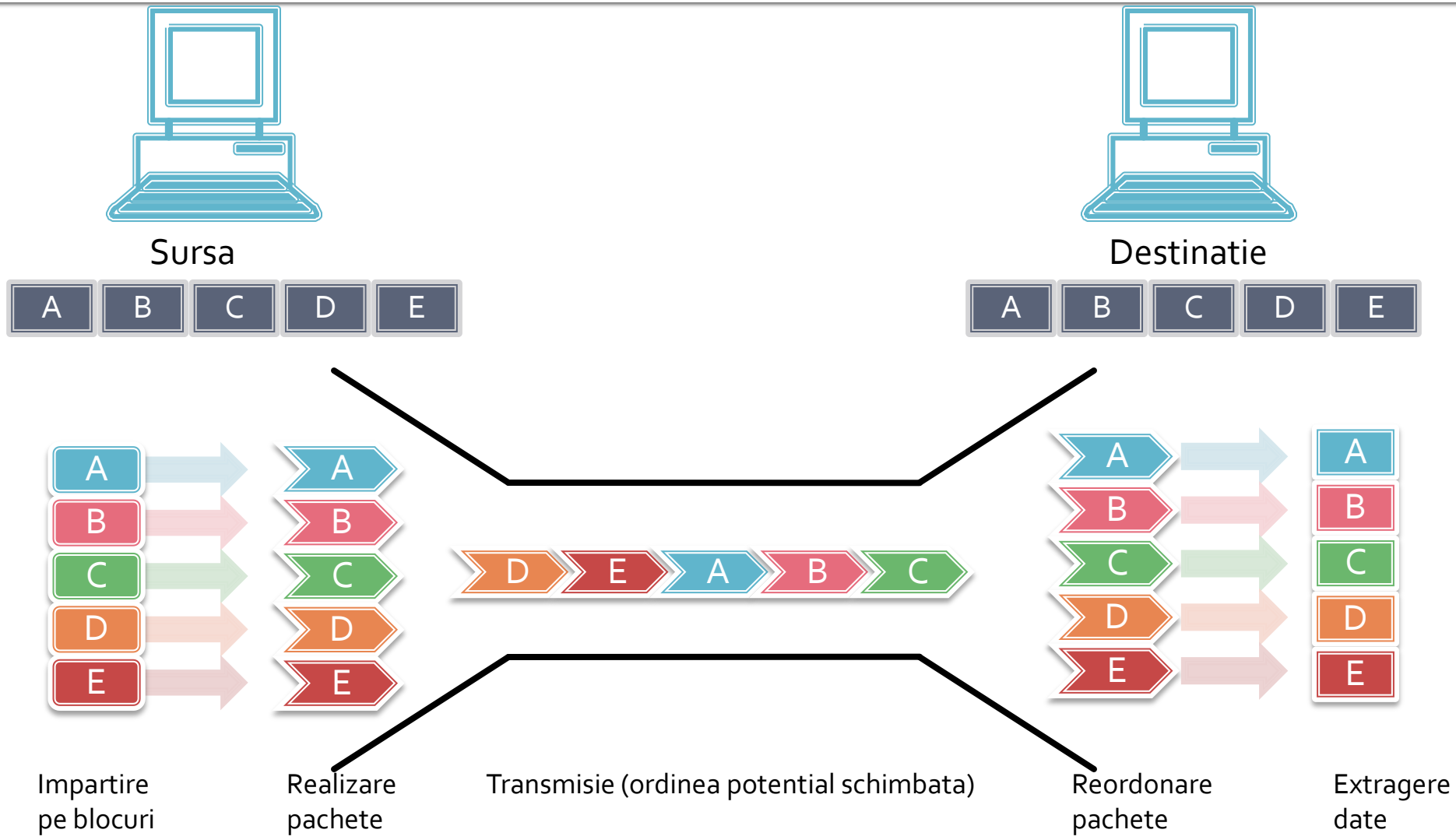
Rutare pachete - TCP



- Legatura intre:
  - Calculatorul C1 deservit de ruterul R2 si gateway-ul G3
  - Calculatorul C9 deservit de ruterul R8 si gateway-ul G7
- Noduri esentiale sunt :
  - R2, G3,
  - G7, R8

- Trasee posibile:
  - 1, 2, 3, 7, 8, 9
  - 1, 2, 3, 4, 7, 8, 9
  - 1, 2, 3, 5, 7, 8, 9
  - 1, 2, 3, 6, 7, 8, 9
  - 1, 2, 3, 5, 6, 7, 8, 9
  - 1, 2, 3, 5, 4, 7, 8, 9
  - 1, 2, 3, 5, 6, 4, 7, 8, 9
- Traseul e ales in functie de ocupare **in acel moment** si de disponibilitatea nodurilor

Pachet TCP


Sursa
A B C D E
Destinatie
A B C D E
A B C D E
A B C D E
D E A B C
A B C D E
A B C D E
Impartire pe blocuri
Realizare pachete
Transmisie (ordinea potential schimbata)
Reordonare pachete
Extragere date

Aplicatii trace route (tracert)

Administrator: C:\Windows\system32\cmd.exe

```
Microsoft Windows [Version 6.0.6001]
Copyright (c) 2006 Microsoft Corporation.  All rights reserved.

C:\Users\Radu>tracert 81.180.222.13

Tracing route to webhost.etc.tuiasi.ro [81.180.222.13]
over a maximum of 30 hops:

  1    <1 ms    <1 ms    <1 ms  192.168.0.1
  2     5 ms     5 ms     6 ms  10.132.0.1
  3     5 ms     5 ms     5 ms  ro-is01a-rd1-V200.astralnet.ro [193.226.30.89]
  4   204 ms   348 ms    23 ms  ro-buh01a-rd1-v819.astralnet.ro [85.186.212.2]
  5    18 ms    14 ms    15 ms  ro-buh01a-ri1-v790.astralnet.ro [82.208.175.102]

  6    14 ms    23 ms    15 ms  83.103.173.102
  7    24 ms    23 ms    21 ms  89.37.0.141
  8    22 ms    23 ms    22 ms  ten-4-3.core1.buc3.roedu2.net [89.37.0.5]
  9    22 ms    23 ms    23 ms  89.37.0.254
 10    21 ms    22 ms    24 ms  89.37.0.74
 11    23 ms    21 ms    21 ms  ten-2-1.acc1.ias.roedu2.net [89.37.1.130]
 12    47 ms    41 ms    44 ms  217.73.168.15
 13    62 ms    54 ms    67 ms  217.73.168.14
 14    49 ms    48 ms    61 ms  gw-etc.tuiasi.ro [81.180.222.251]
 15    44 ms    77 ms    51 ms  webhost.etc.tuiasi.ro [81.180.222.13]

Trace complete.

C:\Users\Radu>
```

tracert (Windows)

Adresa IP destinatie

Router

Gateway ETC (ETTI)

Nume de domenii

- Reprezinta traducerea literara a adreselor IP in vederea manipularii usoare de catre utilizatorii umani
- Calculatoare dedicate (DNS – Domain Name Server) realizeaza o retea complementara, ierarhizata, pentru realizarea in regim client-server a traducerii ND ⇔ IP
  - **rf-opto.etti.tuiasi.ro** = 81.180.222.13

DNS

- **Domain Name System**
- Caractere permise:
  - literele alfabetului englez
  - cifre
  - "-"
- Fully Qualified Domain Name
  - nume_domeniu.top_level_domain.
  - tipic punctul final (semnificatie = root) se omite
- Top Level Domain
  - cod tara: ro, fr, uk, us, etc.
  - generice: biz, com, info, name, net, org, pro (IANA)
  - sponsorizate: gov, edu, mil, int etc.

DNS - achizitie

- ICANN – Internet Corporation for Assigned Names and Numbers
  - RIPE – Réseaux IP Européens
    - RoTLD – Romania Top Level Domain **www.rotld.ro**
  - ARIN – American Registry for Internet Numbers
  - APNIC – Asia-Pacific Network Information Center
- Cost
  - .ro – 61$ (TVA inclus) pe viata:
  - .com, .eu – 10$/an
- "primul venit primul servit"
- Lamentarea lui Harris: "toate cele bune sunt ocupate deja"
- In caz de conflict, arbitrare ROTLD, RIPE, IANA + justitie

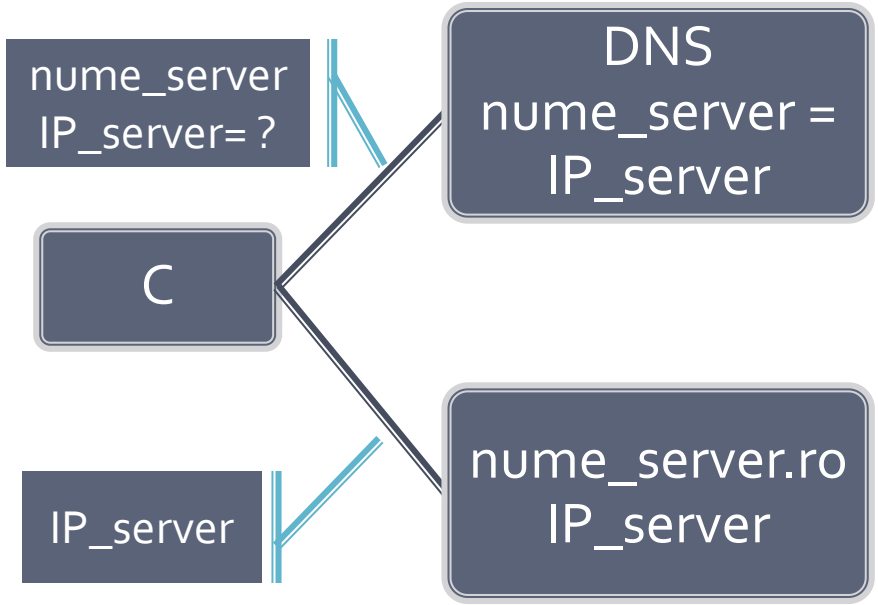
DNS - subdomenii

- Subdomeniile sunt la latitudinea proprietarului domeniului
  - "tuiasi.ro" domeniu inregistrat de TUIasi, controlat de RoTLD
  - "etti.tuiasi.ro" subdomeniu implementat de TUIasi, controlat de ETTI
  - "rf-opto.etti.tuiasi.ro" subdomeniu implementat de ETTI
- Tipic prefixul (automat sau nu) e o indicatie a tipului de date oferite: www, ftp, gopher etc.
- Mai multe nume de domeniu/subdomeniu pot imparti o adresa IP
  - **rf-opto.etti.tuiasi.ro** = 81.180.222.13
  - **www.etti.tuiasi.ro** = 81.180.222.13

Acces utilizand nume de domeniu

- In momentul accesului la **rf-opto.etti.tuiasi.ro**:

- Toate server-ele DNS realizeaza un cache al tabelei ND ⇔ IP pentru utilizare mai rapida
- ipconfig /flushdns



URL

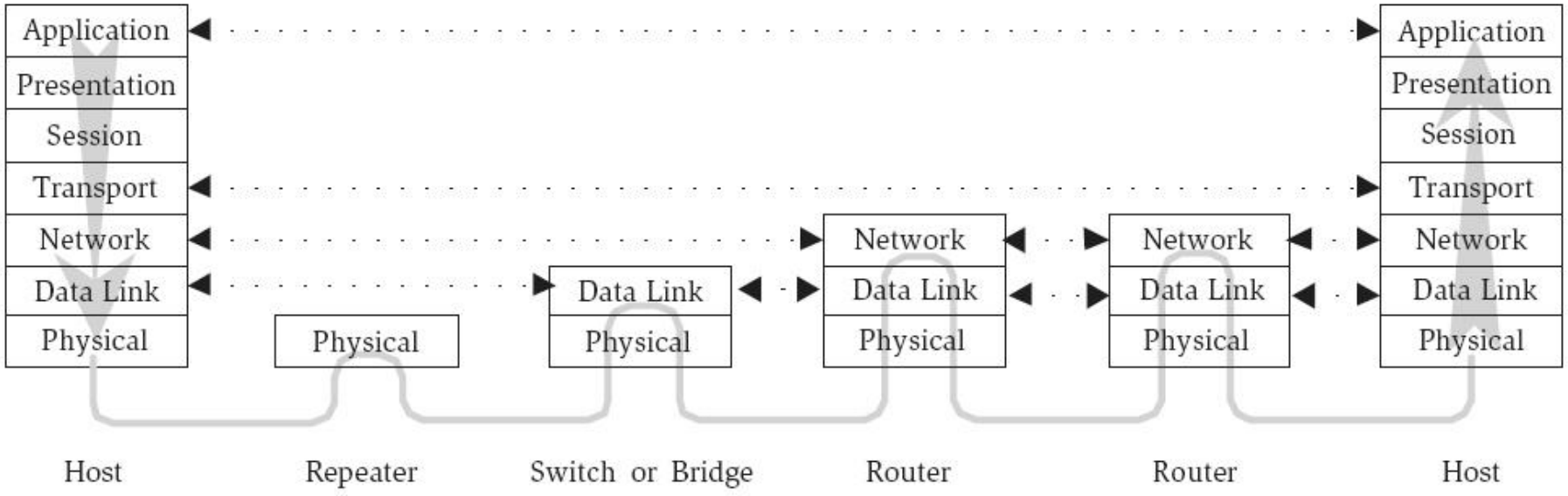
- **Uniform Resource Locator**
- Forma: serviciu://gazda:port/cale/fisier.ext
  - serviciu:// – aplicatia (protocolul) care se acceseaza de pe gazda: http://, ftp://, telnet://, file://
  - gazda – nume de domeniu sau adresa IP
  - :port – portul utilizat in comunicare: unele implicite: (ftp – 21, http – 80, ssh – 22, telnet – 23)
  - cale – cale de directoare plecand de la radacina serviciului pe gazda
  - fisier.ext numele fisierului pe gazda
- Exemplu: http://rf-opto.etc.tuiasi.ro:80/ui/Lucrari/Lucrarea1/Lucrarea1.html

Continuare

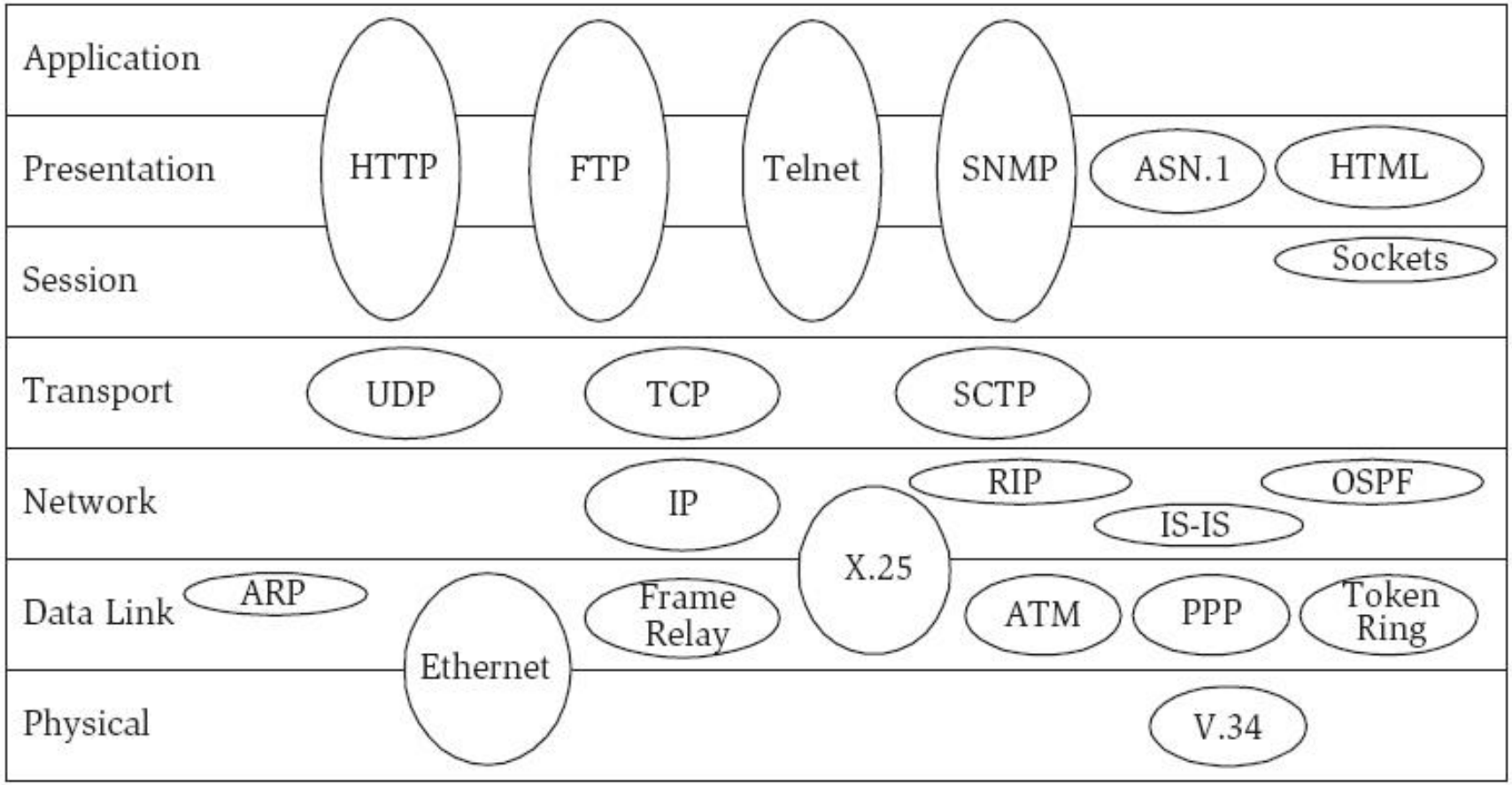
Organizarea retelelor

Model de referinta ISO/OSI

- **Open Systems Interconnection**
- Structura stratificata pe 7 nivele

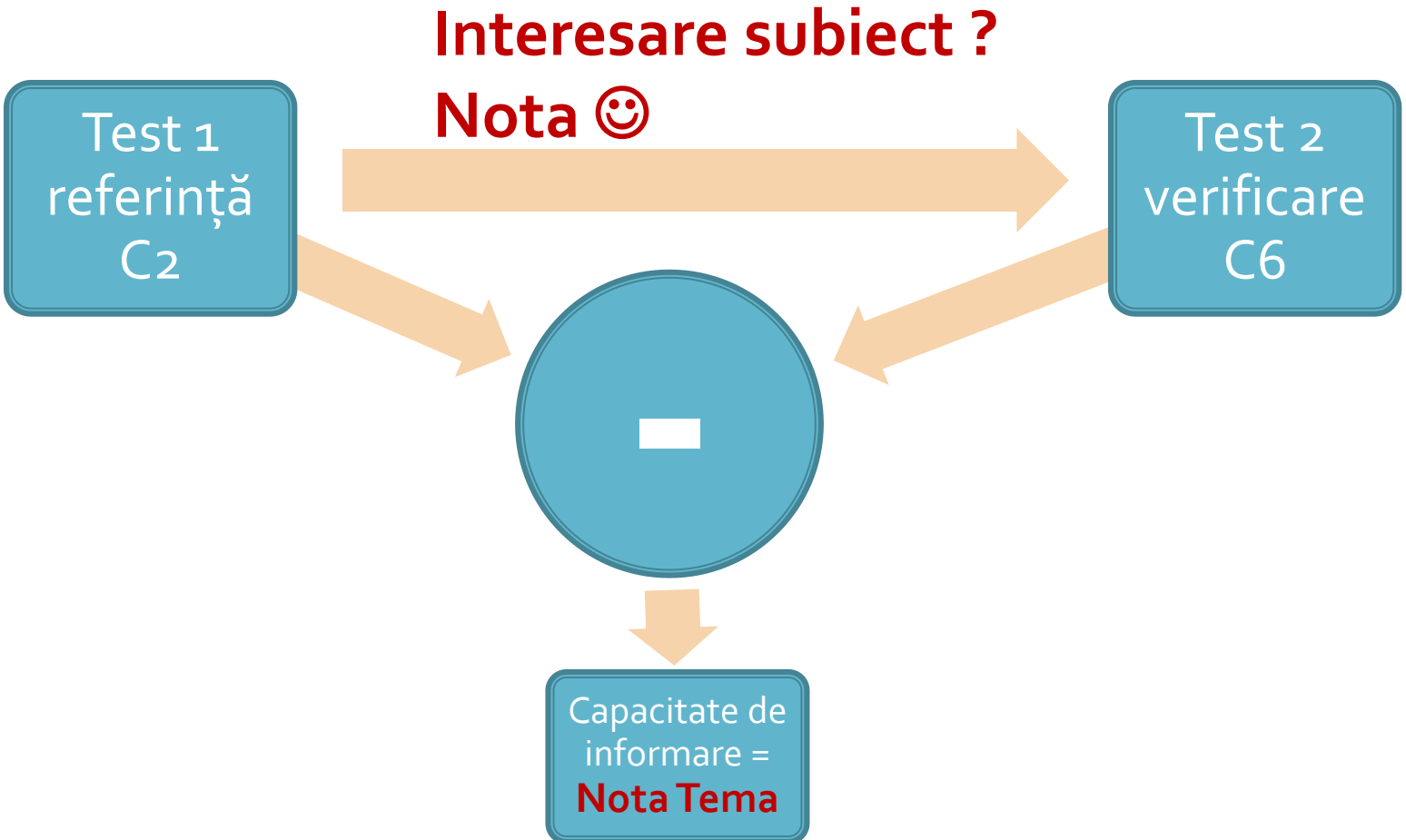


Protocoale


Application
Presentation
Session
Transport
Network
Data Link
Physical
HTTP
FTP
Telnet
SNMP
ASN.1
HTML
Sockets
UDP
TCP
SCTP
IP
RIP
OSPF
IS-IS
X.25
ARP
Ethernet
Frame Relay
ATM
PPP
Token Ring
V.34

Tema pentru acasa

- Educație terapeutică:



Contact

- Laboratorul de microunde si optoelectronica
- http://rf-opto.etti.tuiasi.ro
- rdamian@etti.tuiasi.ro