

Curs 2

# Tehnologii Web

# Recapitulare

# Fotografii

## FLORESCU DAN-CONSTAN



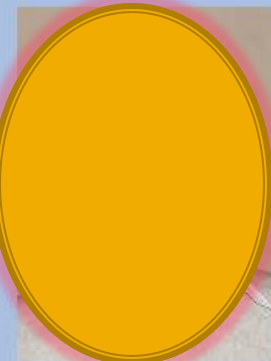
### Date:

Grupa	5405 (2008)
Specializarea	Tehnologii si sisteme
Marca	3275

### Note obtinute

Disciplina	Tip	Data	Descriere	Nota	Ob
DCMR	Dispozitive si circuite de microunde pentru radiocomunic				
	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:

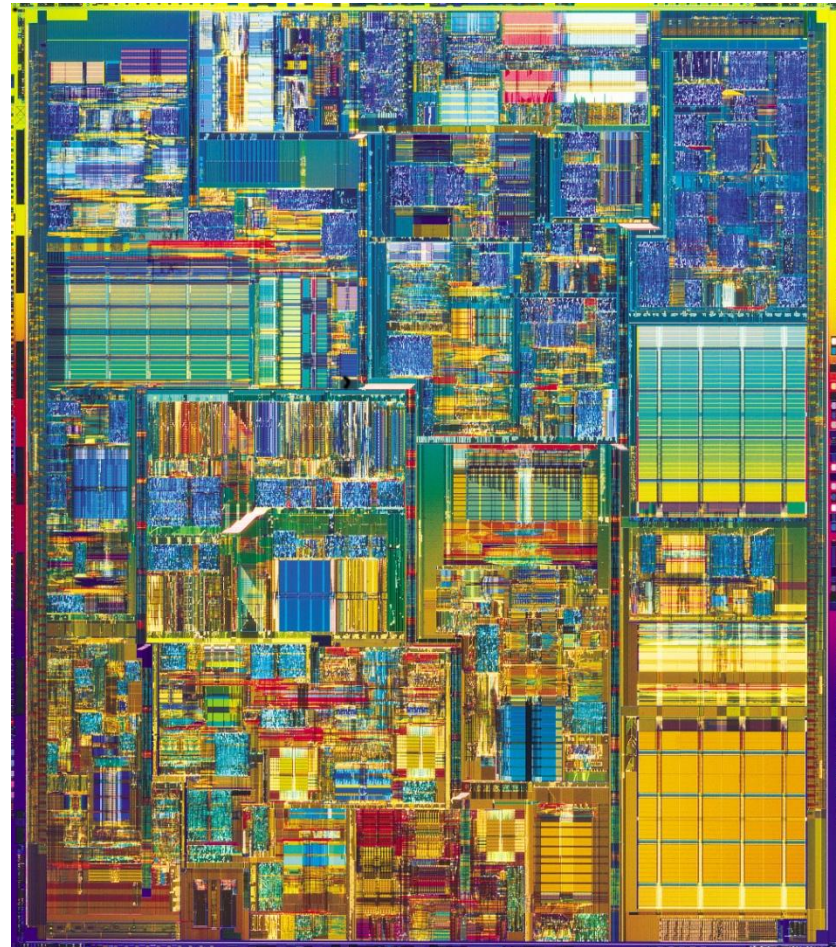
Grupa	5405 (2008)
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### Detalii

Finantare	Buget
Bursa	Bursa de Studii
Domiciliu	Iasi, judet Iasi
Promovare	Promovare Integrala
Credite	60
Media	8.86

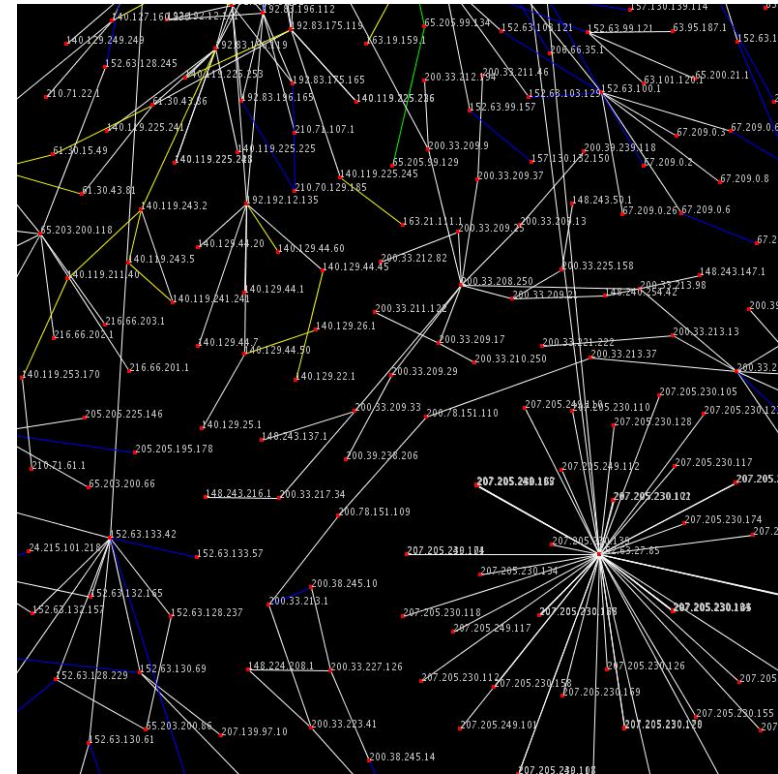
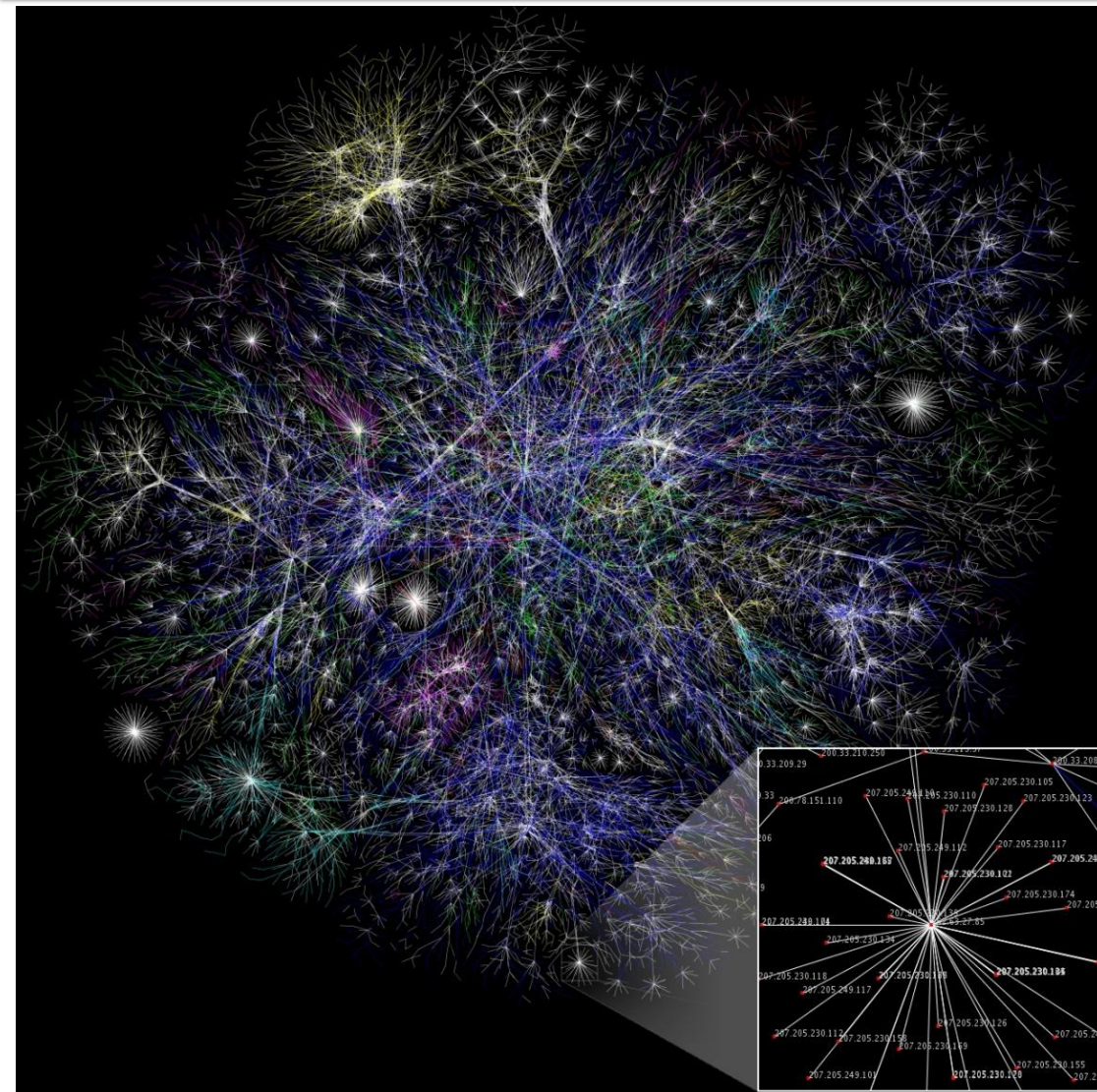
# Impresionant?

- 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>

# 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

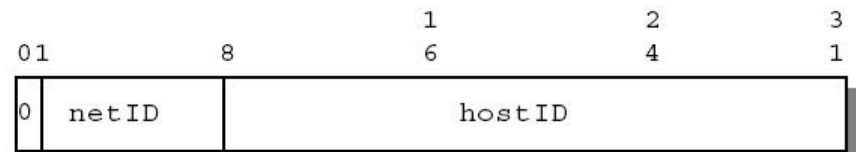
Organizare -  
RETELE

Adrese IP:

Net

Host

Total: 32 biti = 4 octeti

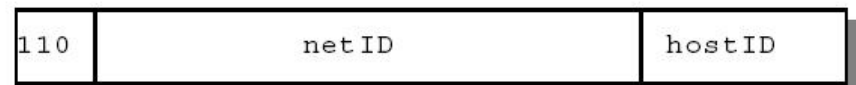


Class A

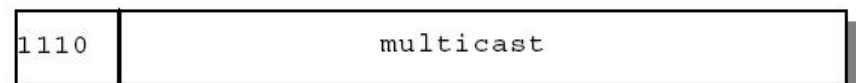
Class B



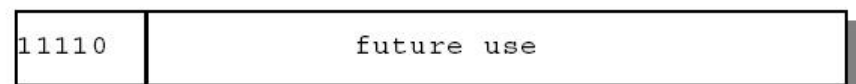
Class C



Class D

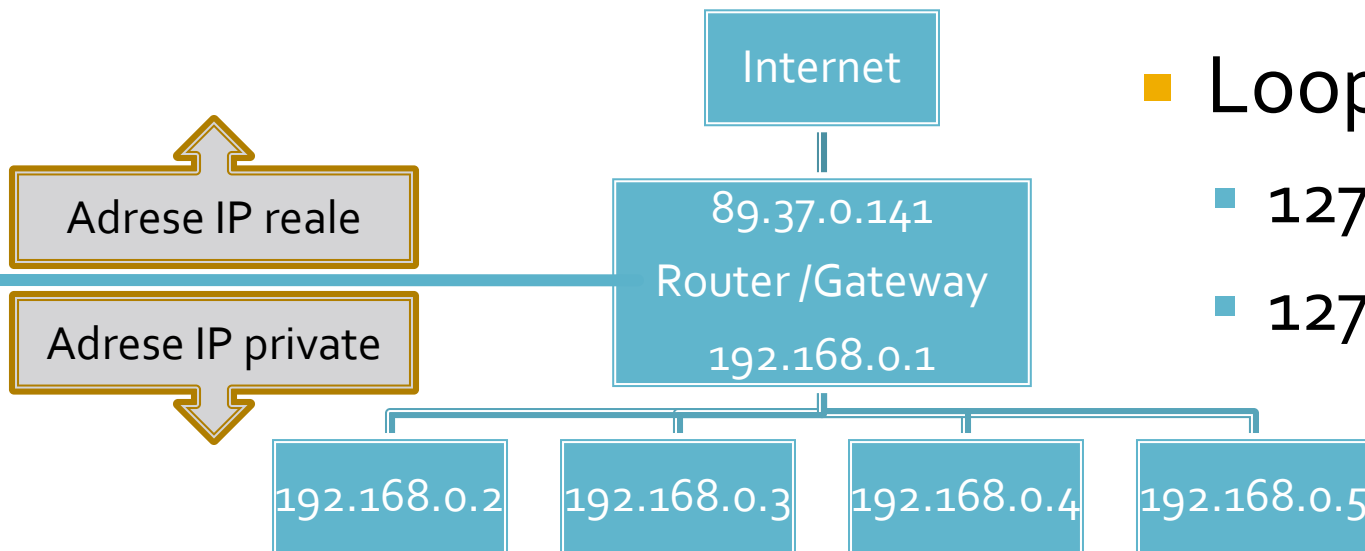


Class E



# 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

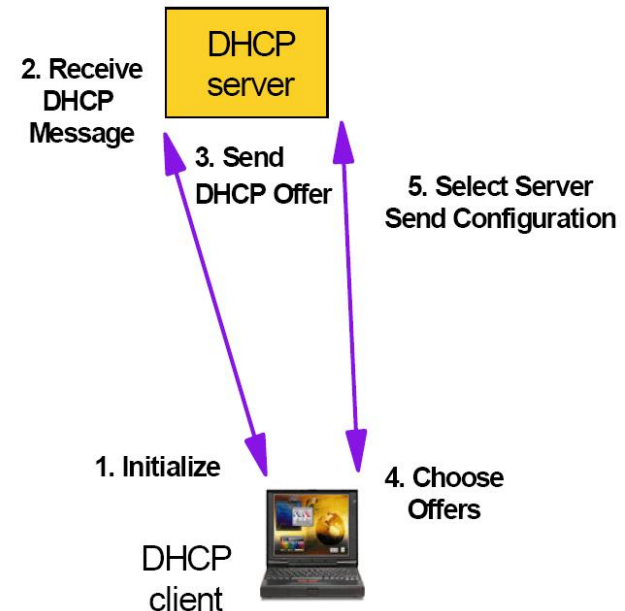
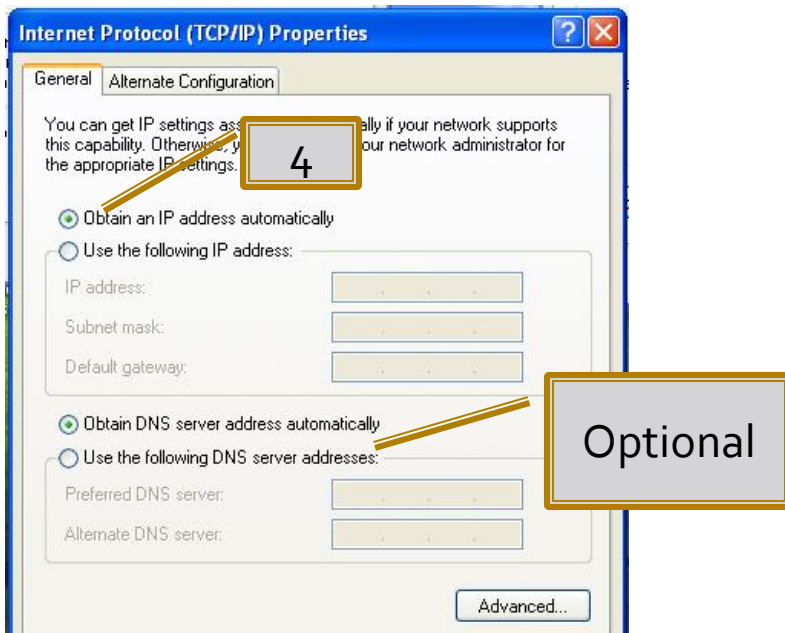


- Loopback
  - 127.0.0.0/8
  - 127.0.0.1 = localhost



# 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

```
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
    Lease Expires . . . . . : Thursday, October 23, 2008 5:12:49 A

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

ipconfig  
/all – toate

**MAC**  
(Media Access  
Control)

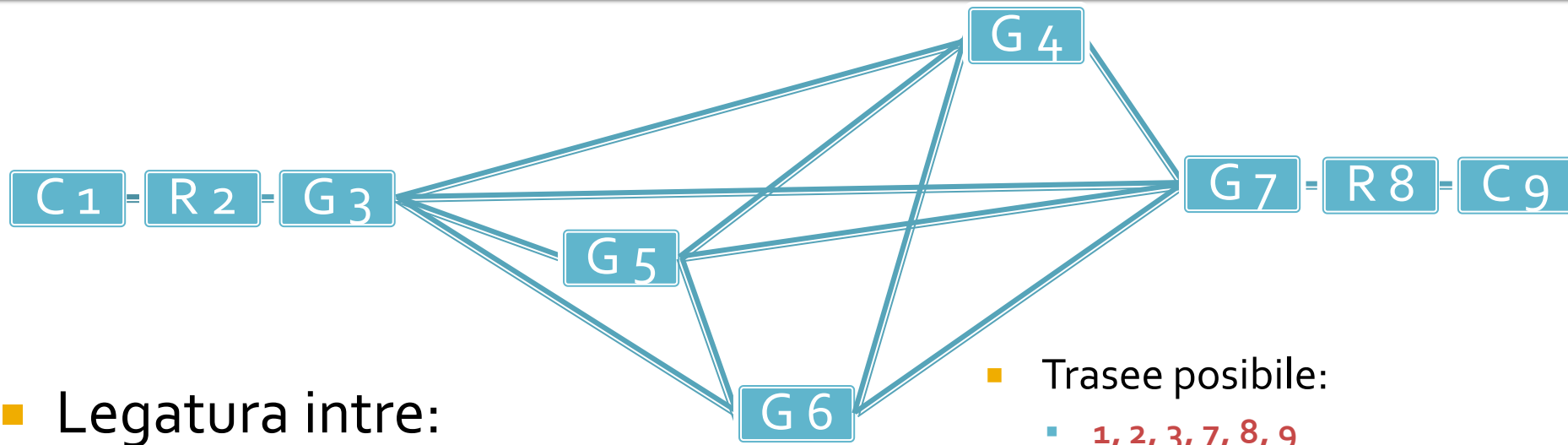
DHCP ?

DHCP- alocare  
temporara

Stare IP

**Continuare**

# Rutare pachete - TCP



## ■ Legatura între:

- Calculatorul C1 deservit de ruterul R2 si gateway-ul G3
- Calculatorul C9 deservit de ruterul R8 si gateway-ul G7

## ■ Noduri esentiale sunt :

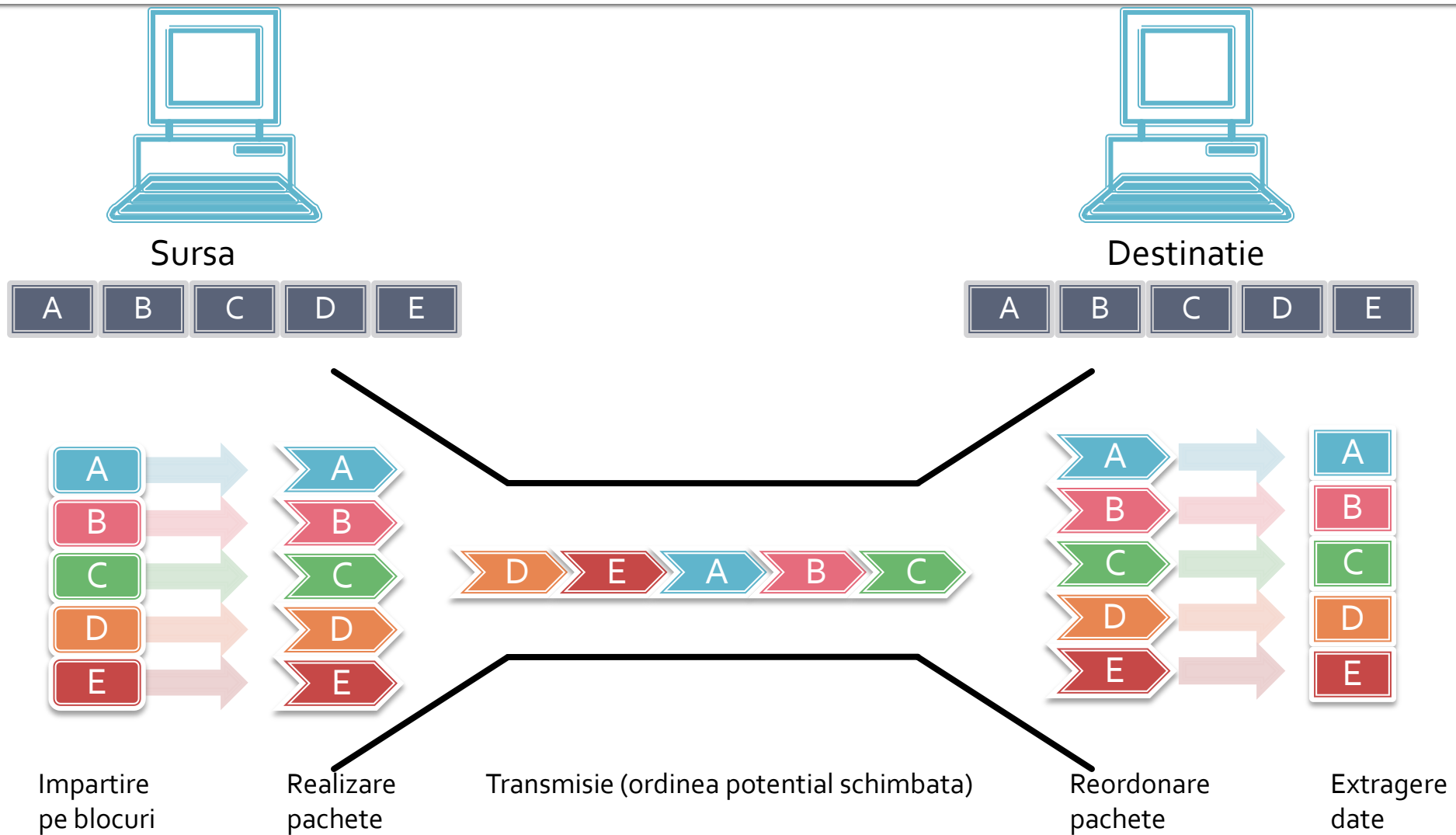
- R2, G3,
- G7, R8

## ■ 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





# 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:

Hop	Source	Destination	Source IP	Destination IP
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 [85.186.212.21]
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>


Annotations:

- 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  $\Leftrightarrow$  IP
  - [rf-opto.etc.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](http://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 TUlasi, controlat de RoTLD
  - “etc.tuiasi.ro” subdomeniu implementat de TUlasi, controlat de ETC (ETTI)
  - “rf-opto.etc.tuiasi.ro” subdomeniu implementat de ETC (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.etc.tuiasi.ro** = 81.180.222.13
  - **www.etc.tuiasi.ro** = 81.180.222.13

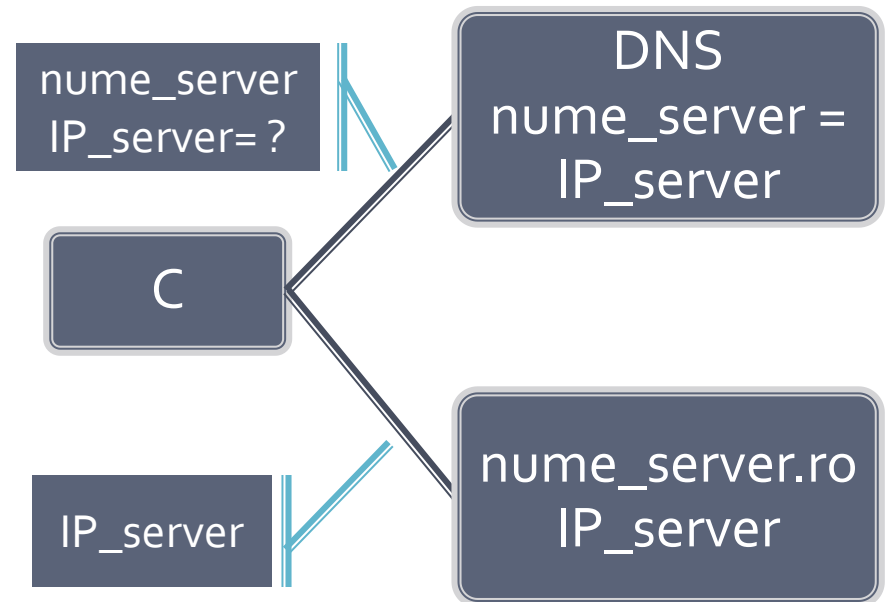


# Acces utilizand nume de domeniu

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



- Toate server-ele DNS realizeaza un cache al tabelei ND  $\Leftrightarrow$  IP pentru utilizare mai rapida
- `ipconfig /flushdns`

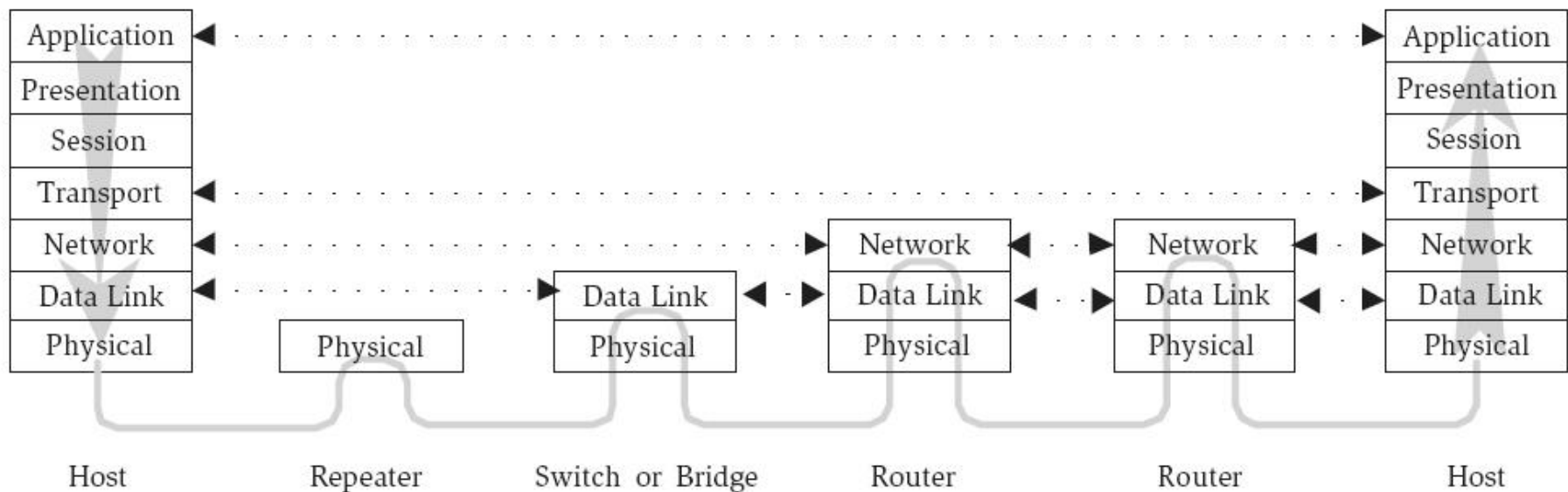


# URL

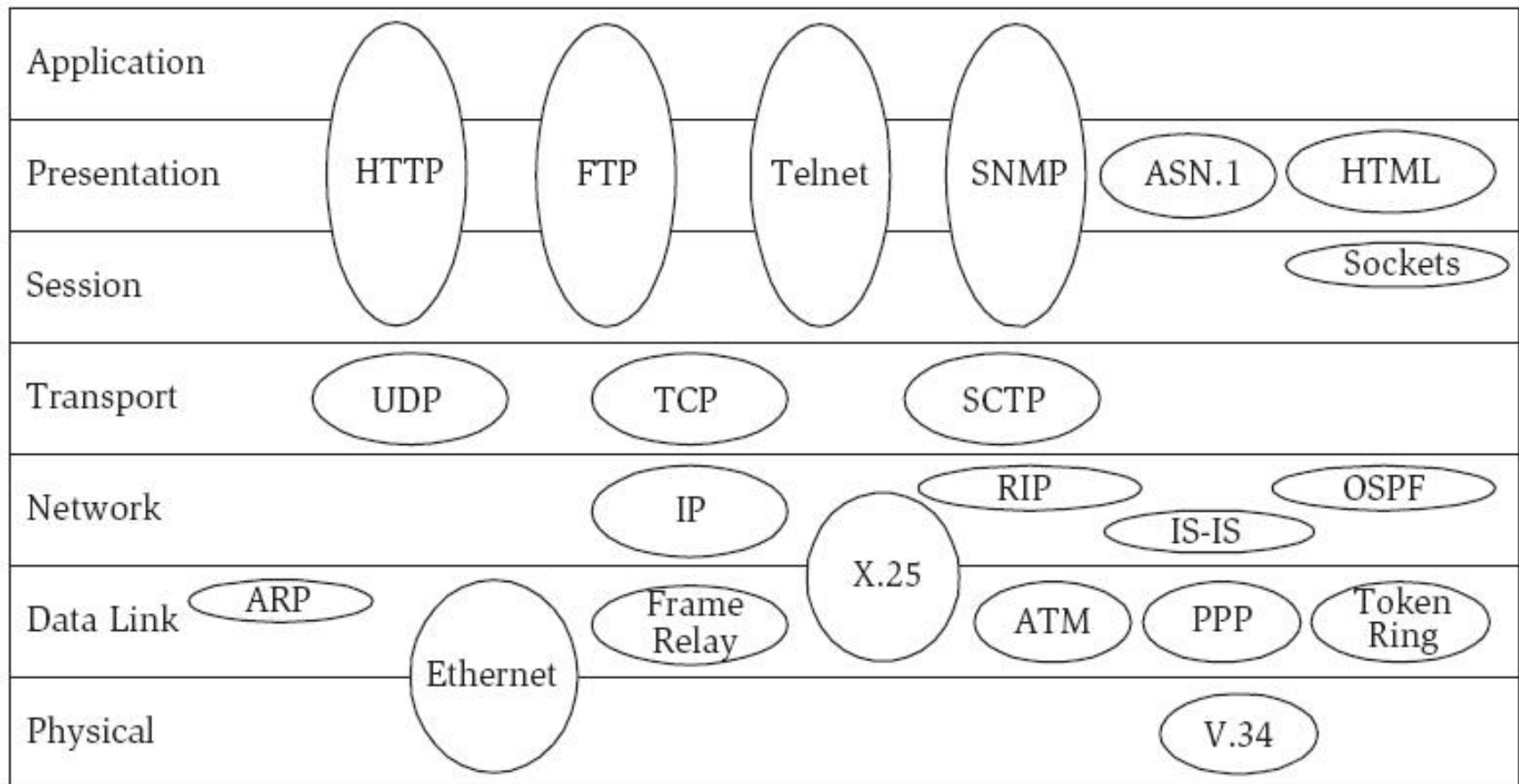
- **Uniform Resource Locator**
- Forma: **serviciu://gazda:port/cale/fisier.ext**
  - **serviciu://** – aplicatia (protocolul) care se acceseaza de pe gazda: http://, ftp://, telnet://, file://
  - **gazda** – nume de domeniu sau adresa IP
  - **:port** – portul utilizat in comunicare: unele implicite: (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**

# Model de referinta ISO/OSI

- Open Systems Interconnection
- Structura stratificata pe 7 nivele



# Protocollo



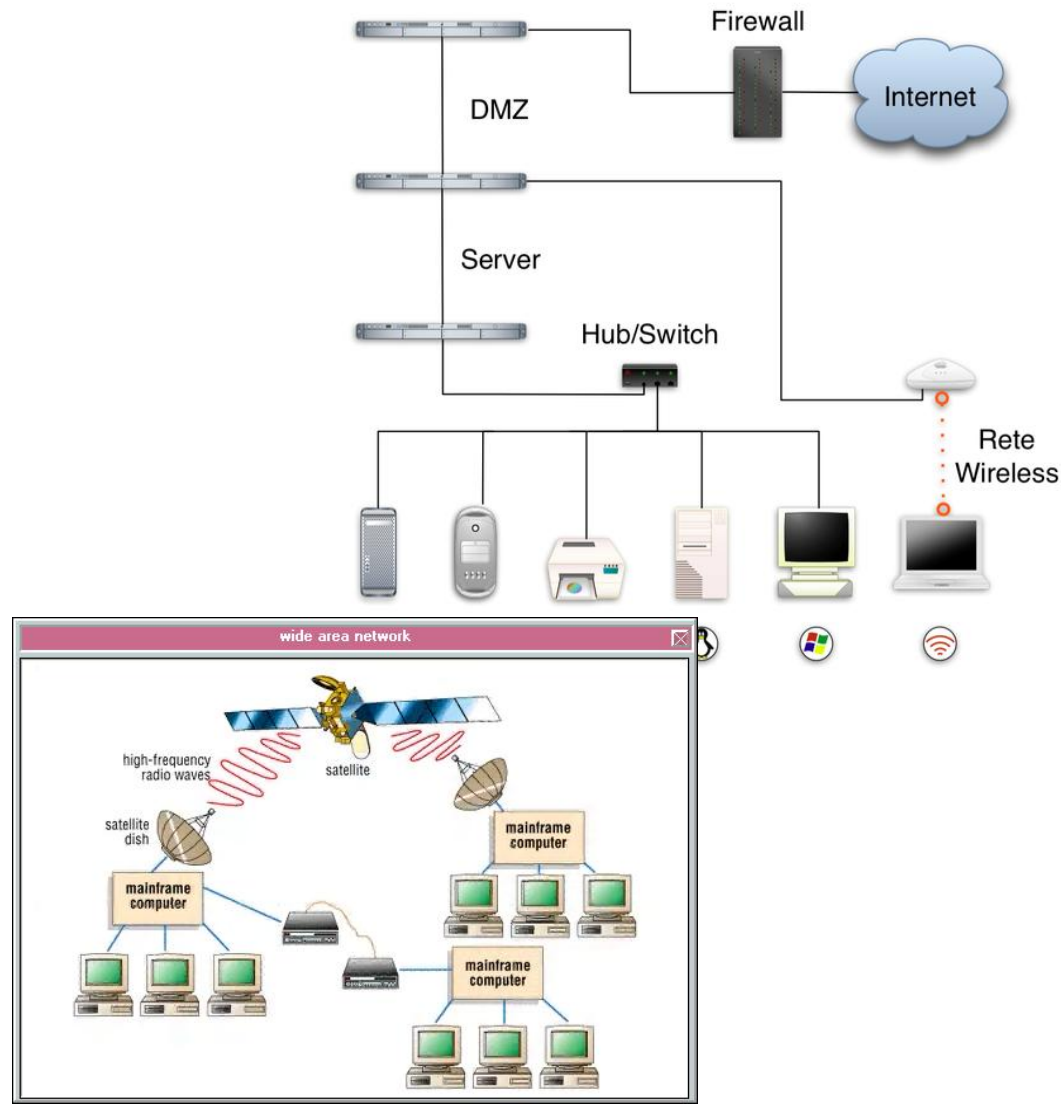
# Protocolle

- IP – Internet Protocol
- HTTP – Hyper Text Transfer Protocol
- FTP – File Transfer Protocol
- TCP – Transport Control Protocol
- SMTP – Simple Mail Transfer Protocol
- POP3 – Post Office Protocol
- IMAP – Internet Message Access Protocol
- Telnet – **Tele**communication **net**work  
(remote login)



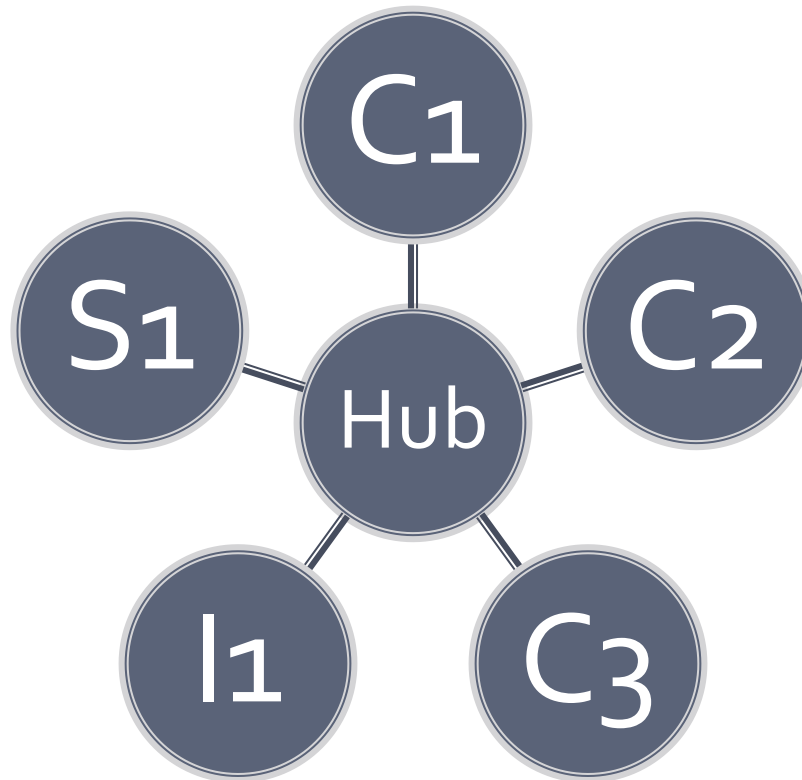
# Tipuri de retele

- LAN – Local Area Network
  - acopera distante maxim de ordinul km
- WAN – Wide Area Network
  - poate acoperi intreaga lume
  - Internetul e cea mai mare WAN



# Topologii de retea

- **Stea:** toate nodurile sunt conectate la un nod central numit hub (switching hub)



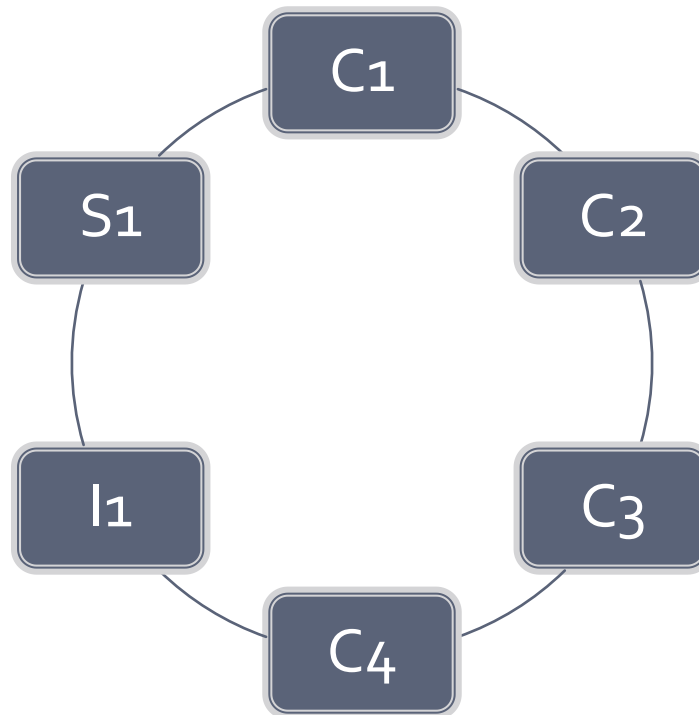
# Topologii de retea

- **Bus** – toate nodurile sunt conectate la un singur cablu
  - obligatoriu trebuie sa apara terminatoare la capat



# Topologii de retea

- **Inel** – toate nodurile sunt conectate la un singur cablu care realizeaza un inel
  - terminatoarele nu sunt necesare



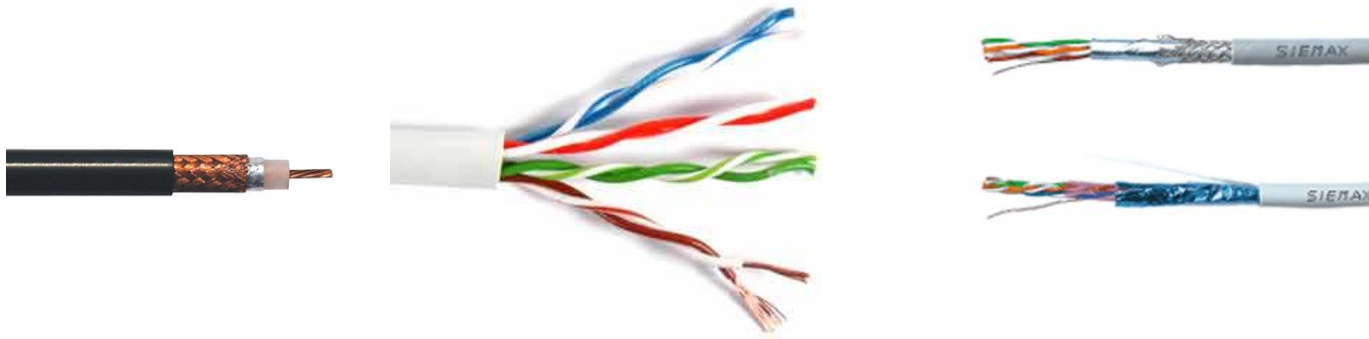
# Raspandire

- Topologiile de retea
  - **toate** topologiile sunt valide in retele WAN
  - topologia STEA predomina in retele LAN
- Avantaje/Dezavantaje



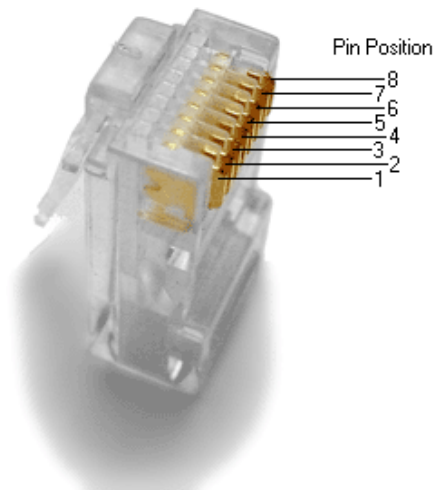
# Implementarea rețelei

- Cablu
  - Coaxial: 185 m, 10 Mb/s
  - UTP – Unshielded twisted pair: 100 m,
    - Cat 5 100 Mb/s (5e – 1000Mb/s)
    - Cat 6 1000 Mb/s (6e – 10000Mb/s)
  - STP – Shielded twisted pair: distanta mai mare
  - fibra optica



# Implementarea rețelei

- Conectori
  - BNC – Bayonet Neill Concelman
  - RJ45 – UTP
  - RJ22 – Telefonie (RJ11)



# Contact

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- Laboratorul de microunde si optoelectronica
- <http://rf-opto.etc.tuiasi.ro>
- [rdamian@etc.tuiasi.ro](mailto:rdamian@etc.tuiasi.ro)