# Modèle OSI
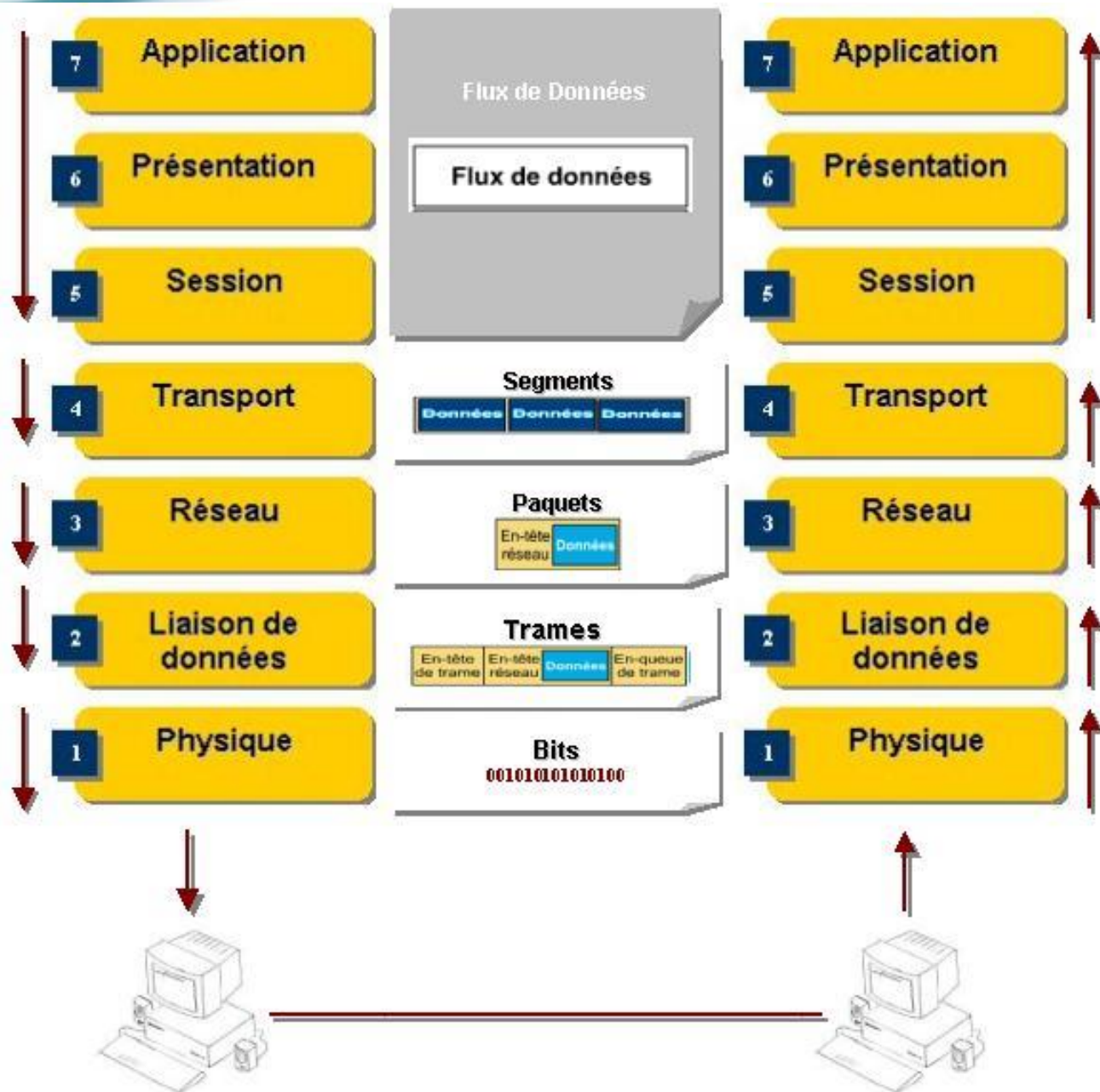
# RESEAUX

# OSI

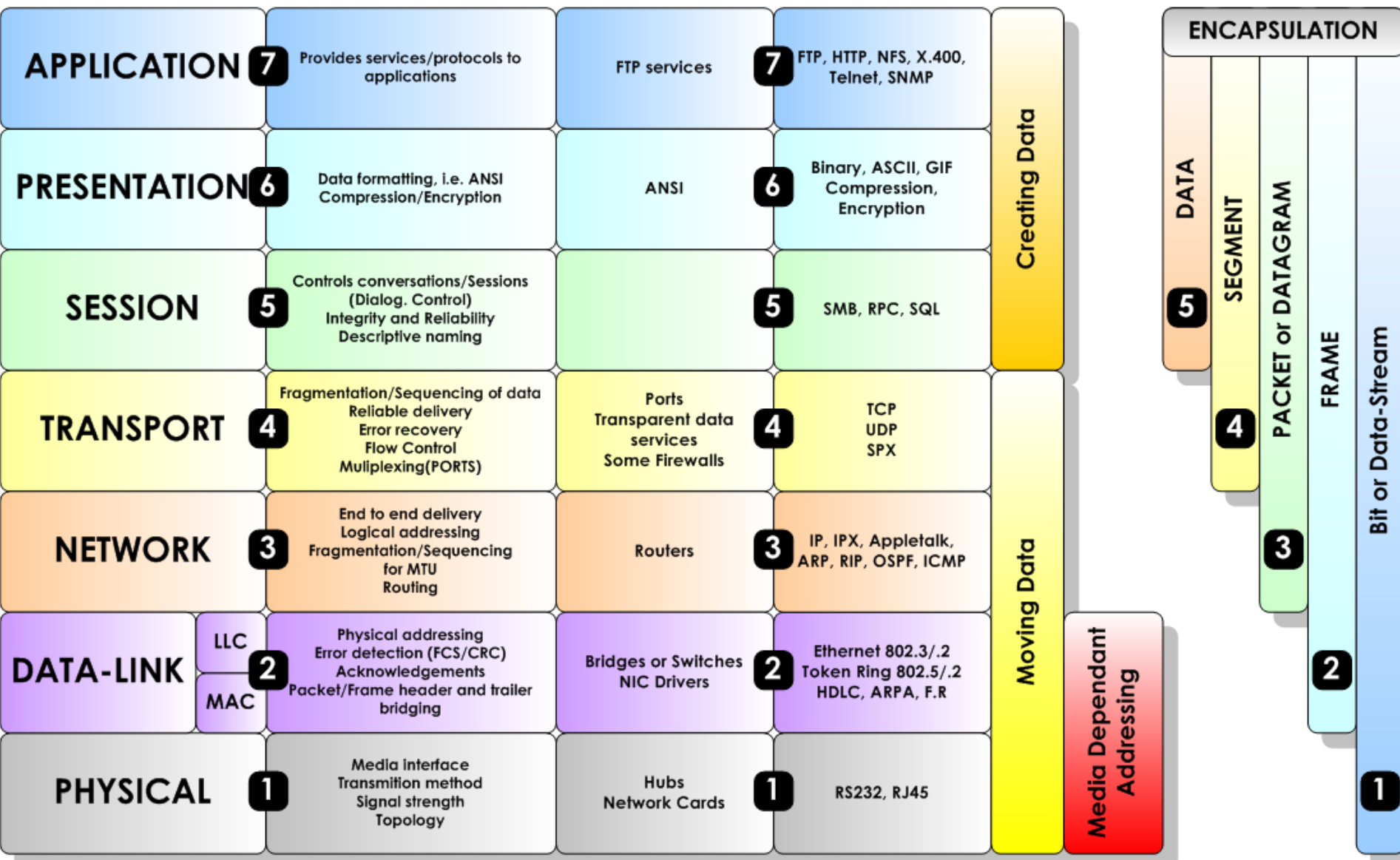## Open Systems Interconnect

# OSI
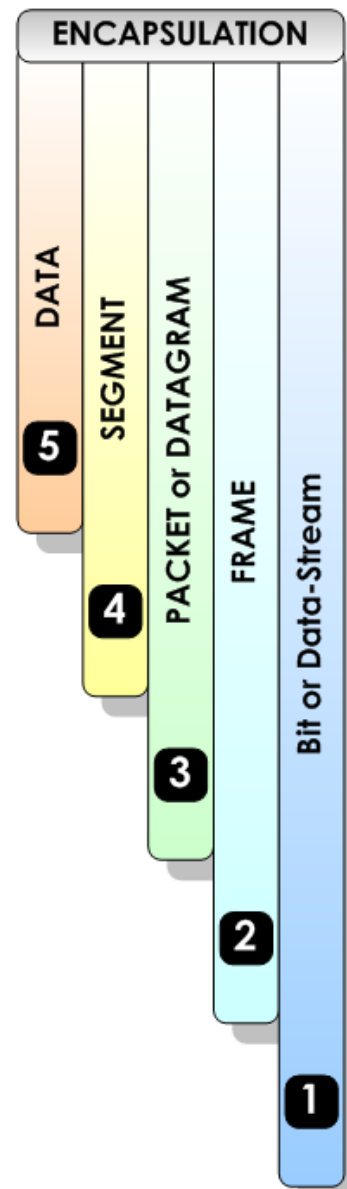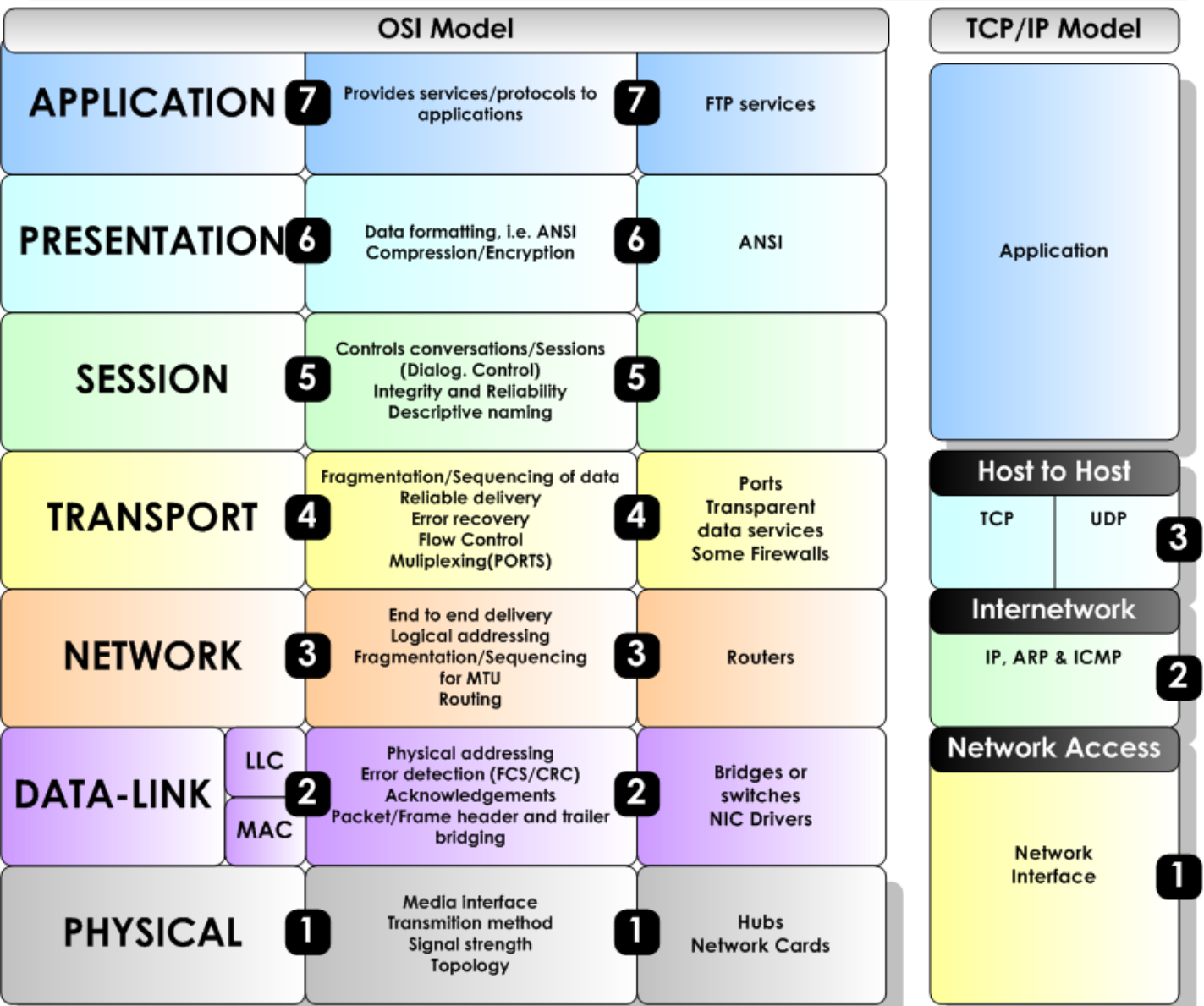
# The OSI Model (Open Systems Interconnection)

| Layer | | Function | Device/Service | Protocols | Data Flow |
|---|---|---|---|---|---|
| APPLICATION | 7 | Provides services/protocols to applications | FTP services (7) | FTP, HTTP, NFS, X.400, Telnet, SNMP | Creating Data |
| PRESENTATION | 6 | Data formatting, i.e. ANSI Compression/Encryption | ANSI (6) | Binary, ASCII, GIF Compression, Encryption | Creating Data |
| SESSION | 5 | Controls conversations/Sessions (Dialog. Control) Integrity and Reliability Descriptive naming | (5) | SMB, RPC, SQL | Creating Data |
| TRANSPORT | 4 | Fragmentation/Sequencing of data Reliable delivery Error recovery Flow Control Muliplexing(PORTS) | Ports Transparent data services Some Firewalls (4) | TCP UDP SPX | Moving Data |
| NETWORK | 3 | End to end delivery Logical addressing Fragmentation/Sequencing for MTU Routing | Routers (3) | IP, IPX, Appletalk, ARP, RIP, OSPF, ICMP | Moving Data |
| DATA-LINK (LLC / MAC) | 2 | Physical addressing Error detection (FCS/CRC) Acknowledgements Packet/Frame header and trailer bridging | Bridges or Switches NIC Drivers (2) | Ethernet 802.3/.2 Token Ring 802.5/.2 HDLC, ARPA, F.R | Moving Data / Media Dependant Addressing |
| PHYSICAL | 1 | Media interface Transmission method Signal strength Topology | Hubs Network Cards (1) | RS232, RJ45 | Moving Data / Media Dependant Addressing |

## ENCAPSULATION

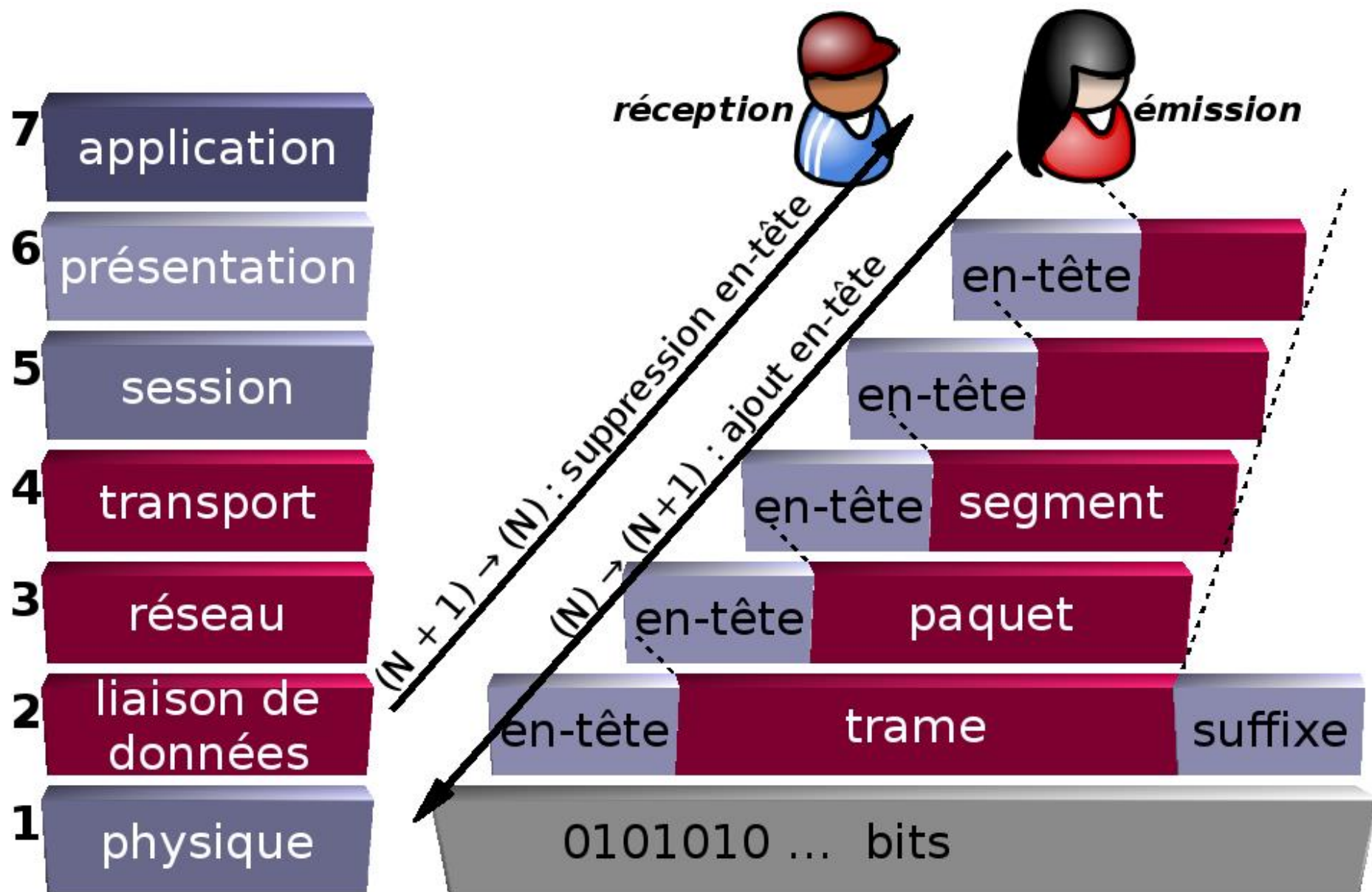| Layer | Unit |
|---|---|
| 5 | DATA |
| 4 | SEGMENT |
| 3 | PACKET or DATAGRAM |
| 2 | FRAME |
| 1 | Bit or Data-Stream |

# The OSI Model (Open Systems Interconnection)

## OSI Model
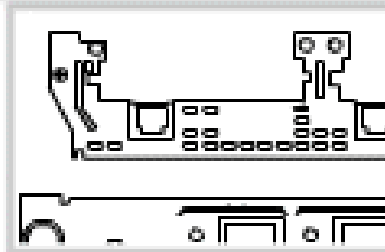
| Layer | | Functions | | Devices/Examples |
|---|---|---|---|---|
| APPLICATION | 7 | Provides services/protocols to applications | 7 | FTP services |
| PRESENTATION | 6 | Data formatting, i.e. ANSI Compression/Encryption | 6 | ANSI |
| SESSION | 5 | Controls conversations/Sessions (Dialog. Control) Integrity and Reliability Descriptive naming | 5 | |
| TRANSPORT | 4 | Fragmentation/Sequencing of data Reliable delivery Error recovery Flow Control Muliplexing(PORTS) | 4 | Ports Transparent data services Some Firewalls |
| NETWORK | 3 | End to end delivery Logical addressing Fragmentation/Sequencing for MTU Routing | 3 | Routers |
| DATA-LINK (LLC / MAC) | 2 | Physical addressing Error detection (FCS/CRC) Acknowledgements Packet/Frame header and trailer bridging | 2 | Bridges or switches NIC Drivers |
| PHYSICAL | 1 | Media interface Transmission method Signal strength Topology | 1 | Hubs Network Cards |

## TCP/IP Model

| Layer | |
|---|---|
| Application | |
| Host to Host — TCP \| UDP | 3 |
| Internetwork — IP, ARP & ICMP | 2 |
| Network Access — Network Interface | 1 |

## ENCAPSULATION

- DATA — 5
- SEGMENT — 4
- PACKET or DATAGRAM — 3
- FRAME — 2
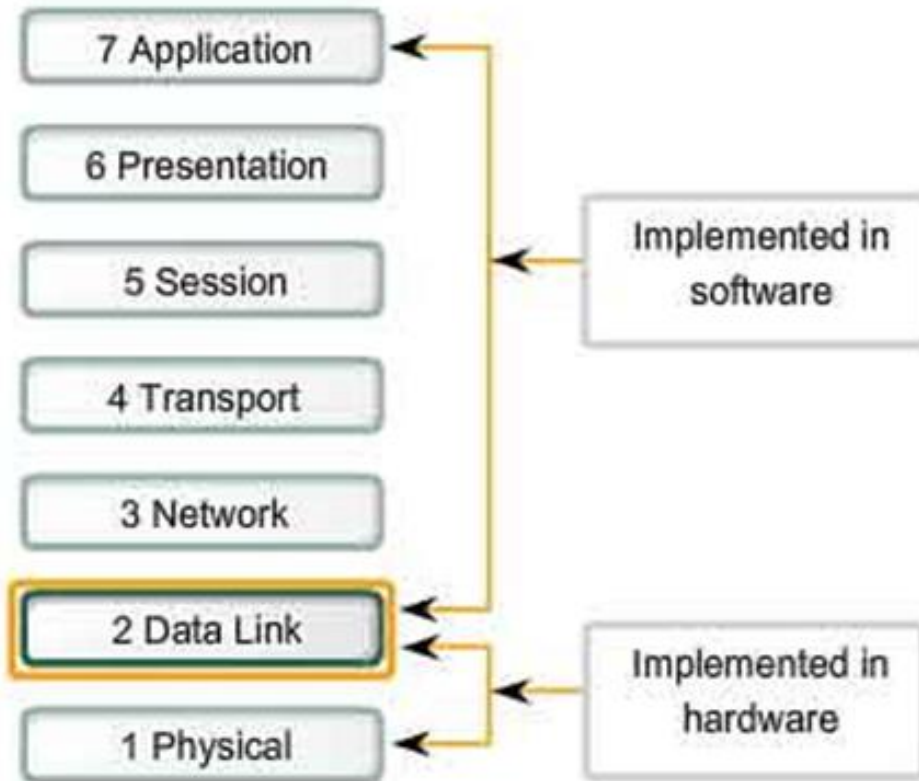- Bit or Data-Stream — 1

# OSI

# Niveau 1 : Physique

SIGNALS    CONNECTORS    CABLES

# Niveau 2 : Liaison de données

## Niveau 2 : Lien entre le logiciel et le matériel

| OSI Layers | |
|---|---|
| 7 Application | |
| 6 Presentation | |
| 5 Session | Implemented in software |
| 4 Transport | |
| 3 Network | |
| 2 Data Link | |
| 1 Physical | Implemented in hardware |

PC NIC

# Niveau 3 : Réseaux

Host

| 7. Application |
| 6. Presentation |
| 5. Session |
| 4. Transport |
| 3. Network |
| 2. Data Link |
| 1. Physical |
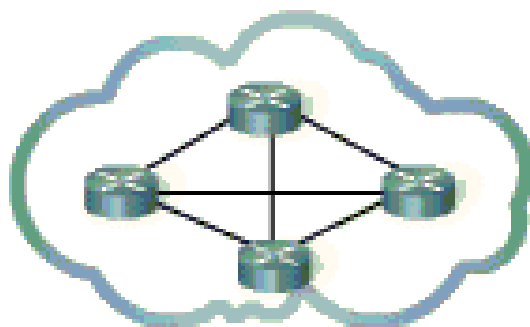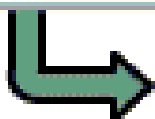
Host
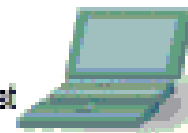
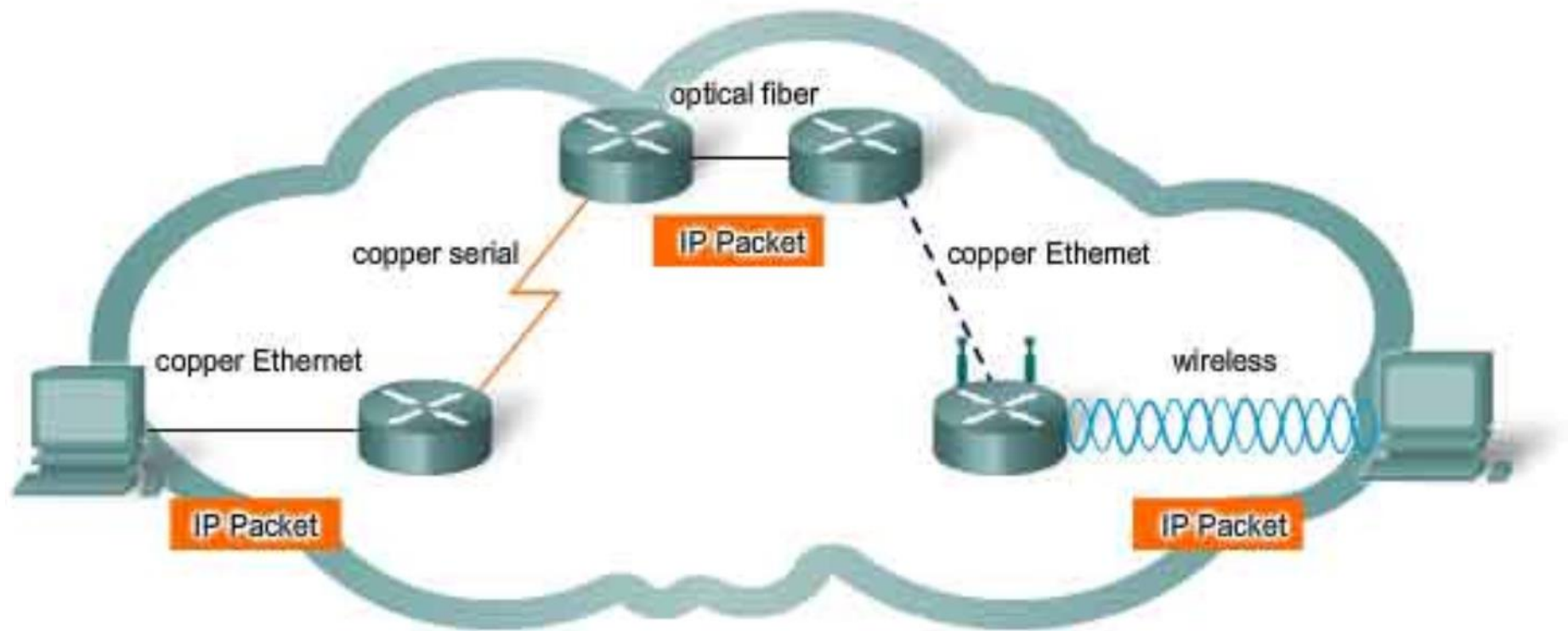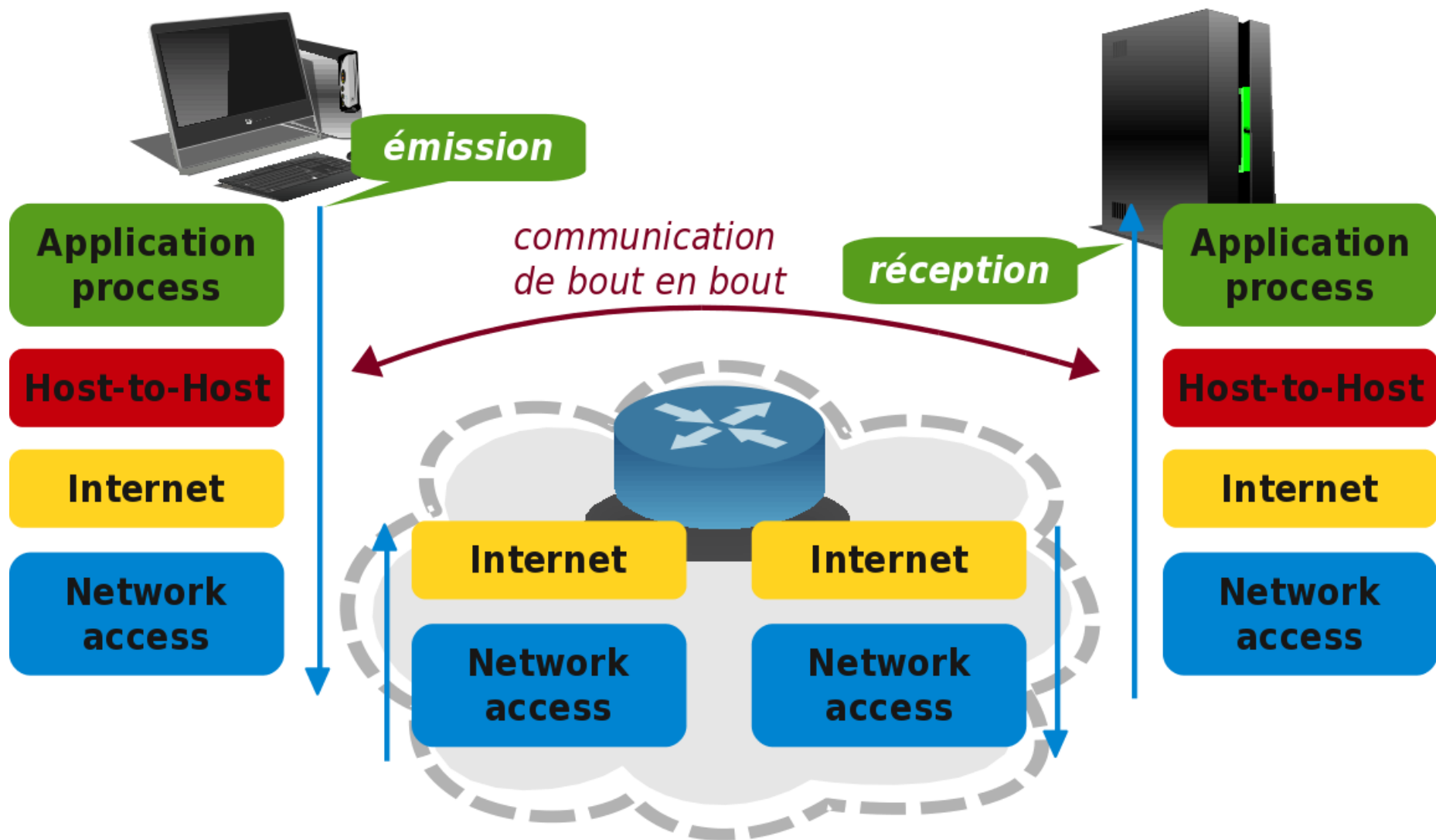| 7. Application |
| 6. Presentation |
| 5. Session |
| 4. Transport |
| 3. Network |
| 2. Data Link |
| 1. Physical |
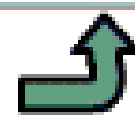
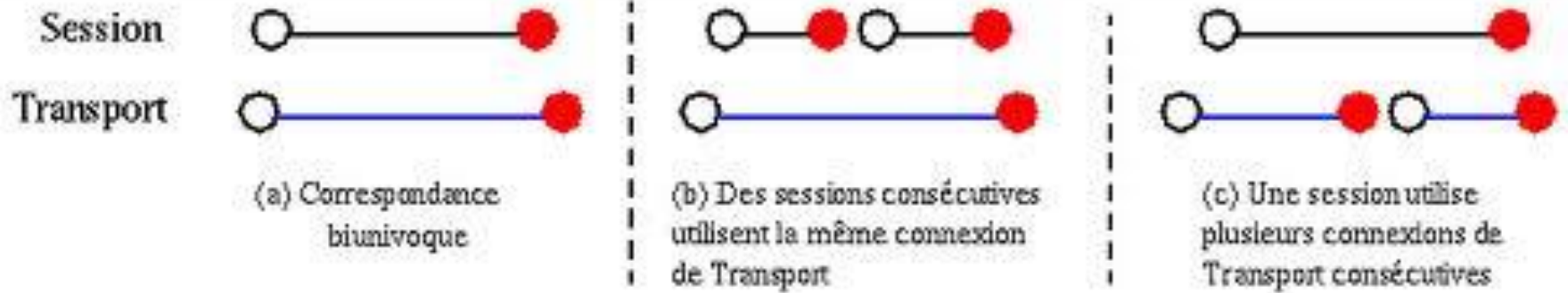# Niveau 3 : Réseaux



IP packets can travel over different media.

# Niveau 4 : Transport

émission

communication de bout en bout

réception

**Application process**

**Host-to-Host**

**Internet**

**Network access**

**Internet**

**Network access**

**Internet**

**Network access**

**Application process**

**Host-to-Host**

**Internet**

**Network access**

# Niveau 5 : Session



Session

Transport

(a) Correspondance biunivoque

(b) Des sessions consécutives utilisent la même connexion de Transport

(c) Une session utilise plusieurs connexions de Transport consécutives
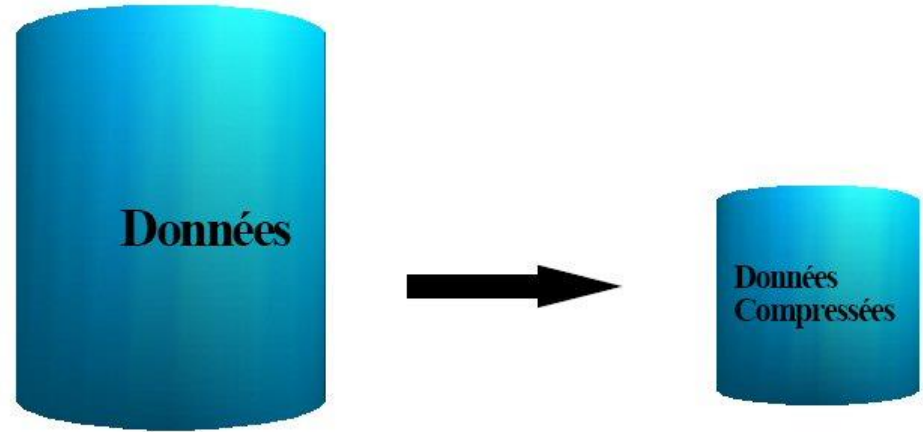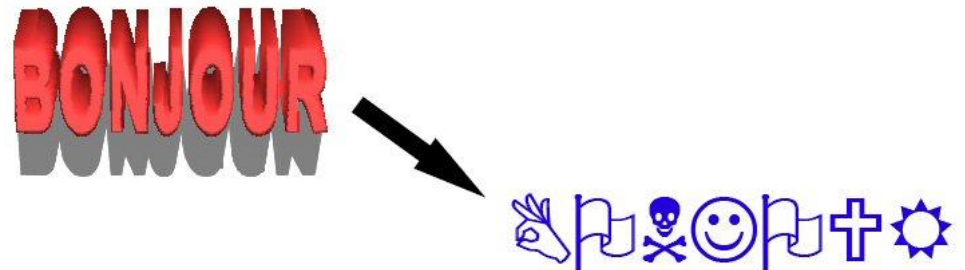
Système A

Transaction

Système B
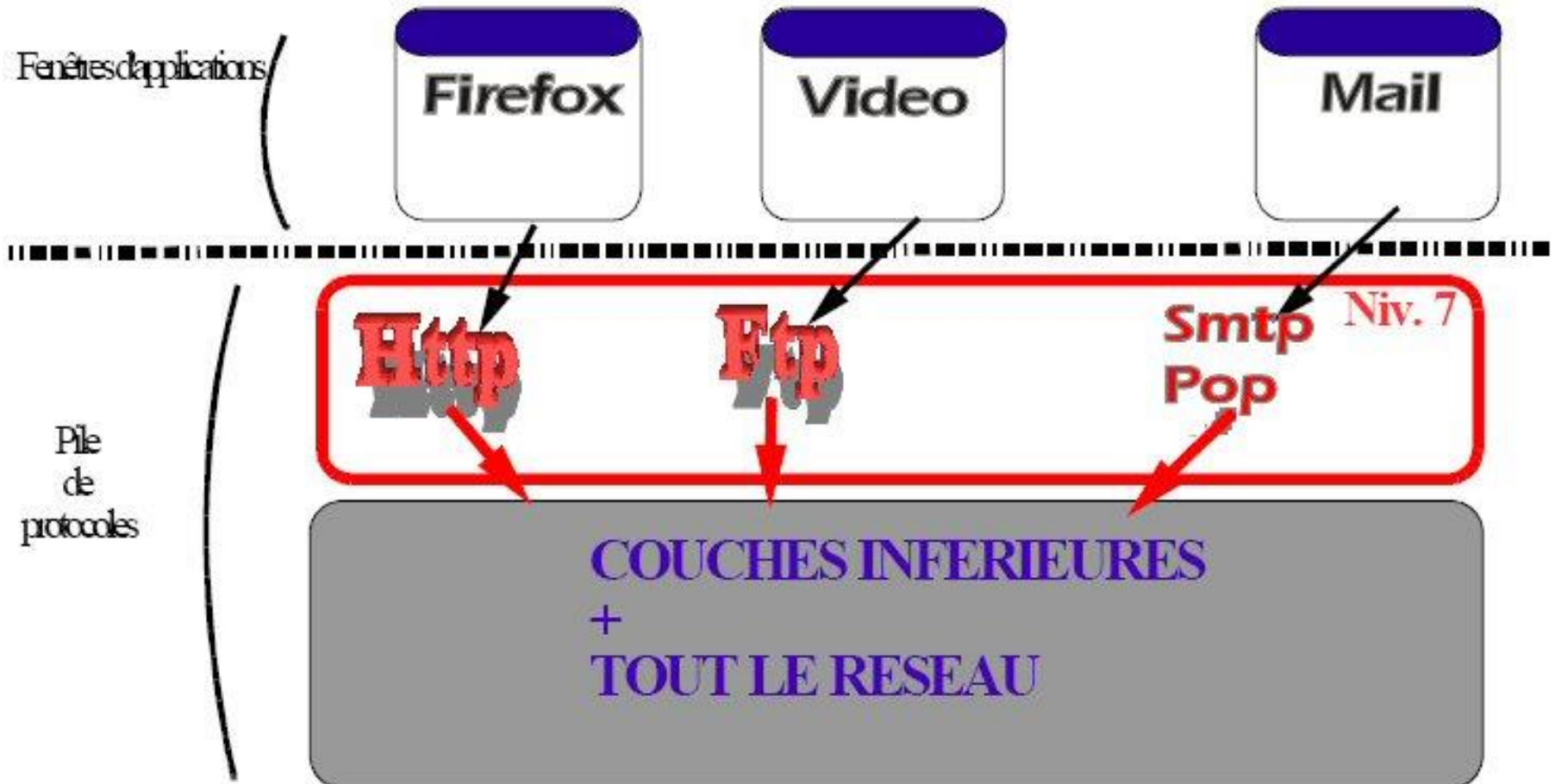
# Niveau 6 : Présentation

**Compression**

**Cryptage**

**Représentation des données**
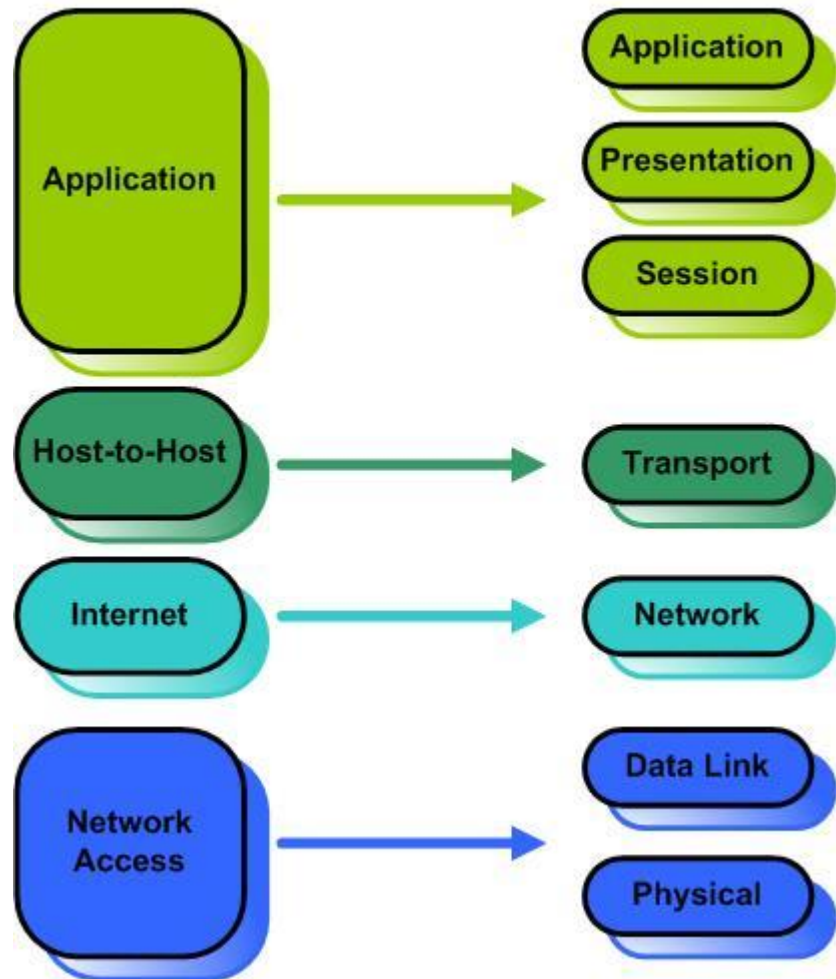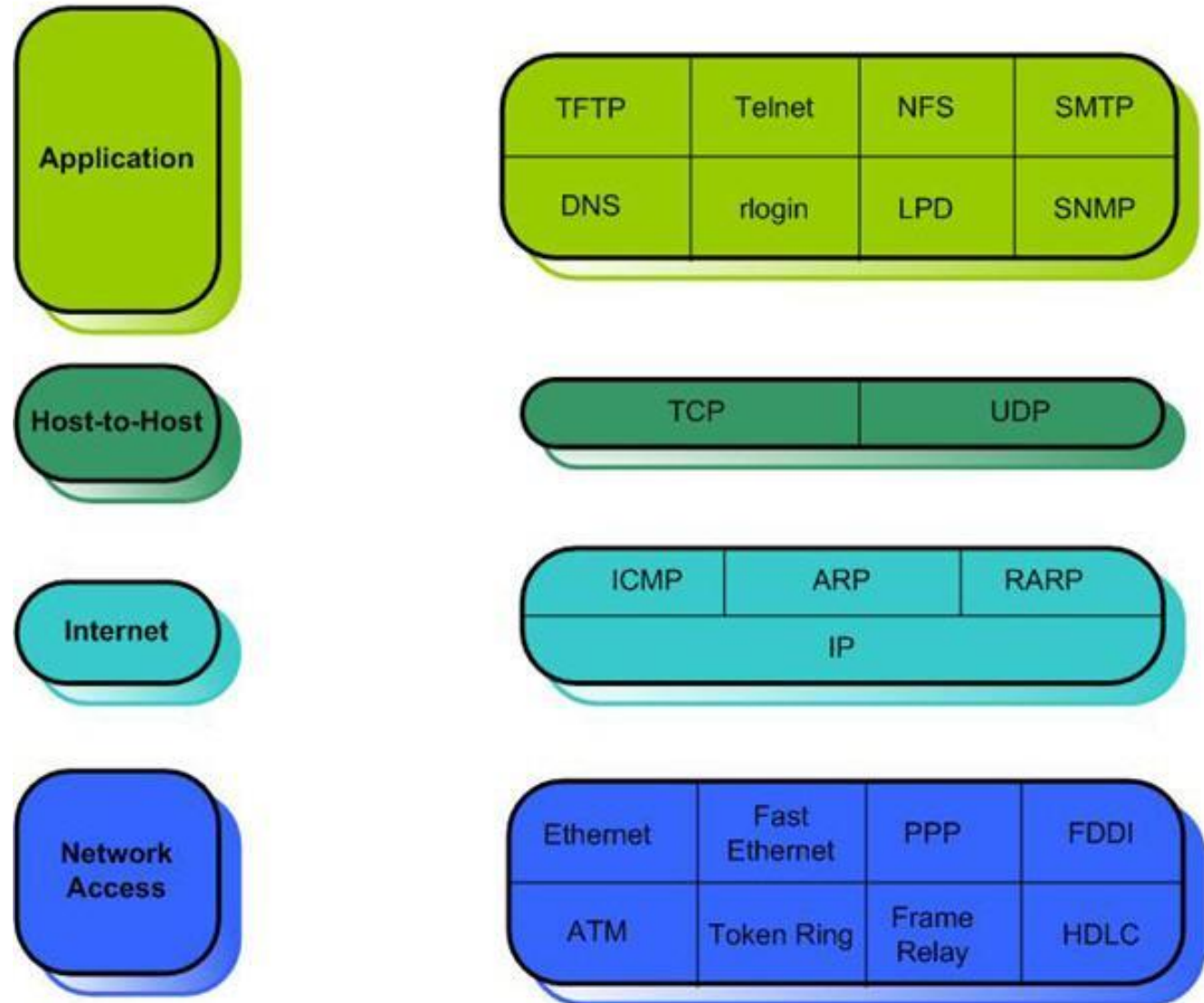
# Niveau 7 : Services d'applications

# Modèle TCP / IP

## The TCP/IP and OSI Models

# TCP / IP

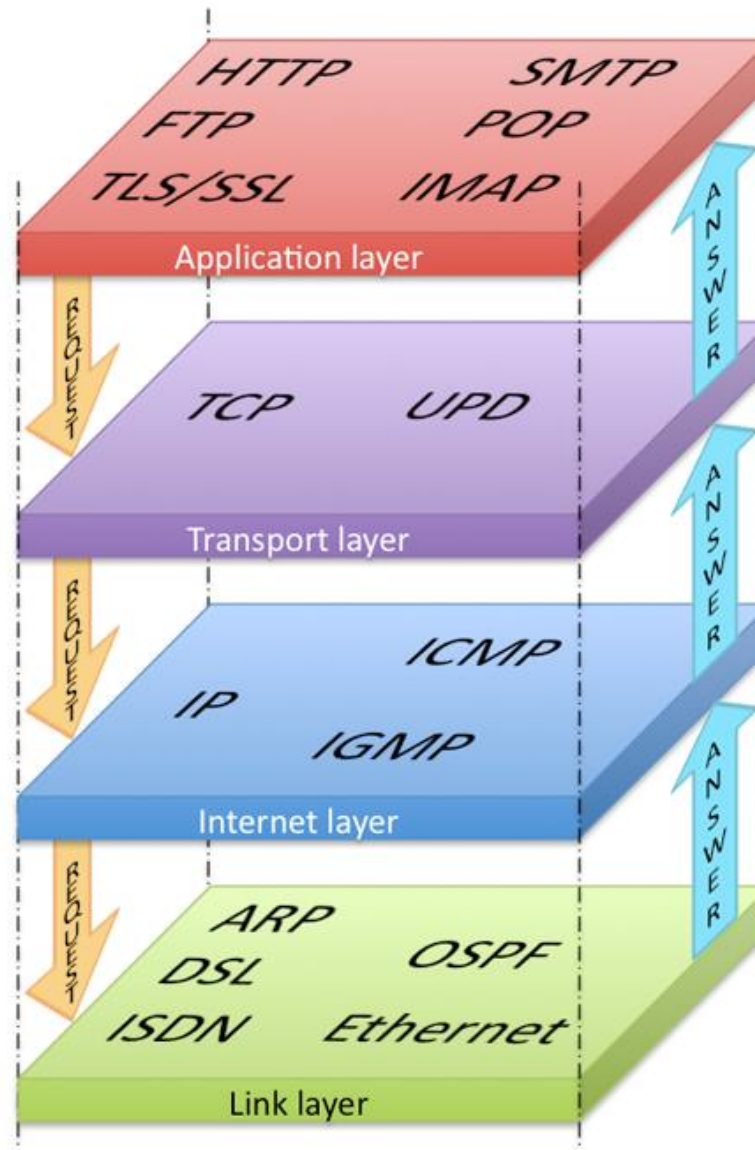## The TCP/IP Protocol Suite

**Application**

| TFTP | Telnet | NFS | SMTP |
|------|--------|-----|------|
| DNS | rlogin | LPD | SNMP |

**Host-to-Host**

| TCP | UDP |
|-----|-----|

**Internet**

| ICMP | ARP | RARP |
|------|-----|------|
| IP | | |

**Network Access**

| Ethernet | Fast Ethernet | PPP | FDDI |
|----------|---------------|-----|------|
| ATM | Token Ring | Frame Relay | HDLC |

# TCP / IP

| # | OSI Reference Model | TCP/IP |
|---|---------------------|--------|
| 7 | Application | Application |
| 6 | Presentation | Application |
| 5 | Session | Application |
| 4 | Transport | Transport |
| 3 | Network | Internet |
| 2 | Data Link | Network Interface |
| 1 | Physical | Network Interface |

OSI Reference Model

TCP/IP