

# Lecture 5

# Internet Hardware, Software and Communications

Lecturer: Professor Rasulev D.M.

# Internet Hardware, Software and Communications



# Structure of the Internet

- host computers
- IP stands for Internet Protocol
- packets
- source address, a destination address, sequencing information, error-control information and the data
- destination address
- a router



# Hardware: Servers



- hypertext transfer protocol (HTTP)
- file transfer protocol (FTP)
- the post office protocol (POP)
- simple mail transfer protocol (SMTP)

# Microsoft Cloud Infrastructure



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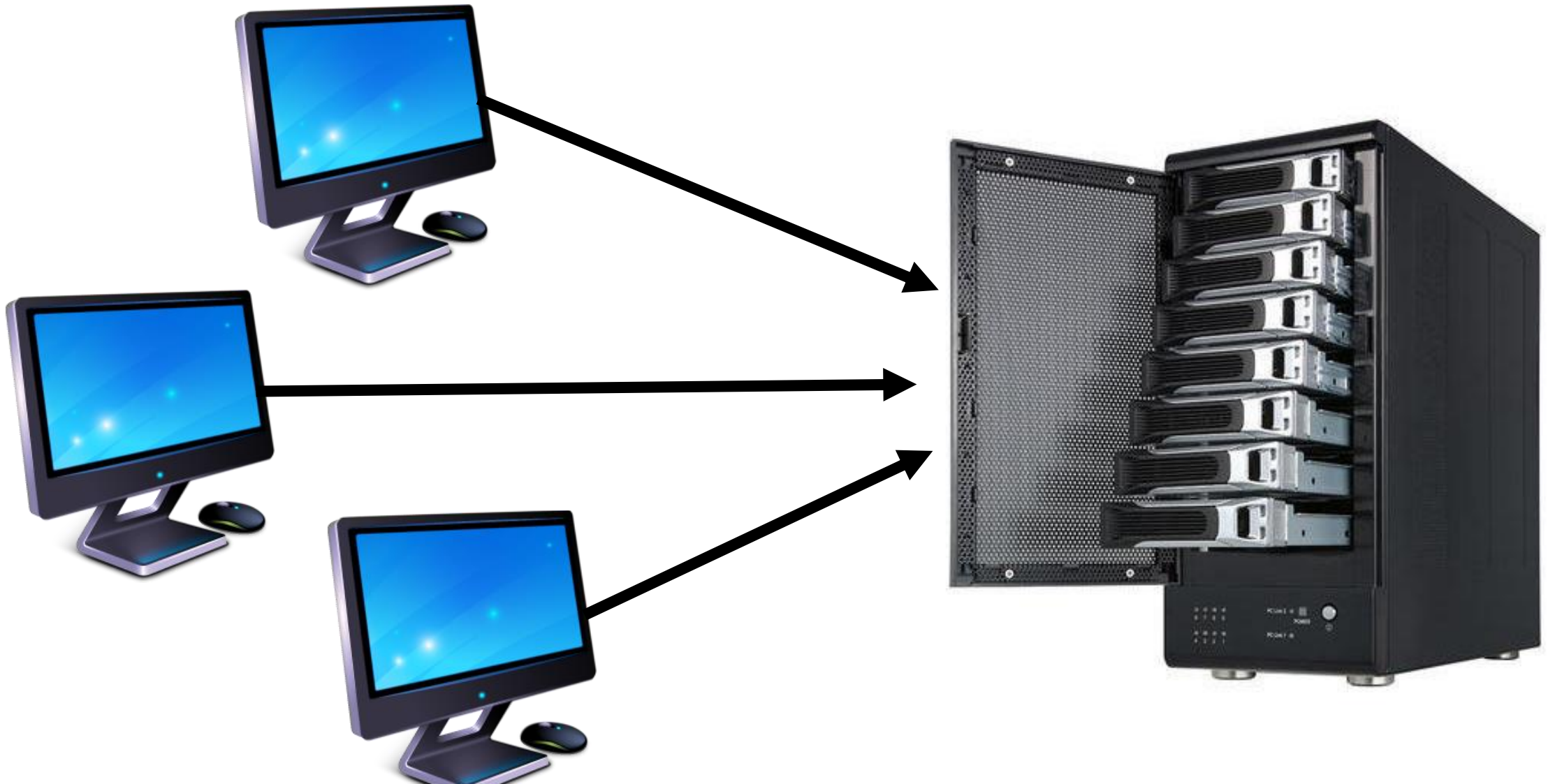
# Hardware: Communications Media

- bits per second (bps)
- kilobits per second (Kbps)
- megabits per second (Mbps)
- gigabits per second (gbps)



- Fiber-optic cable
- Opto -chip
- Optical modem
- Repeaters

# Hardware: Storage Area Networks (SANs)



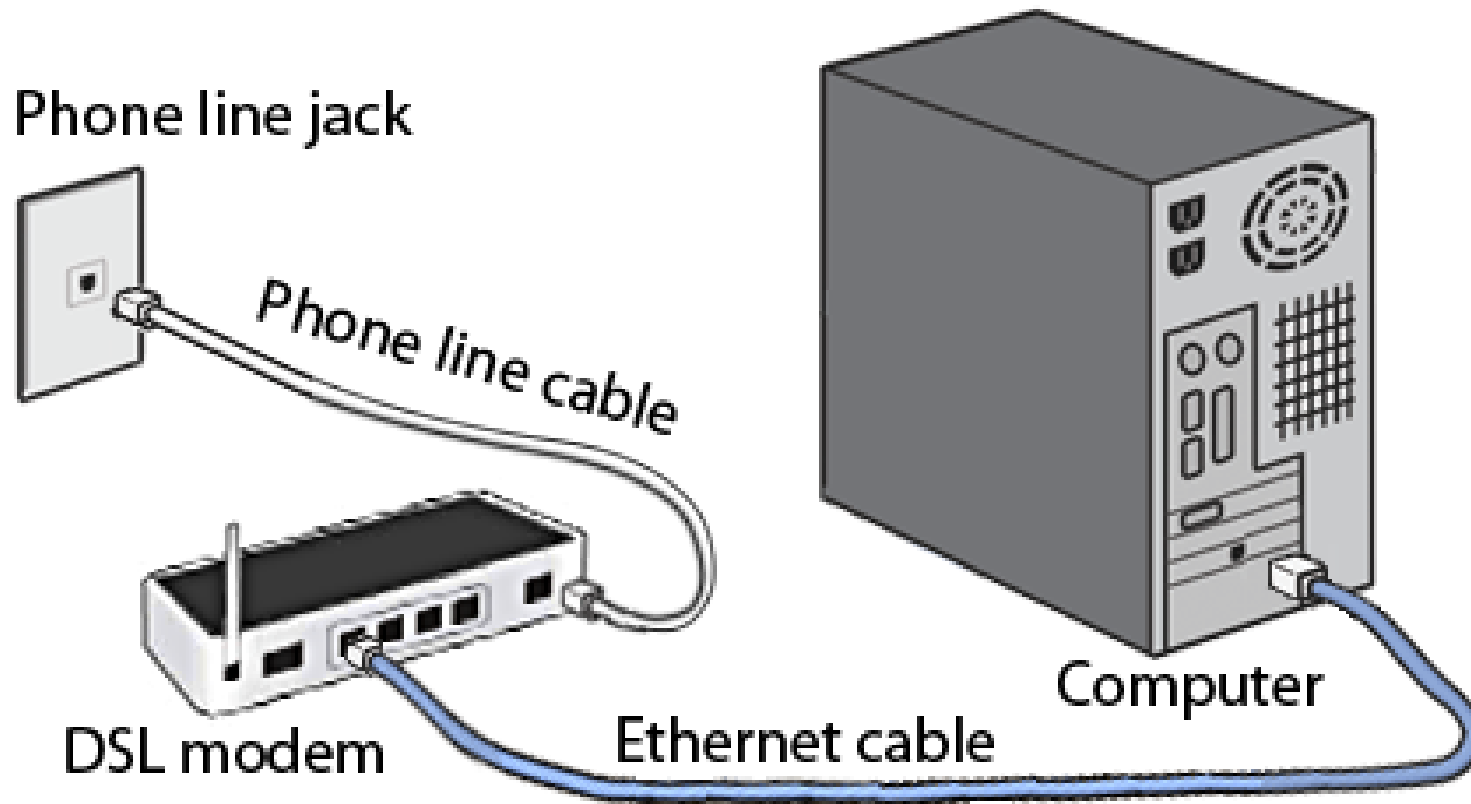
# Connecting to the Internet

- Internet Service Provider (ISP)

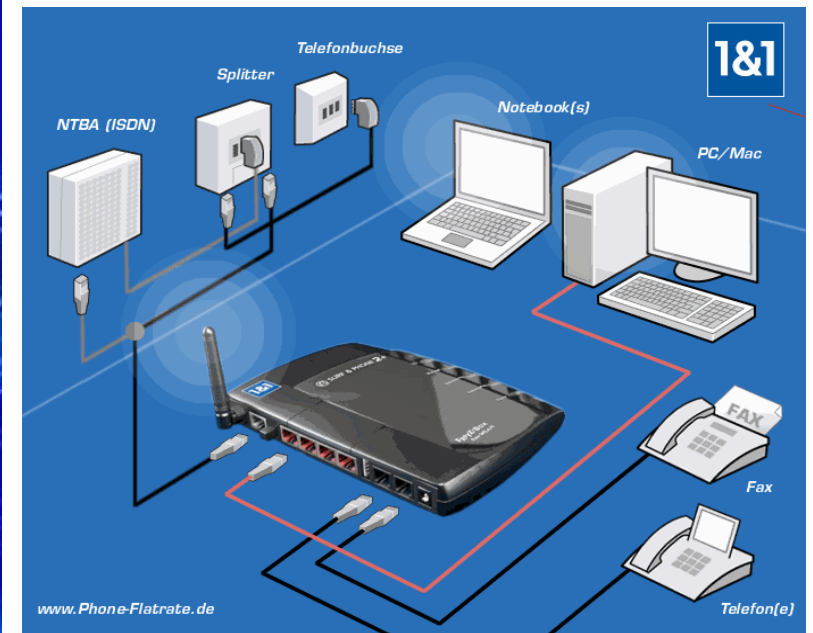
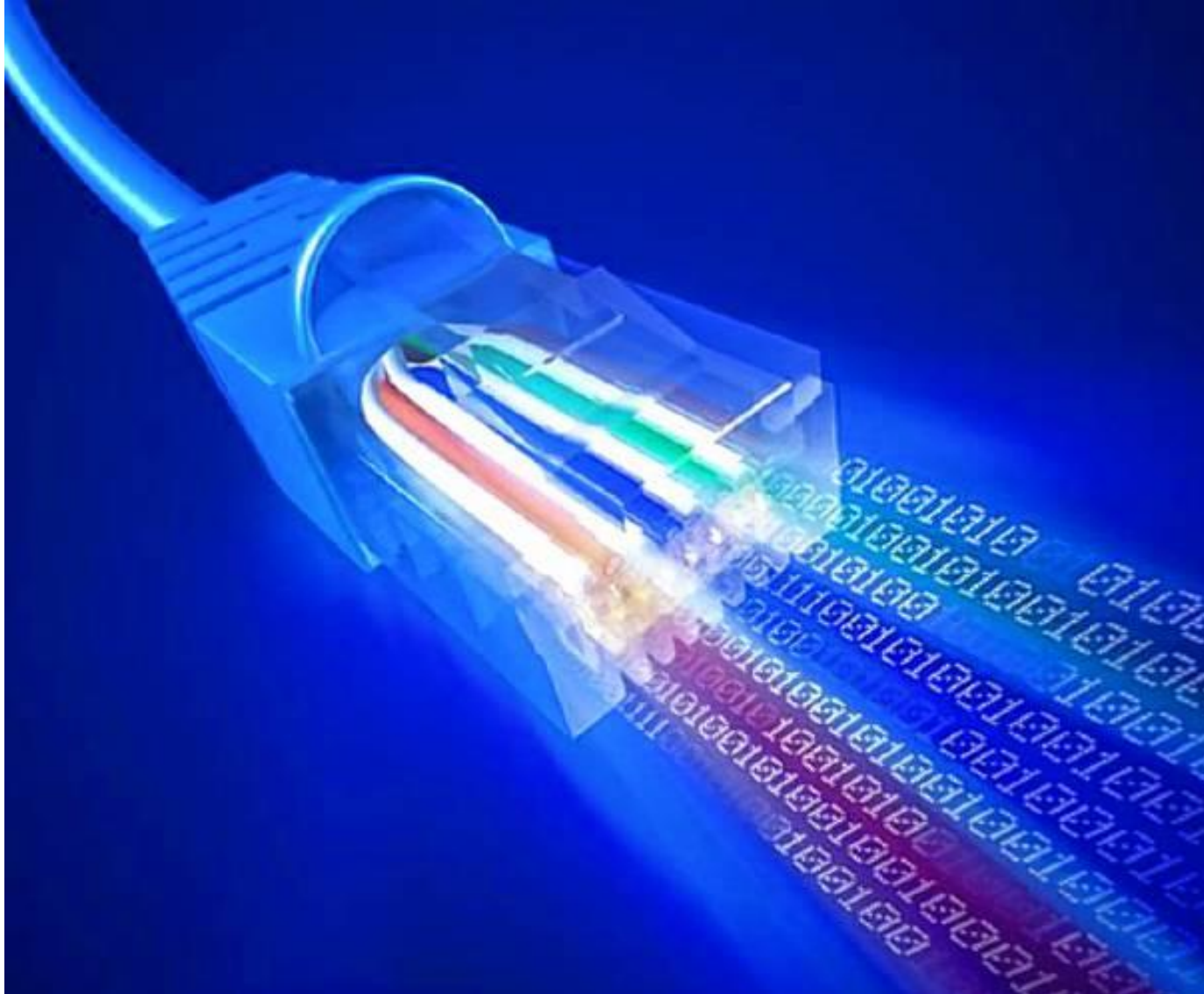


# Digital Subscriber Line (DSL)

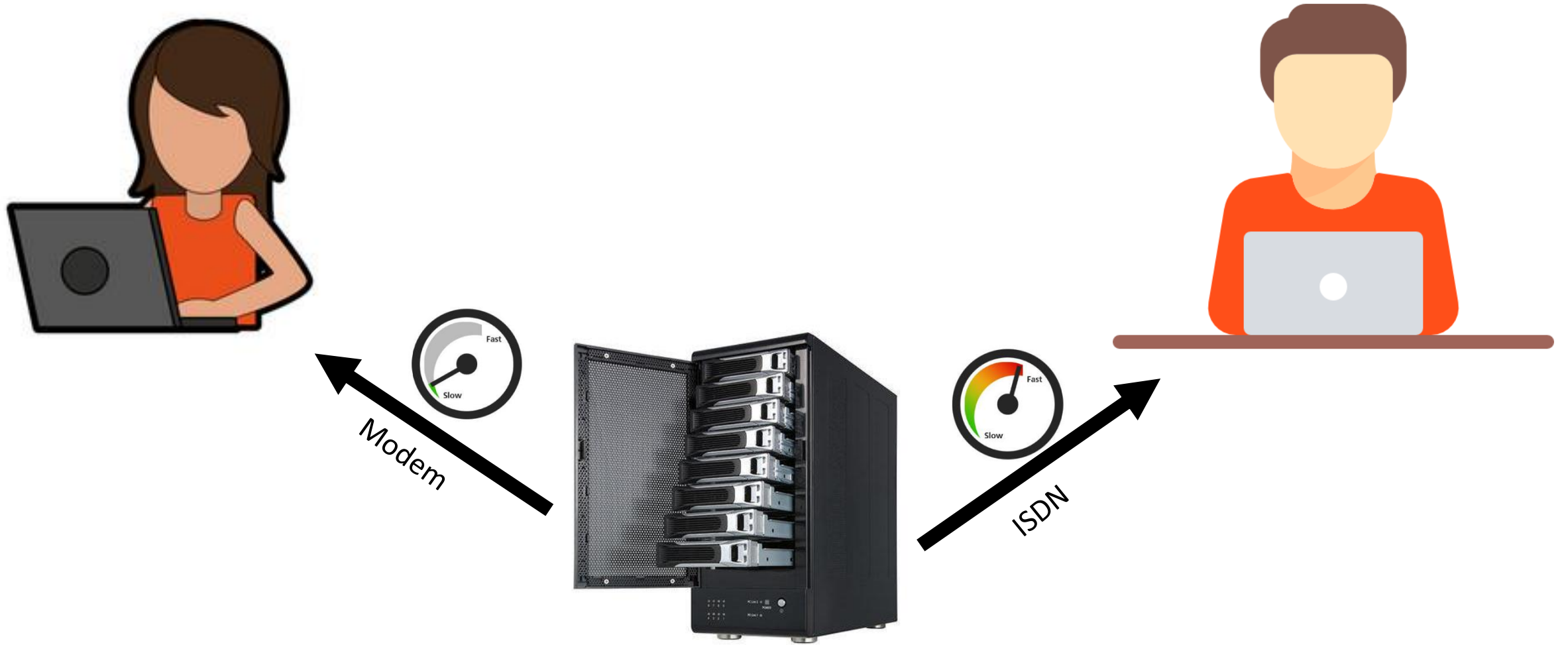
- hypertext transfer protocol (HTTP)



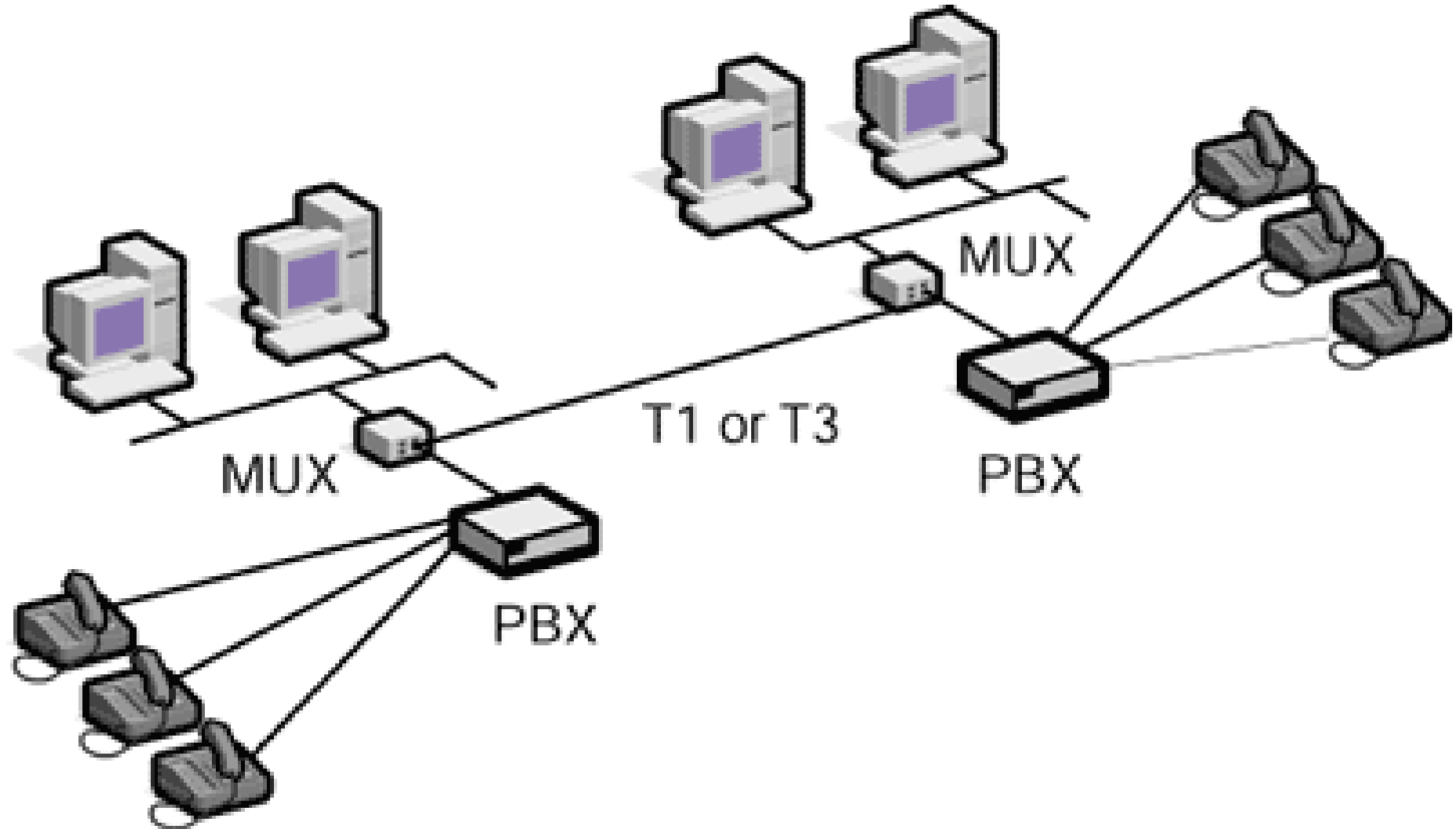
# Broadband



# Integrated Services Digital Network (ISDN)



# T-1 and T-3 Lines



# Software: Application Service Providers (ASPs)

- information technology (IT)
- virtual private networks (VPNs)
- Application service providers (ASPs)
- point-to-point tunneling protocol (PPTP)



# Databases

- database management system (DBMS)
- Structured Query Language (SQL)

**Table: Employee**

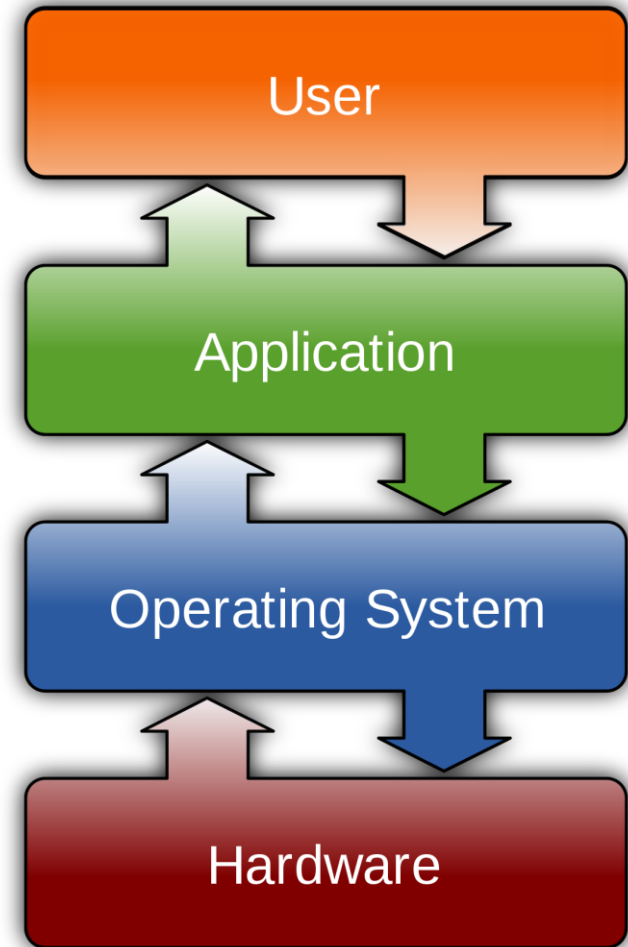
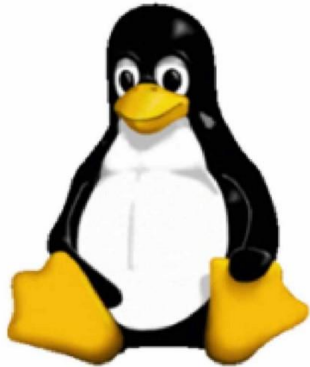
	<b>Number</b>	<b>Last Name</b>	<b>Department</b>	<b>Salary</b>	<b>Location</b>
	23603	JONES	413	1100	NEW JERSEY
	24568	KERWIN	413	2000	NEW JERSEY
A record {	34589	LARSON	642	1800	LOS ANGELES
	35761	MYERS	611	1400	ORLANDO
	47132	NEUMANN	413	9000	NEW JERSEY
	78321	STEPHENS	611	8500	ORLANDO

Primary key

A column

# Operating Systems

- central processing unit (CPU)
- random access memory (RAM)
- various input/output devices (I/O)
- data stored on hard disks, CD-ROMS



# UNIX®

```
# \tps :b2 :c :d3 :i1 :n5 :p6 :u-
12448 tcsh -c env SHELL=/usr/local/bin/tcsh DISPLAY=win:0.0  rxvt -display win
└─> 12473  rxvt -display win:0.0
    └─> 12475  /home/vlefevre/bin-sparc/zsh
23547 screen -T vt100 -c .screenrc
└─> 17983  /home/vlefevre/bin-sparc/zsh
└─> 23549  /home/vlefevre/sparc/bin/perl -T ./t3-server -v results.exm.8.54
└─> 23552  /home/vlefevre/sparc/bin/perl ./t3-secstep -r=results.exm.8.54 -g=psm
    └─> 26290  /usr/local/maple/bin_SUN_SPARC_UNIX/mapleTTY -q -s
└─> 23609  rlogin psmn-u2-1
    └─> 23614  rlogin psmn-u2-1
26273 tcsh -c env SHELL=/usr/local/bin/tcsh DISPLAY=win:0.0  rxvt -display win
└─> 26275  rxvt -display win:0.0
    └─> 26277  /home/vlefevre/bin-sparc/zsh
        └─> 26371  /home/vlefevre/bin-sparc/perl ./tst
            └─> 26372  <defunct>
        └─> 26445  /usr/local/bin/perl /home/vlefevre/private/bin/tps :b2 :c :d3 :i1
            └─> 26449  sh -c ps -u vlefevre -o "user pid ppid nice args"
```



# Microsoft Windows







# Enhancing Business Communication



What's next?

Next Lecture: [Online Monetary Transactions](#)



Thank you!

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