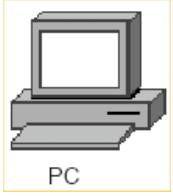


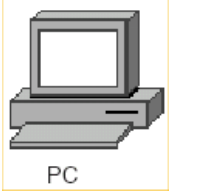
AĞ TEMELLERİ

4.Hafta Ders Sunusu
Öğr.Gör.Volkan ALTINTAŞ

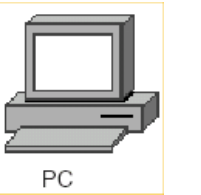
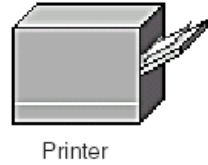
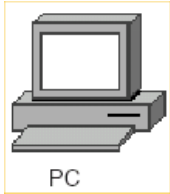
Data Network'lerin Gelişimi



➤ Veri Ağları iş uygulamalarının bir sonucudur.

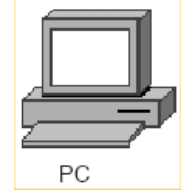


➤ Bağımsız cihazlar kendi başlarına kendi işlemlerini yapabilirler.

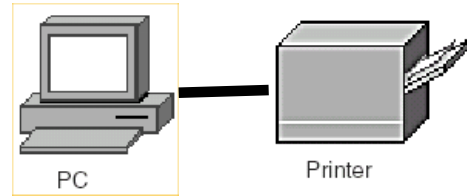


Data Network'lerin Gelişimi

Bağımsız Cihazlar;

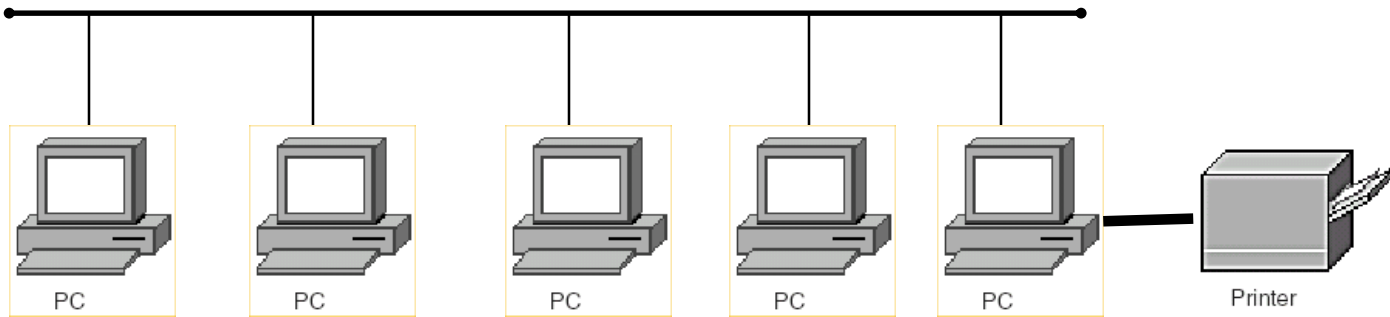


- ❖ Verimli ve uygun maliyetli değil.
- ❖ Kaynakların ve cihazların çoğalması.
- ❖ Veri paylaşımı veya cihazların birbirine bağlanması mümkün değil.



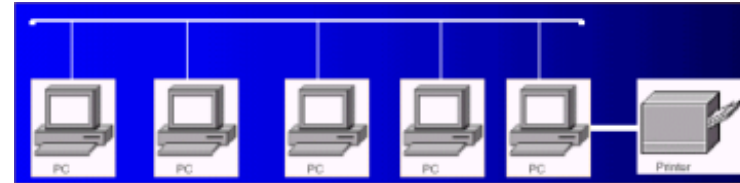
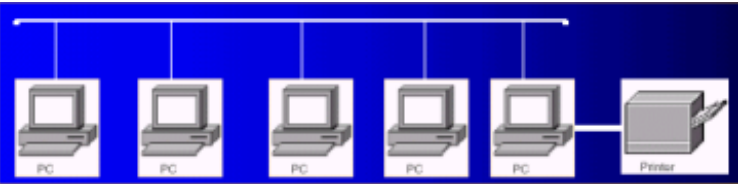
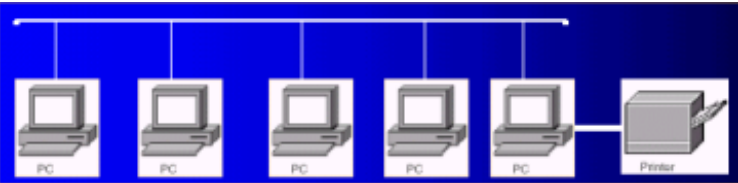
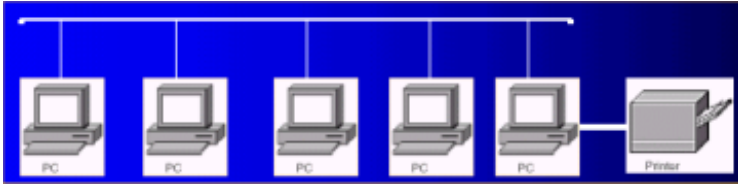
Data Network'lerin Gelişimi

- ❖ 1980 'lerde büyüyen network teknolojileri.
- ❖ Yazılım ve donanım ihtiyaçlarının artması.
- ❖ Uyumsuz teknolojilerinin birbiri ile uyum sağlayamaması..
- ❖ Standartın sağlanması ve birlikte çalışma.



Data Network'lerin Gelişimi

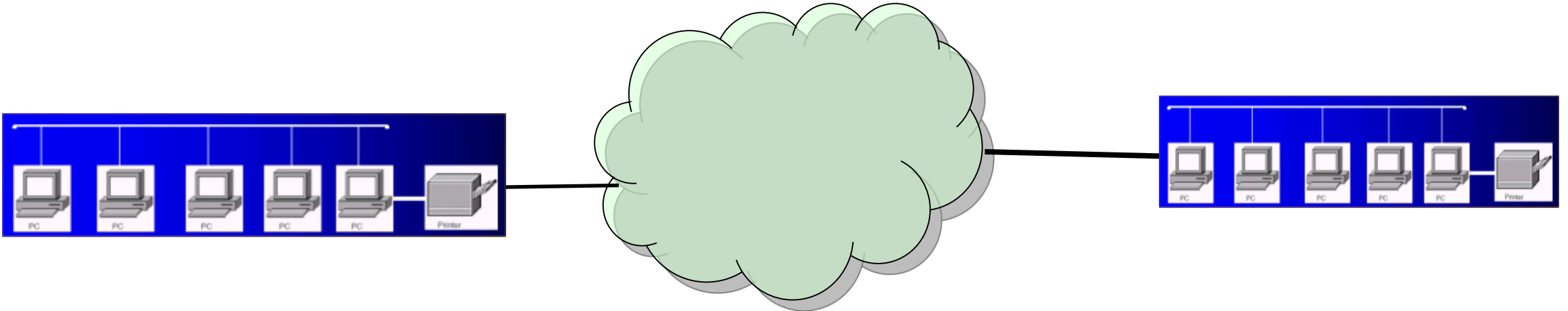
- ❑ LAN (Local Area Network) hızlı bir şekilde oluşması.
- ❑ LAN'ları kendi aralarında bir elektronik ada haline getirdi.
- ❑ Uzak bağlantılar nasıl olacak...



Data Network'lerin Gelişimi

Uzak elektronik adaların bağlantı çözümü için MAN(Metropolitan Area Network) ve WAN(Wide Area Network) sistemleri ile çözüm oluşturulmaya çalışıldı.

WAN'lar sayesinde çok uzak adalar arasında bağlantı oluşturuldu.



Veri Ağları için Örnekler

Distance Between CPUs	Location of CPUs	Name
0.1 m	Printed circuit board Personal data asst.	Motherboard Personal Area Network (PAN)
1.0 m	Millimeter Mainframe	Computer Systems Network
10 m	Room	Local Area Network (LAN) Your classroom
100 m	Building	Local Area Network (LAN) Your school
1000 m = 1 km	Campus	Local Area Network (LAN) Stanford University
100,000 m = 100 km	Country	Wide Area Network (WAN) Cisco Systems, Inc.
1,000,000 m = 1,000 km	Continent	Wide Area Network (WAN) Africa
10,000,000 m = 10,000 km	Planet	Wide Area Network (WAN) The Internet
100,000,000 m = 100,000 km	Earth-moon system	Wide Area Network (WAN) Earth and artificial satellites

LAN (Local Area Network)

- ❑ Belli bir alanda uygulanabilir.
- ❑ Yüksek bant ve birden fazla erişime izin verir.
- ❑ Ağ yönetici tarafından kontrol edilebilir.
- ❑ Yerel hizmetlere kesintisiz bağlantı.
- ❑ Fiziksel olarak ortak cihazların kullanımı.

LAN (Local Area Network)



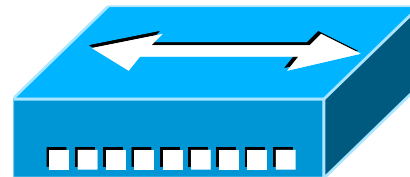
Switch



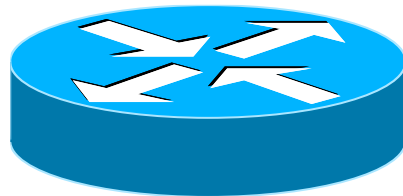
100BaseT
Hub



Bridge



Small Hub (10BaseT Hub)

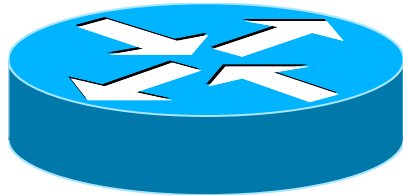


Router

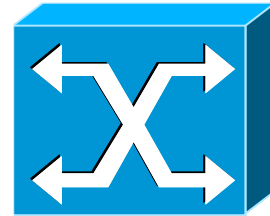
WAN(Wide Area Network)

- ❖ Büyük coğrafi alanlarda uygulanır.
- ❖ İster tam istenirse part time bağlantı imkanı sunar.
- ❖ Uzak yerlerde bulunan cihazları birbirine bağlayabilirsiniz.

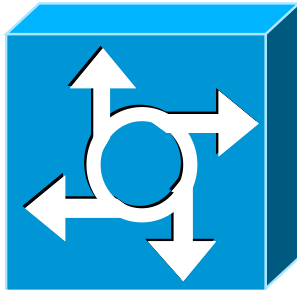
WAN(Wide Area Network)



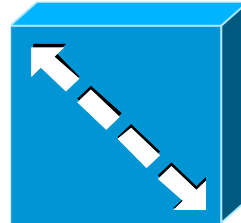
Router



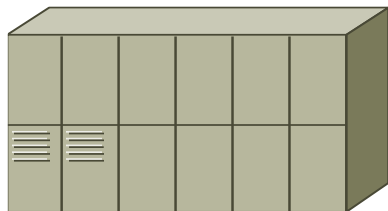
ATM
Switch



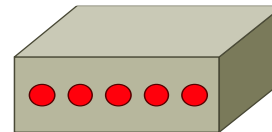
Access
Server



ISDN
Switch



WAN
Bandwidth
Switch



Modem

CSU/DSU

TA/NT1

Bandwidth

Unit of Bandwidth	Abbrev.	Equivalence
Bits per second	bps	1 bps = fundamental unit of bandwidth
Kilobits per second	kbps	1 kbps = 1,000 bps = 10^3 bps
Megabits per second	Mbps	1 Mbps = 1,000,000 bps = 10^6 bps
Gigabits per second	Gbps	1 Gbps = 1,000,000,000 bps = 10^9 bps

Belli bir zamandaki bilginin akış miktarını tanımlar...

Bandwidth

Digital Sistemlerde: Saniyedeki veri iletim hızı.

- Modem 56,000 bps
- T1 line 1,544 Mbps
- E1 line 2048 Kbps
- A 10 Base-T Ethernet Line 10Mbps

Analog Sistemlerde: Den yüksek frekanslı cihazlar ile en düşük frekanslı cihazlar arasındaki fark. (Frekans saniyedeki cycle sayısının ölçümüdür. Veya HERTZ)

- Ses sinyali~ 0-3 kHz
- Video sinyali~ 6MHz

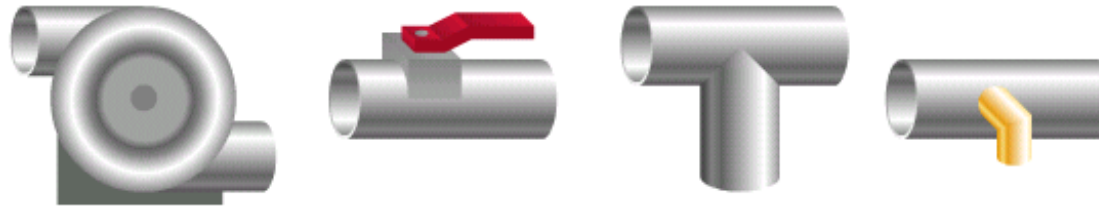
Analojiler

Pipe Analogy

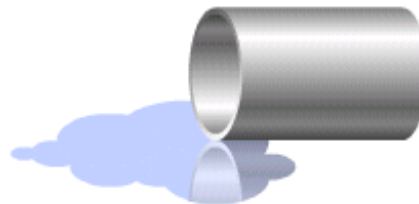
Bandwidth is like pipewidth.



Network devices are like pumps, valves, fittings, and taps.



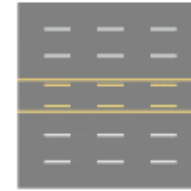
Packets are like water.



Analojiler

Highway Analogy

Bandwidth is like the number of lanes.



Network devices are like on-ramps, traffic signals, signs, and maps.



Packets are like vehicles.



WAN Hizmetleri ve Bandwidth

Type of WAN service	Typical User	Bandwidth
Modem	Individuals	56 Kbps = 0.056 Mbps
ISDN	Telecommuters, Small businesses	128 Kbps = 0.128 Mbps
Frame-Relay	Small institutions (schools); reliable WANs	56 Kbps - 1544Kbps = 0.056 Mbps - 1.544 Mbps
T1	Larger entities	1.544 Mbps
T3	Larger entities	44.736 Mbps
E1	Larger entities	2.048 Mbps
E3	Larger entities	34.368 Mbps
STS-1 (OC-1)	Phone companies; DataComm company backbones	51.840 Mbps
STS-3 (OC-3)	Phone companies; DataComm company backbones	155.251 Mbps
STS-48 (OC-48)	Phone companies; DataComm company backbones	2.488320 Gbps