

# Introduction to Networking

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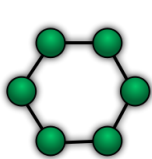
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A **computer network** is a collection of computers and other hardware components interconnected by communication channels that allow sharing of information

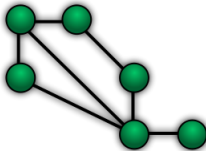
A **host** is an end system connected to a network

**Server** – host, that provides some service

# Connection types



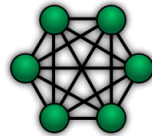
**Ring**



**Mesh**



**Star**



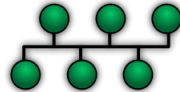
**Fully Connected**



**Line**



**Tree**



**Bus**

# OSI model

N	Layer	Function
7	Application	Network process to application
6	Presentation	Data representation, encryption and decryption
5	Session	Managing sessions between applications
4	Transport	End-to-end connections, reliability and flow control
3	Network	Path determination and logical addressing
2	Data link	Physical addressing
1	Physical	Media, signal and binary transmission

# Modern protocols

- Ethernet
- IP/TCP
- DNS
- FTP
- WHOIS
- HTTP

An IPv4 address (dotted-decimal notation)

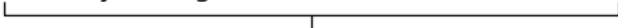
**172 . 16 . 254 . 1**



10101100.00010000.11111110.00000001



One byte=Eight bits



Thirty-two bits (4 x 8), or 4 bytes

# IP – Network classes

Class	Leading bits in address	Range of first octet (decimal)	Network/Host ID format	Number of networks
A	0	0-127	a/b.c.d	128
B	10	128-191	a.b/c.d	$2^{14}$
C	110	192-223	a.b.c/d	$2^{21}$

# Reserved private IPv4 network ranges

IANA-reserved private IPv4 network ranges

	Start	End
A	10.0.0.0	10.255.255.255
B	172.16.0.0	172.31.255.255
C	192.168.0.0	192.168.255.255



# Basic hardware components

- Interface cards
- Repeaters and hubs
- Bridges
- Switches
- Routers

# Dixi