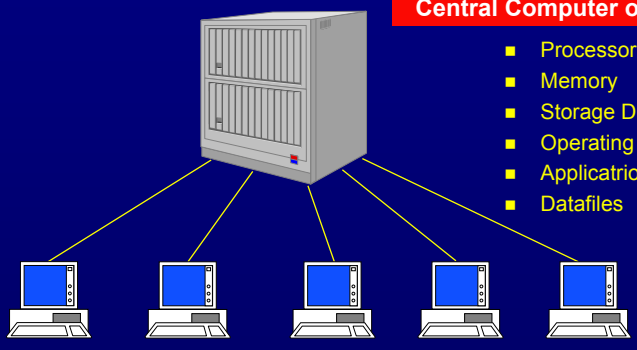
Network of Networks

A Presentation by

R. Jayanthan BSc.Eng.(Hons), MIEEE, AMIEE

Where it all started ?

This is an early day's MainFrame Computer System...



Central Computer or Host

- Processor
- Memory
- Storage Disk
- Operating System
- Applicatrion Programes
- Datafiles

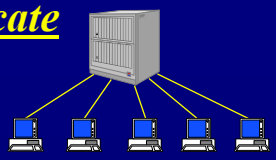
Terminals

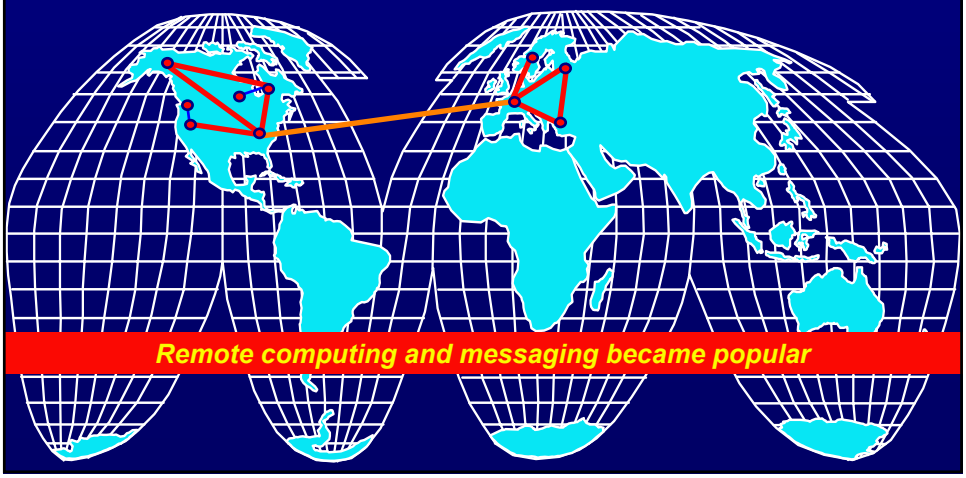
- Keyboard
- Visual Display Unit

Host Sharing

Large and Expensive Systems.

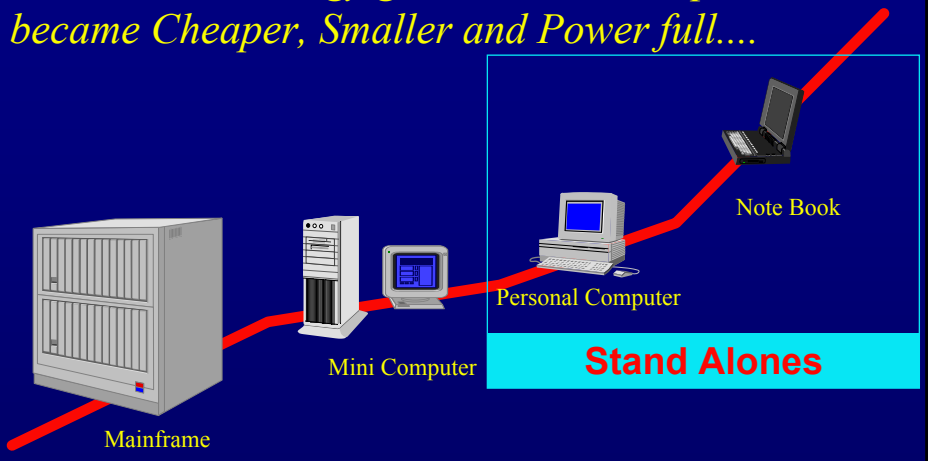
UNIX Hosts were able to communicate through telephone lines.





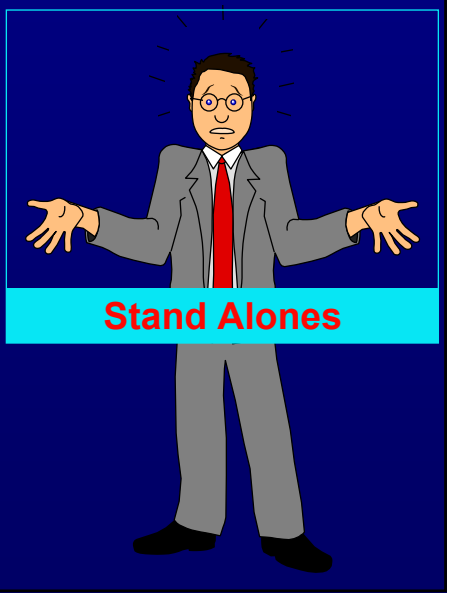
Remote computing and messaging became popular

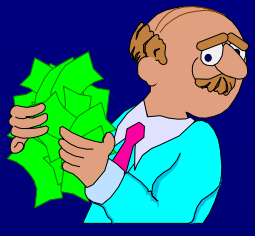
When the technology grow and the Computers became Cheaper, Smaller and Power full....



...people had individual computers working as stand alones

Why Stand alone ?



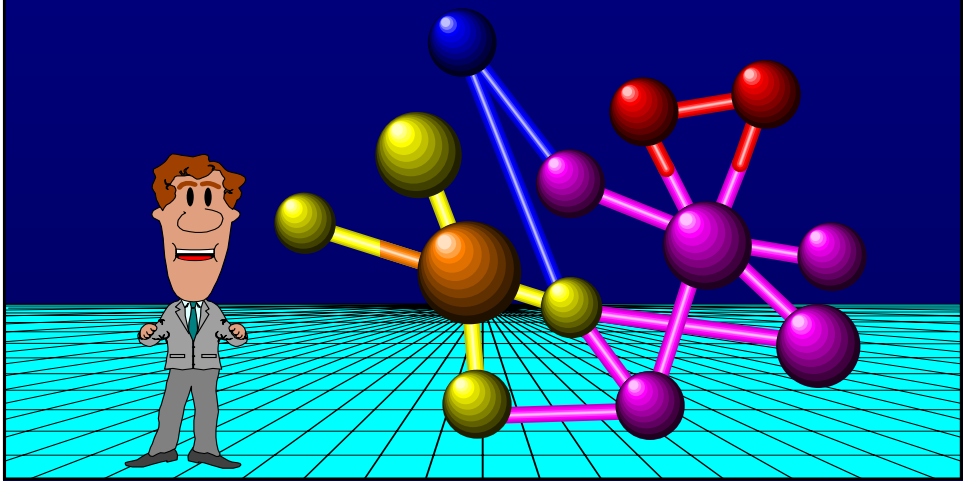


Link-up the stand alones !

So that:

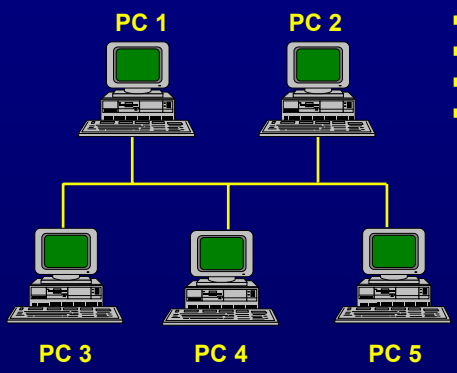
- **Information can be shaired**
- **Resources can be shaired**

The Concept of "*Network*" was born !



Stand alone PCs got connected...

- Processor
- Memory
- Storage Disk
- Operating System
- Applicatrion Programes
- Datafiles

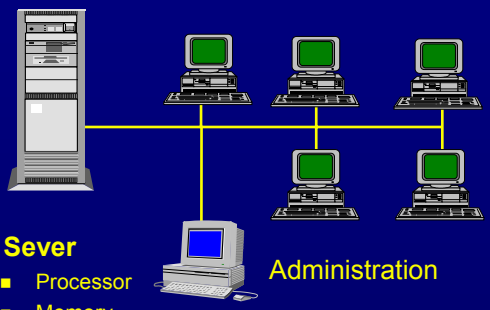


Information Sharing

...and formed a peer-to-peer Network

Consolidation of Harware and Software Resources

Resource Sharing



Clients

- Processor
- Memory
- Local Disk
- Client Operating System

Sever

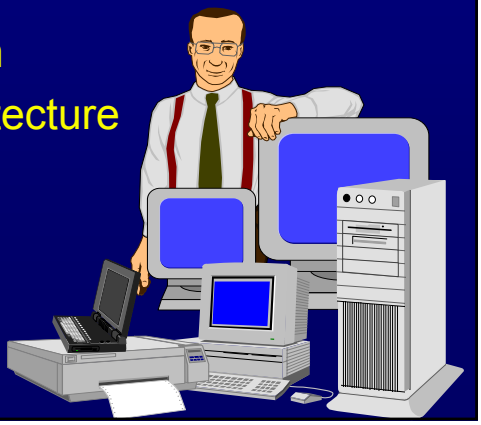
- Processor
- Memory
- Storage Disk
- Network Operating System
- Applicatrion Programes
- Datafiles

Administration

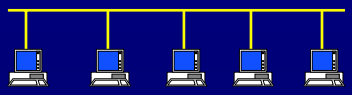
Client / Server Network

Three Popolar Network Architectures

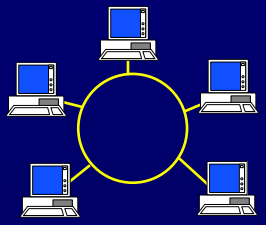
- Host Based System
- Peer-to-peer System
- Client / Server Architecture



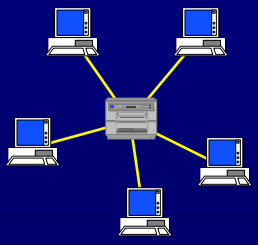
Different types of network topologies and standards evolved ...



BUS TOPOLOGY



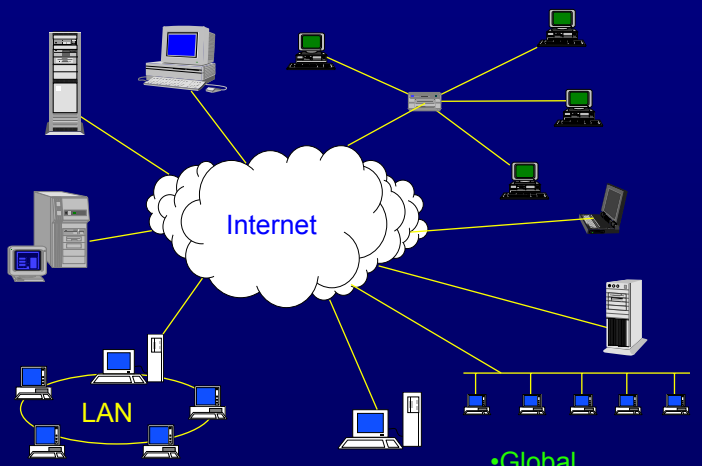
RING TOPOLOGY



STAR TOPOLOGY

Networking the Networks

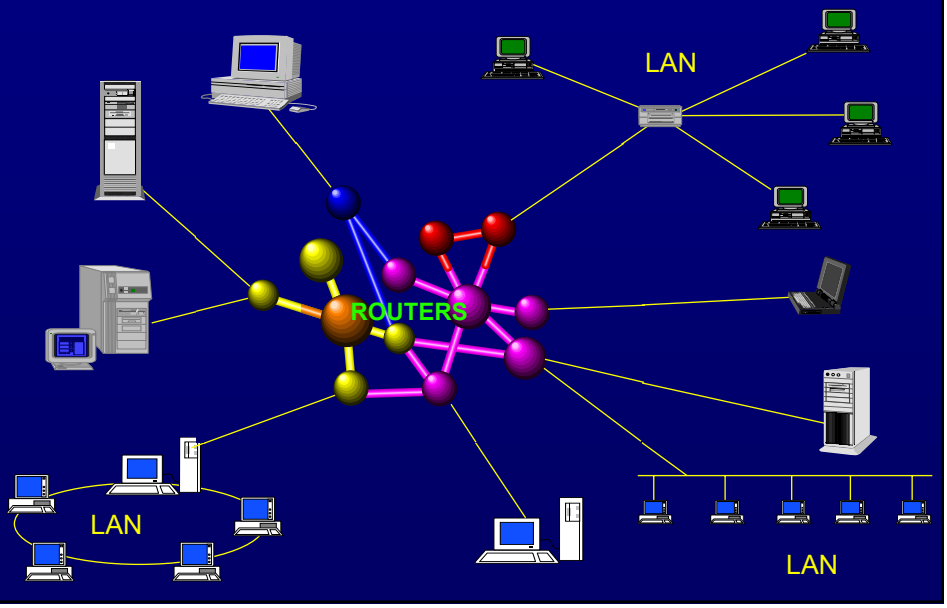
more & more people joined the 'net



- Global
- Packet Switching
- Hetrogeneous

Communication

Inside the Cloud ....



Trouble bigens...

- How to identify induvidual computers in a Global Net work ?
- How to make Different types computers Communicate ?
- What kind of service can be expected from a remote machine ?

Lost in the 'Net !

Stick to Standards

- Standared Addressing Scheams
- Standared Communication protocols
- Standared Services & Applications

Standard Addressing Scheame

Uniform **R**esource **L**ocator

URL

This is a logical extension of the Directory/File name structure

Forming the URL

protocol://host_name.domain_name/path.../file_name.extension

- **protocol** => What protocol to use to get the file
- **host_name** => Name of the host
- **domain_name** => Where to find the host in the Internet
- **path** => Directory path of the file
- **file_name** => Name of the file
- **extention** => Extention of file

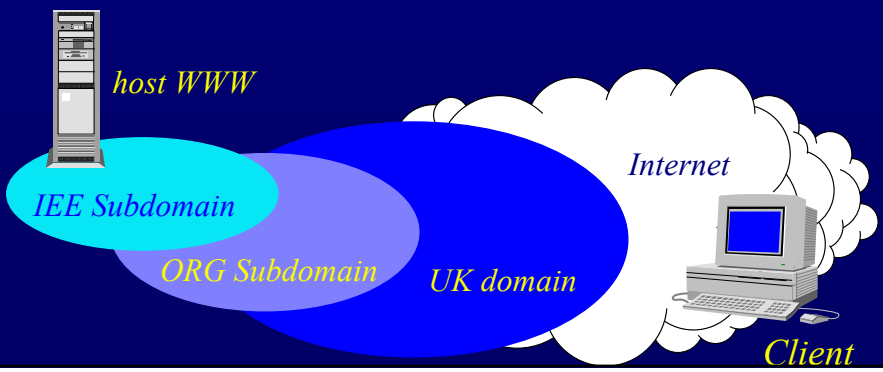
Addressing

Example URL:

URL of Institution of Electrical Engineers, UK

http:// www.iee.org.uk/index.html

Protocol | host name | domain | file name



Addressing

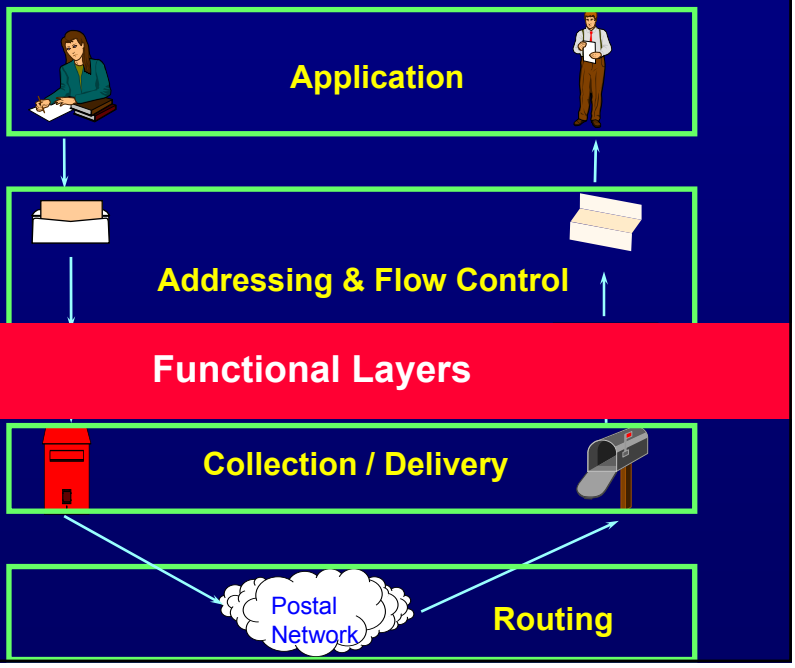
What Language to Speak ?

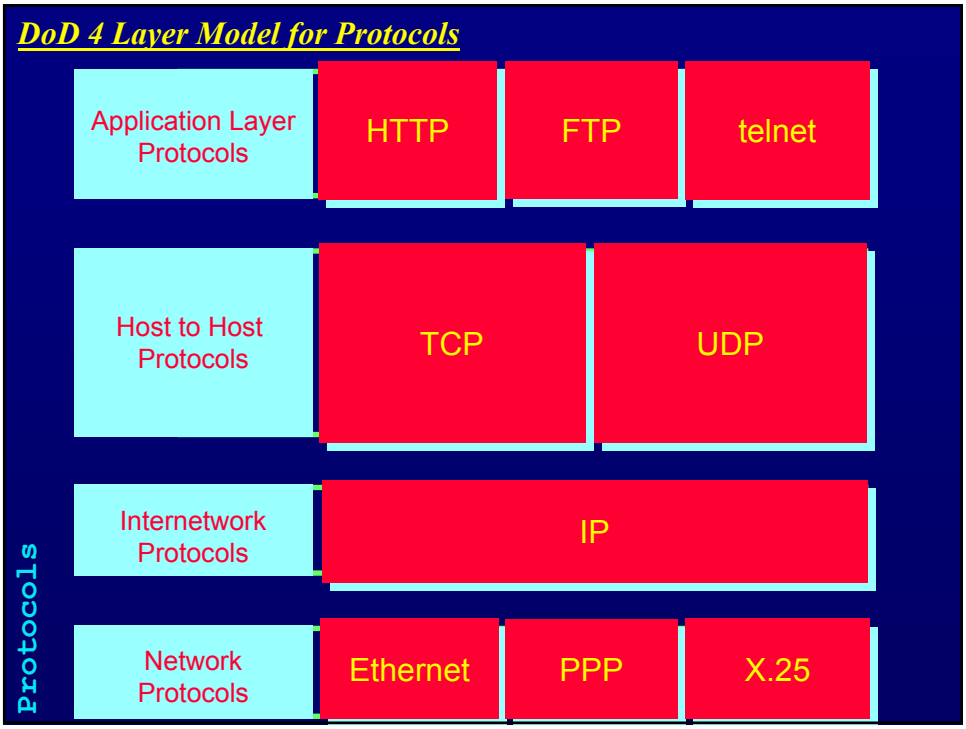
PROTOCOLS defines the standards for communication. They do the following functions:

- Establishing links
- Addressing & ensuring the delivery of information
- and
- more

Protocols

Consider this postal Network





ISO 7 Layer Model