DNS

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⇒ Paul V. Mockapetris with Jon postel invented DNS.

⇒ Jon postel was an administrator of the IANA (Internet Assigned Numbers Authority)

God of the Internet
↓
Jon postel (until his death)

Ip Address

Two methods

⇒ IPV4

⇒ IPV6

IPV4

⇒ 32-bit unique address.

An address space is the total number of addresses that can be made by that protocol.

Represent in two ways.

* Binary notation
* Dotted-decimal notation (seperated by Dot (·))

128.143.137

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IPV6 Address (Hexadecimal).

128 - bit unique address

128 - bit divided into

8, 16 - bit block.

Seperated by colon (:)

ex: 2001 : 000 : 32313 :

Uniform Resource Locator (URL)

Four parts:

- ⇒ Protocols
- ⇒ Hostname
- ⇒ foldername
- ⇒ file name.

http:// — protocol

cms.tn.gov.in/ - Hostname/domain nam

sites/default/files/press_release/ folder

pro701199.jpg - file (with extension)

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URL Type:-

Absolute (Complete address)

Relative (partial address)

↓

(only file name (or) file name with folder name)

DNS

⇒ Maximum of 128 levels.

⇒ 0 to level 127

⇒ Root node alway represent ('Null)

Label:-

⇒ Maximum of 63 characters.

⇒ Label separated by (dot) ..

⇒ Domain names are not case-sensitive.

Generic top-level Domain name are maintained by IANA.

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Tamil language is also used in three country Top level Domain

Domain name	Meaning
இந்தியா	India
சிங்கப்பூர்	Singapore
இலங்கை	Srilanka.

Types of Nameserver

1. Root Name Server
2. Primary/ Master
3. Secondary /slave.

WHOIS is a service of ICANN.

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Types of Cables:-

1. Coaxial cables:-

→ 1880 (invented)

→ used to connect tv set antennas

→ Transfer 10 mbps.

Some of the cable names:

→ Media Bridge

→ 50-feet Coaxial cable

→ Amazon basics.

2. Twisted pair:-

Speed:

10 mbps → 100 mbps → 100BASE-TX → (10gbps) (10GBASE-T)

(10Base-T)

8 wires

Two types: UTP (unshielded)
STP (shielded)

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3. Fiber optics:-

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Used in wide Area Network (WAN)

Two types:-

⇒ Single mode (long distance)

⇒ Multi mode (short distance)

4. USB cable (univeral serial Bus)

Dongle:-

⇒ Dongle is a small peripheral device which has a compatible of mobile broadband with a slim slot in it connect the internet.

⇒ Act as a modem to the computers.

Latest version :- USB 3.0

Data transfer :- 4.85 Gbps

USB 2.0 ⇒ 480 Mbps

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5. Serial & parallel cables:-

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⇒ Used in 1980s & 1990s when the ethernet & USB were not developed.

⇒ Serial port ⇒ 1 bit at a time

parallel port ⇒ 8 bit at a time.

RS232 is a type of serial port also known as Null modem.

6. Ethernet cables:-

⇒ Used for connecting computers at home.

⇒ Used LAN for sharing resources.

⇒ Crossover ethernet example of the Null modem cables.

⇒ speed of 10 gbps.

Routers are connected through Crossover cable to provide wireless network.

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Ethernet Cabling components.

1. patch Cable
2. RJ45 Connector
3. Ethernet ports
4. Crimping tool.

Ethernet cables are manufactu in standards. 6, 6e

Cat 3, Cat 4, ... 7

Cat ⇒ Category.

Ethernet card

Card is a network Interface card (NIC) allow computers to connect & transmit data to the devices on the network.

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Registered Jack:-

RJ-11

RJ-45

RJ-21

RJ-28

Male physical Connector (plug)

Female physical Connector (Jack)

RJ-11 mainly used in telephone & landlines

RJ-14 is also used for telephone & landlines.

Ethernet cable Color coding techniques:-

Straight-Through wiring

Cross-over wiring

Roll-over wiring

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Open Source Concepts

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Open source software is created & updated by many programmer.

proprietary software is owned by organization or individual

↓

Cannot be edit.

BOSS (Bharat operating system solution

C-DAC (Centre for Development of Advanced Computing)

↓

developed in India.

Free software developed by MIT Computer science Researcher (Richard stallman) in 1980.

	Open Source	Free software.
(i)	Created by many programmer	Owned by organizat or individual
(ii)	ability to download & modify s/w without any restriction or charges.	Can download at no cost.
		Source code cannot be changed.
Ex	Android, Firefox, Gname	windows, ~~mac OS~~ Google earth

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Freeware

* Freeware usually refers to Proprietary software that users can download at no cost.

* But whose source code cannot be changed.

OTCL & C++ are used to create & run NS2

NS2 works on windows & Linux platform supports wired / wireless network.

API (Application programming Interface) is a pure event based S/W.

Open NMS written in Java. issued under the GNU (General public License).

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Open NMS (two types)

→ Meridian
→ Horizon

Open NMS was Released in 199
by Steve Giles, Brian Weaver,
Luke Rindfuss.

In 2004 open NMS Group was
Created by Balog, Matt Brozow
David Hustice.

Open NMS has 3 functional area

* Service monitoring (ICMP, HTTP, DNS)
* Data Gathering (SNMP & JMX)
* Event management.

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1996, IBM Coined the term E-Business.

Tangible	Intangible (or) electronic form
⇒ physical products can be seen or touched	~~physical~~ Have value but are not physical entities
⇒ products may be * printed books * CD * DVD	~~products~~ eg: music album software downloaded from a site
⇒ Delivered at the requested address	Might be delivered in electronic form

⇒ E-Commerce first emerged on private networks in 1970.

⇒ 1979, Michael Aldrich proposed E-Commerce.

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⇒ Teleputer (1980) by Michael Aldrich. * multi-purpose hom infotainment device.

* Teleputer which was a fusi of Television, Computer & Tele networking technologies.

* In August 11, 1994 phil Brandenberger bought music CD paid $12.48 + Shipp charges. using his credit card.

This is the first E-Commerce transaction.

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Development & Growth of e-Commerce

1. First wave (1995 - 2003) Dotcom bubble
2. Second wave (2004 - 2009) rebirth after dotcom burst
3. Third wave (2010 - present)

Classification of E-commerce models:

(9 classification)

Out - sourcing :-

If a Company's work is hired to another Company, it is termed as outsourcing.

Off - shoring.

If the work is outsourced to a Company, which is outside its own Country Off shoring

G2G can be classified into two types:-

⇒ Internal facing / local level

⇒ External facing / international level.

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E- Commerce revenue models.

1. Affiliate site
2. Auction site
3. Banner advertisement
4. Bulk- buying sites.
5. Digital publishing site
6. Licensing sites
7. Name- your -prices sites.
8. Online shopping mall.

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Electronic payment system

Electronic payment system is also known as clearing system / Clearing service.

Classification

Micro electronic payment → small amoui

macro on-line payment →

* Card based payment
* Electronic account tranger
* Electronic cash payment systems
* mobile payment systems.

Card Based payment system.

1. Credit card (1887)
2. Debit card
3. Stored Valued card.

credit card in 1887 in the Sci-fi novel by Edward Bellamy

In 1995, the card was made of plastic

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Hologram:-

Hologram is a security feature that prevents duplicati
It is a 3-dimentional image formed by interference of light beams.

Debit card (three ways).

1. EFT pos (online debit / PIN debit
2. offline debit
3. Electronic purse card system.

Stored value card

Two varieties

1. closed loop card (single purpose) (eg) metro train train
2. open loop card (multipurpose)
   ↓
   prepaid debit card eg. Visa gift cards.

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Smart Card

Used EMV chip.

classified into two

Contact smart card - eg. pos (point of sale)

Contactless smart card.

Electronic clearing service

Used for both credit & debit.

ECS Credit (push transcati

Ecs debit (pull transcation

ECS Credit a single account is debited & multiple account are credited

ex: Company Salary.

Ecs debit multiple accounts are debited & single account is credited.

ex: insurance premium.

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EFT (Electronic fund transfer)

Widely used for moving funds from one account to another in B2B business models.

Electronic wallets

Widely used e-wallets.

Paypal

SBI Buddy.

IFSC - Indian financial System Code

11 digit alpha-numeric Code by RBI.

UPI (unified Payments Interface) developed by NCPI (National payments Corporation of India).

Regulated by RBI.

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E-commerce security technologies:-

Encryption technology
Authentication technology
Authentication protocols.

Encryption technology:-

Symmetric key
asymmetric key

Symmetric key:-

⇒ DES (Data Encryption standard) introduced in America in 1976 by FIPS (Federal Information processing standard)

⇒ DES key ⇒ 64 bits but uses only 56 (algorithm) 8 bits are used to verify.

Not safe.

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Asymmetric / public key encryption

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RSA (Rivest - Shamir - Adleman)

public - key.

Authentication Technology

Main role :-

Authetication

Integrity

Non - repudiation.

Digital signature → (PKI public key infrastructure) (sender's identity, digital signature & public key).

Digital certificates

↓

issued by (CA) certification Authorities.

Common digital Certificate are

⇒ X.509 (Currently accepted worldwide)

⇒ PGP

Pretty Good privacy was developed by Zimmermann in 1991

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Authentication protocols :-

Two kinds

SET (Secure electronic transaction)

SSL (Secure sockets Layer)

⇒ SET was developed by VISA & Mastercard in 1996.

⇒ Uses dual signature to ensure privacy

3D Secure developed by Visa
adapted by Mastercard

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EDI

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Ed Guilbert ⇒ Father of EDI

Internationally accepted EDI

EDIFACT
XML
ANSI ASCX12

First EDI standard were released by TDCC (Transportation Data Coordinating Committee) in 1975 to form EDI standards.

TDCC renamed as Electronic Data Interchange Association (EDIA) in 1978

⇒ First EDI message 1965 from Holland-American steamship Trans Atlantic

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