INTERNET APPLICATIONS

Internet Applications

- Domain Name Service

- Proxy Service

- Mail Service
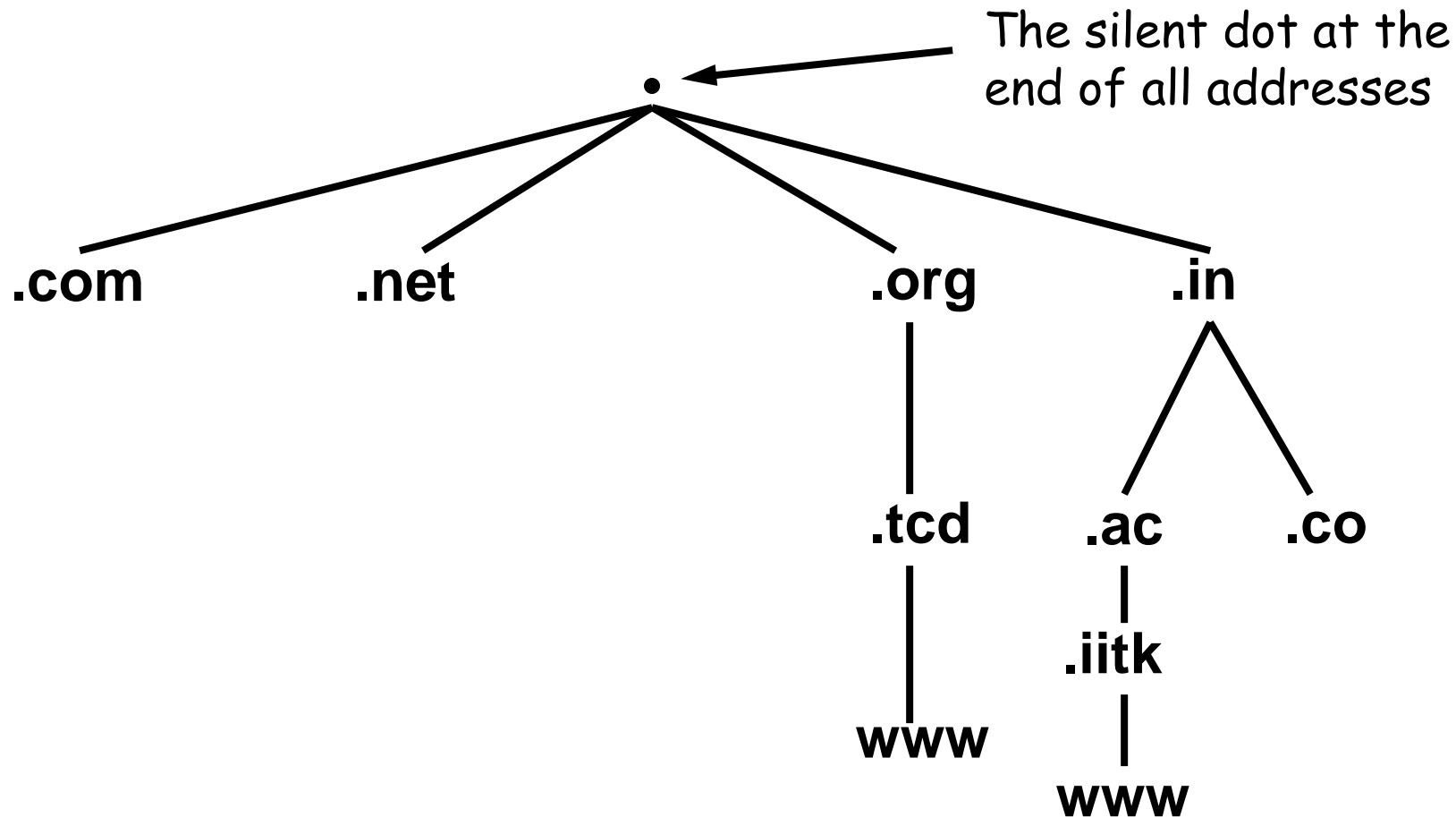
- Web Service

DNS

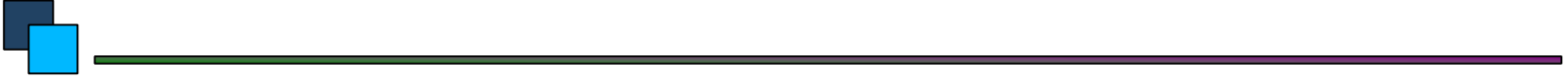# Internet Naming Hierarchy

The silent dot at the end of all addresses

•

.com   .net   .org   .in
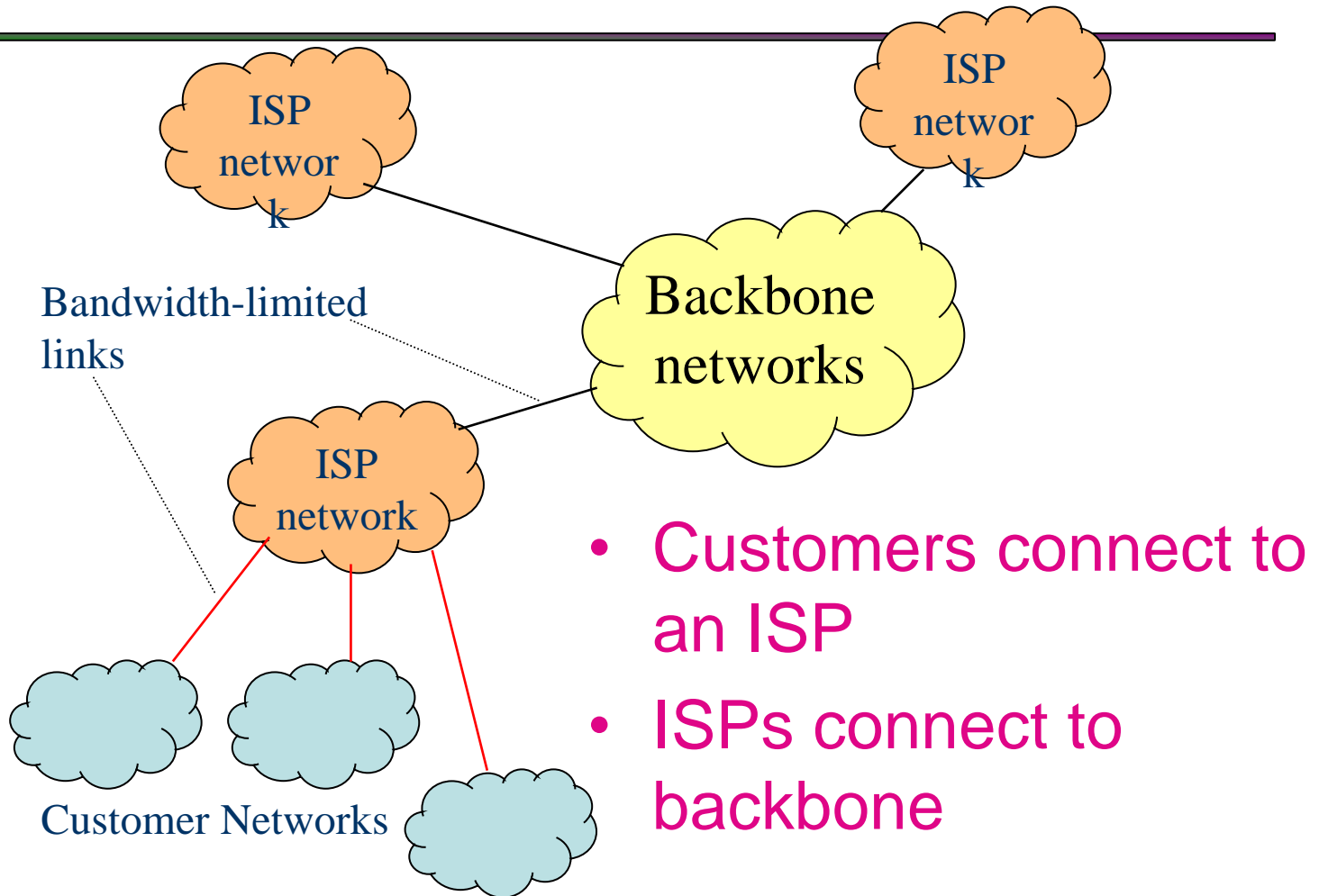
.tcd   .ac   .co

www   .iitk

www

DNS Operation

- A DNS server maintains the name to IP address mapping of the domain for which it is the name server.

- The DNS server for a domain is registered with the domain registrar and the entry is maintained by the Internet Root-Servers (13) or Country Level Root-Servers.

- Whenever a server is queried, if doesn't have the answer, the root servers are contacted.

- The root servers refer to the DNS server for that domain (in case the domain is a top level domain) or the Country Root Server (in case the domain is country level domain).

PROXY SERVER

Internet Connections

ISP network

ISP network

ISP network

Backbone networks

Bandwidth-limited links

Customer Networks

- Customers connect to an ISP

- ISPs connect to backbone

Internet Connections

- Cost of connections is based on bandwidth

- Cost of connection is a major part of network cost

- Organisations only obtain as much bandwidth as they can afford

- Many organisations in Asia-Pacific only have 64kb/s – 2Mb/s connections (as compared to their counterpart in US and Europe who have bandwidths of 2.4 Gbps – 10 Gbps)

What is a Web Proxy?

- ■ **A proxy is a host which relays web access requests from clients**

  - ■ **Used when clients do not access the web directly**

  - ■ **Used for security, logging, accounting and performance**

browser   proxy   web
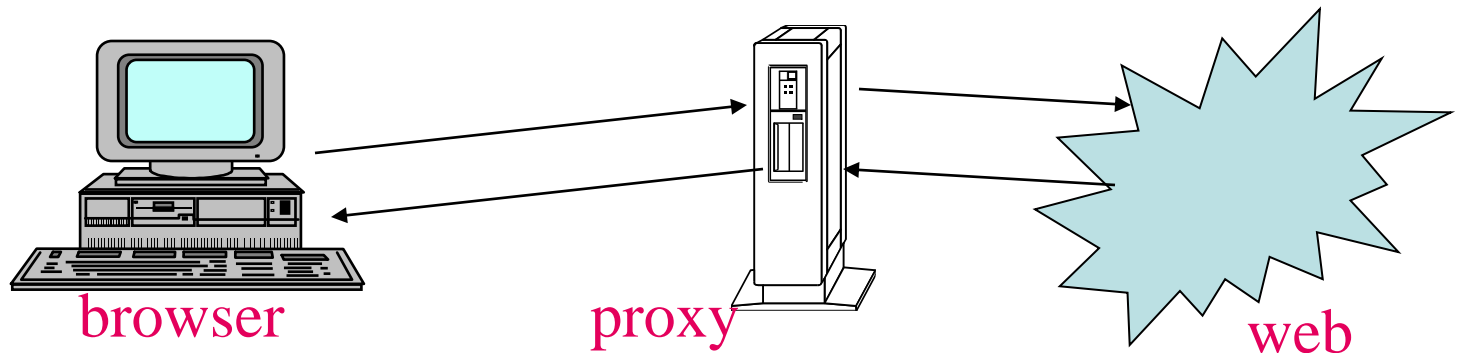
What is Web Caching?

- Storing copies of recently accessed web pages

- Pages are delivered from the cache when requested again

- Browser caches

- Proxy caches

Why Cache?

- **Shorter response time**

- **Reduced bandwidth requirement**

- **Reduced load on servers**

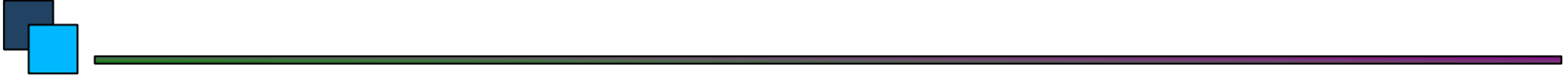- **Access control and logging**

Popular Proxy Caches

- Apache proxy

- MS proxy server

- WinProxy

- Squid

 - Squid is popular because it is powerful, configurable and free

- Many others

WEB SERVER

Web Server

- **HTTP (Hyper Text Transfer Protocol) is used to transfer web pages from a Web Server to Web Client (Browser)**

- **Web Pages are arranged in a directory structure in the Web Server**

- **HTTP supports CGI (Common Gateway interface)**

- **HTTP supports Virtual Hosting (Hosting multiple sites on the same server)**

- **Popular Web Servers**
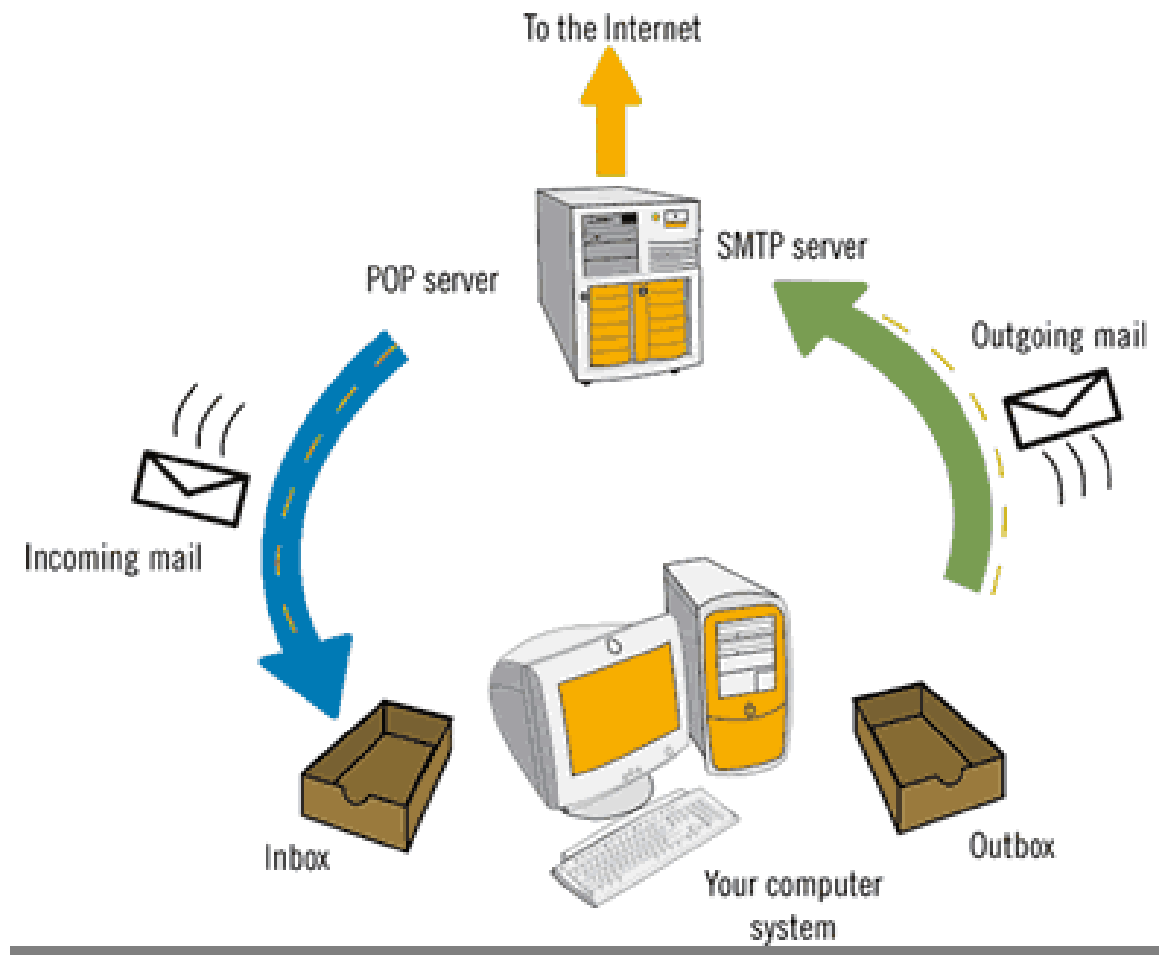 - Apache
  - Windows IIS
  - IBM Websphere

EMAIL

Mail Architecture

Internet

Mail Server

Mail Server

Mail Client

Mail Client
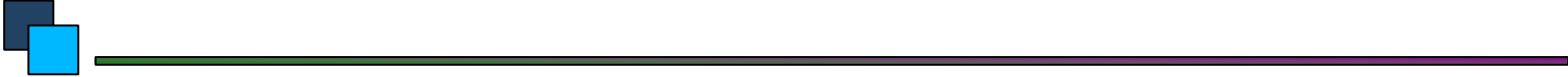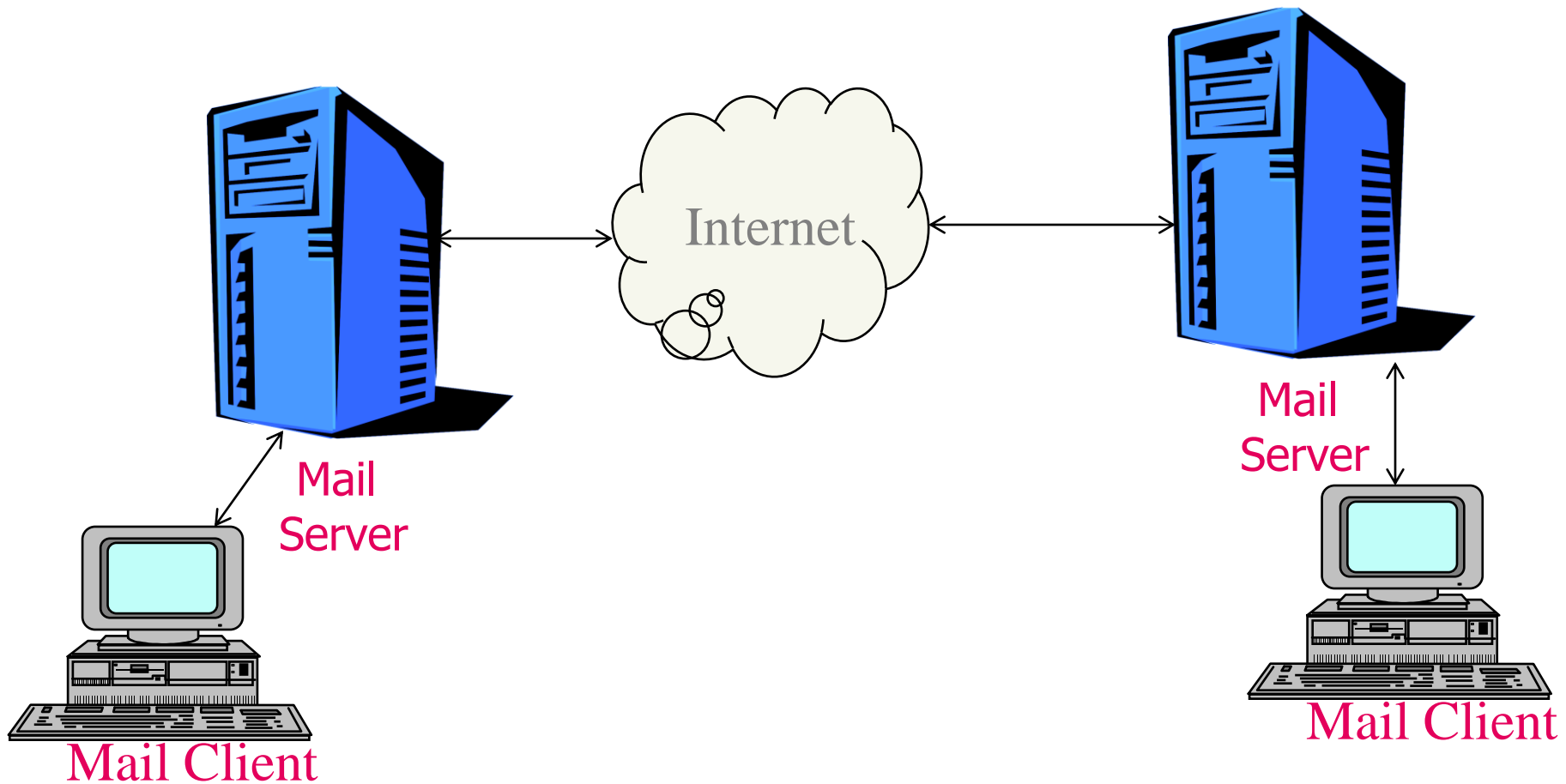
Mail Architecture

Mail Architecture

- **Simple Mail Transfer Protocol (SMTP) is used to transfer mail between Mail Servers over Internet**

- **Post Office Protocol (PoP) and Interactive Mail Access Protocol (IMAP) is used between Client and Mail Server to retrieve mails**

- **The mail server of a domain is identified by the MX record of that domain**

- **Popular Mail Servers**
  - Sendmail/Postfix
  - Microsoft Exchange Server
  - IBM Lotus