Computer Hardware & Networking& Server Configurations (H7E3 04)

UNIT 05:
Network devices and protocols

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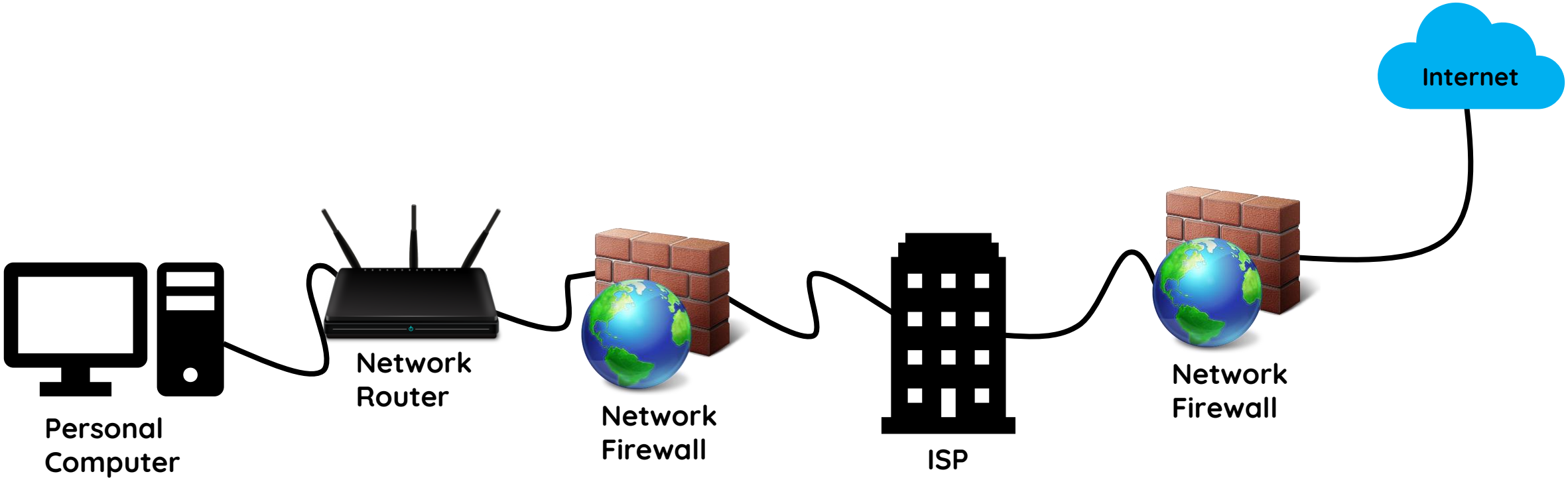
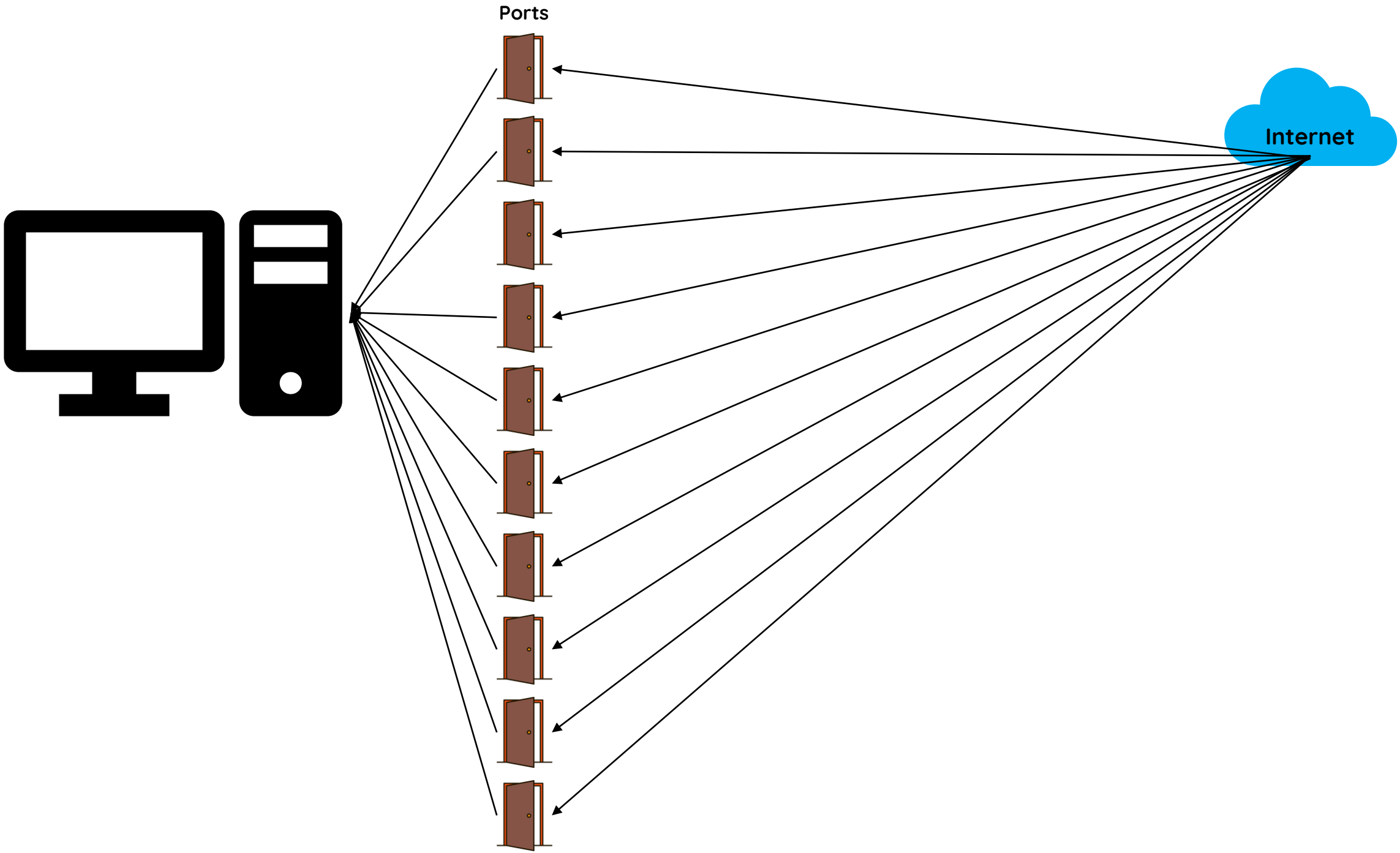
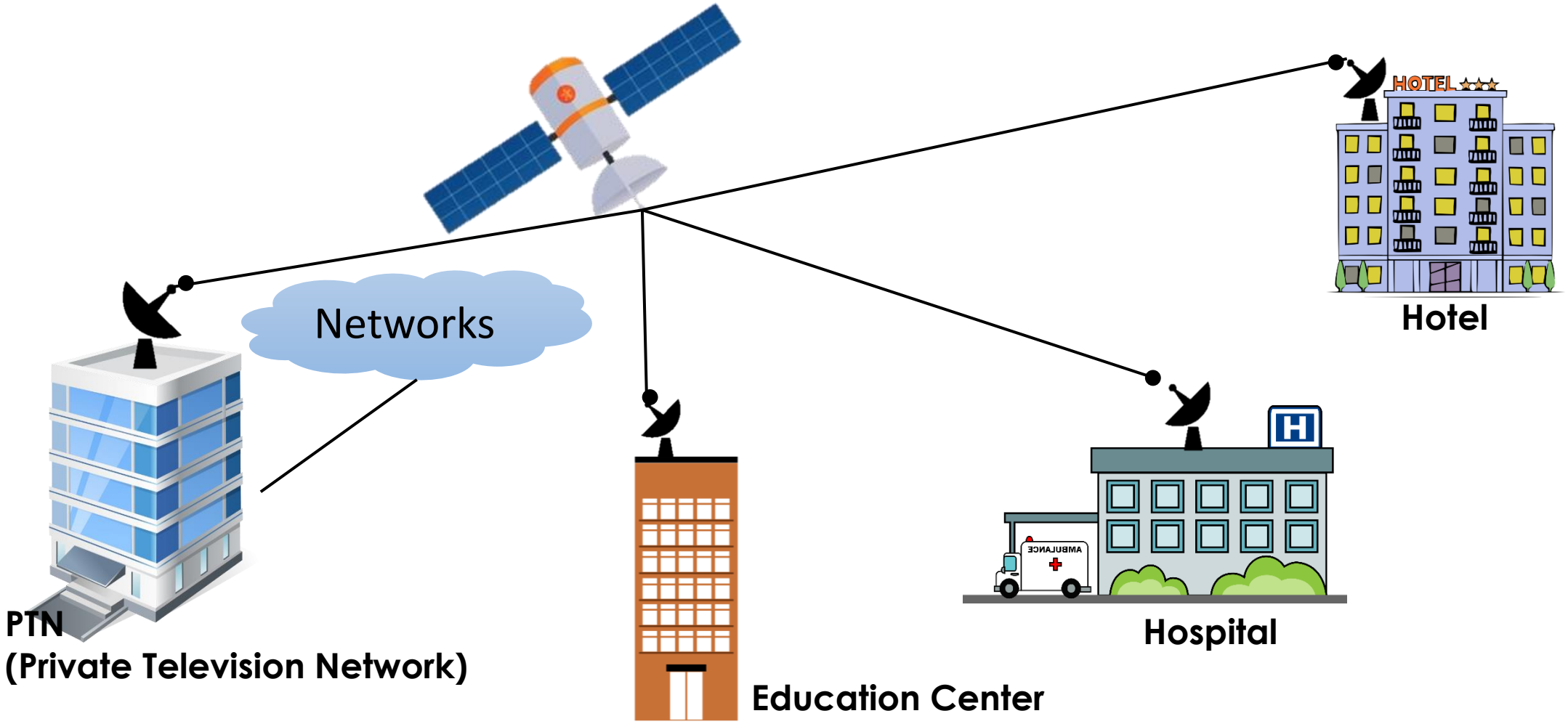
Network Protocols


Internet
Network
Router
Network
Firewall
ISP
Network
Firewall
Personal
Computer


Ports
Internet

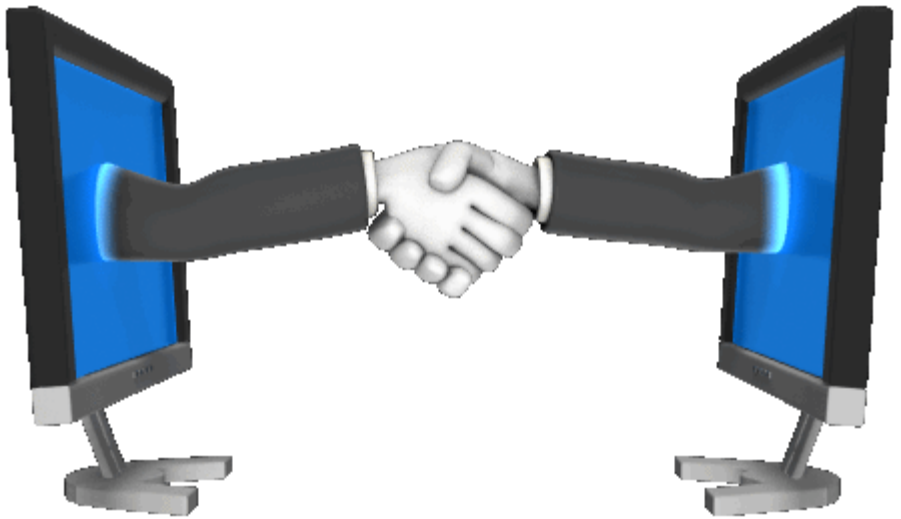
What is protocol?

- A protocol is a series of rules by which computing devices are able to communicate



Requirements of Protocols

- Data formats for data exchange
- Flow control
- Routing
- Acknowledgements
- Loss of information
- Sequence control



Protocol Functions

- Identifies errors
- Applies Compression Techniques.
- Decides On :

  - ❖ How to announce sent data .
  - ❖ How to announce receive data
  - ❖ How to address data.
  - ❖ How data is to be sent.

Need of Protocols

- Protocols Are Needed For Predetermined Understandings For Communications.
- It Helps The Smooth Functioning Of A System, Such Contribution To A System May Benefit Or Offend You From Where You Stand.

Types of Protocol

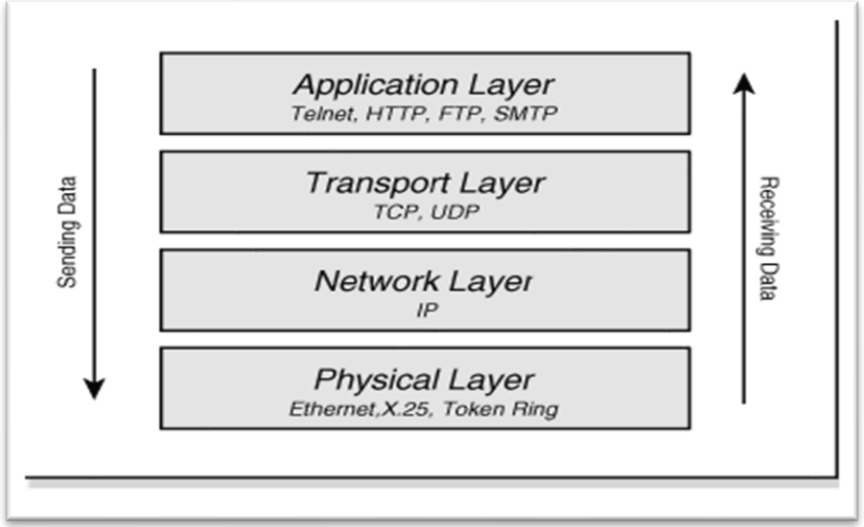
- **TCP:** Transmission Control Protocol
- **HTTP:** Hypertext Transfer Protocol
- **FTP:** File Transfer Protocol
- **SMTP:** Simple Mail Transfer Protocol

- **UDP :** User Datagram protocols
- **ICMP:** Internet Control Message Protocol
- **SCTP:** Stream Control Transmission Protocol
- **ARP**: Address Resolution Protocol
- **DHCP:** Dynamic Host Configuration Protocol

TCP/IP Protocol Suite

- The TCP/IP protocol suite was first defined in 1974

- TCP/IP represents a set of public standards that satisfy how packets of information are exchanged between computers over one and more networks.



IP Protocol

- IP, which stands for Internet Protocol , is a Network layer protocol that is responsible for delivering packets to network devices.

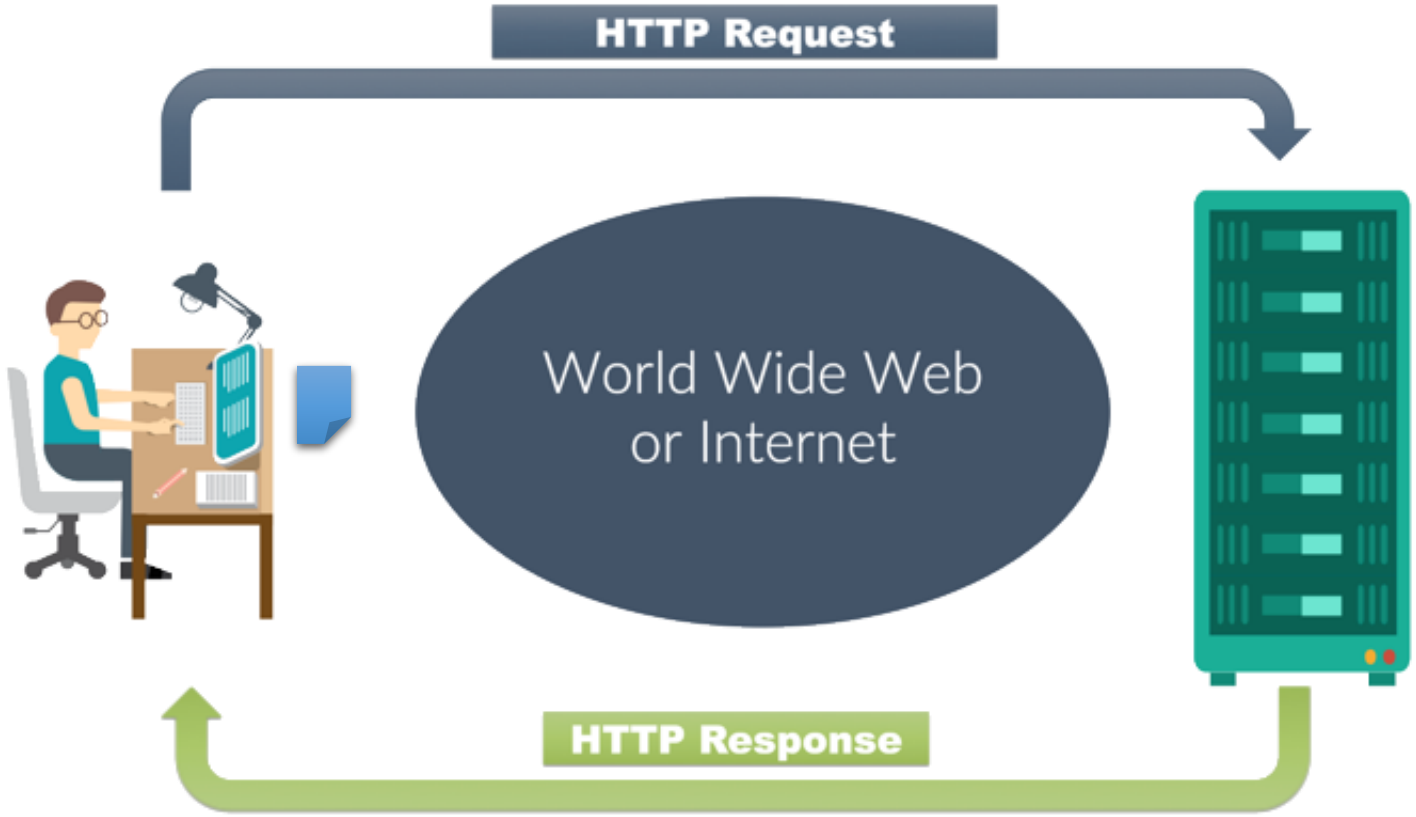
- Each packet is treated as an independent unit of data without any relation to any other unit of data.

TCP Protocol

- Ensures a sent message is sent without any loss of data or any mix up of the order of the data
- Will request re-transmission of lost or damaged packets

Hyper Text Transfer Protocol (HTTP)

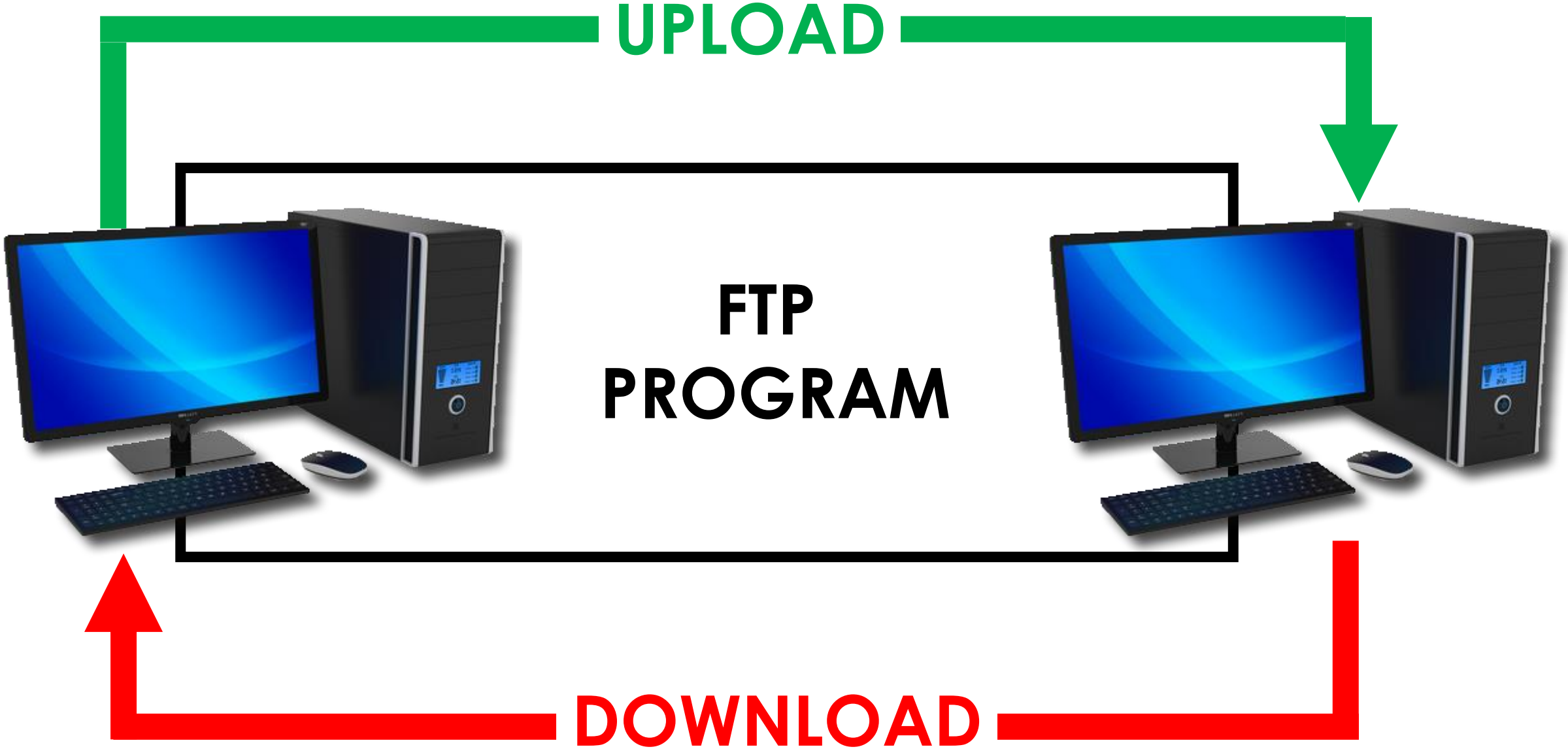
- HTTP is a protocol that communicates between an Internet browser, such as Internet Explorer or Firefox, and a web server that is hosting a website.



FILE TRANSFER PROTOCOL(FTP)

- It is used to transfer files from a server to a client computer.

- ***example*** of an FTP service is when you visit a site to download software--you click on download, and it contacts the FTP server which then downloads the file to your computer.


UPLOAD
FTP
PROGRAM
DOWNLOAD

SIMPLE MAIL TRANSFER PROTOCOL (SMTP)

- SMTP is the most popular protocol for transferring electronic mail on internet.
- SMTP specifies the format for the electronic message along with its route from source computer to destination computer through e-mail servers.

Gmail

Yahoo! Mail

Mail Server

Mail Server

INTERNET

UDP (User Datagram Protocol)

- Controls traffic between network devices, but does not attempt any error correction.

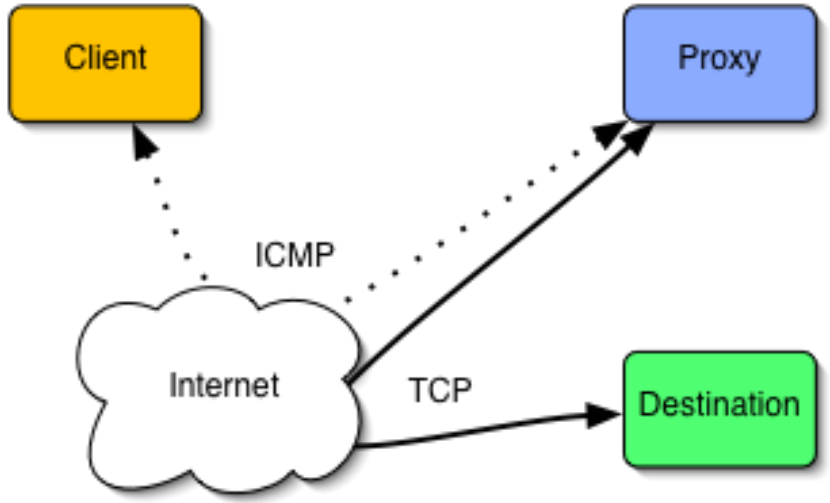
- It is used for protocols where speed is more important than accuracy or error correction is handled by the client.

Are You Getting All Of This ?

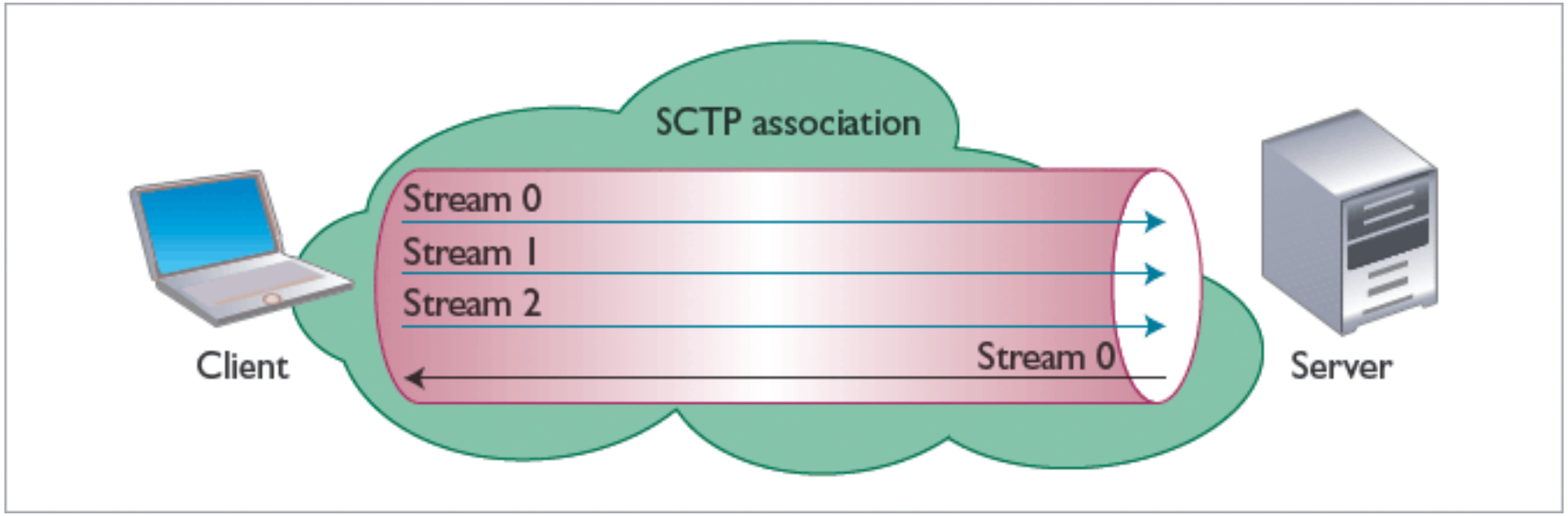
Who Cares Just Send It Faster.

ICMP

- The Internet Control Message Protocol (**ICMP**) is one of the main protocols of the internet protocol suite. It is used by network devices, like routers, to send error messages indicating, for example, that a requested service is not available or that a host or router could not be reached.



Stream Control Transmission Protocol (SCTP)



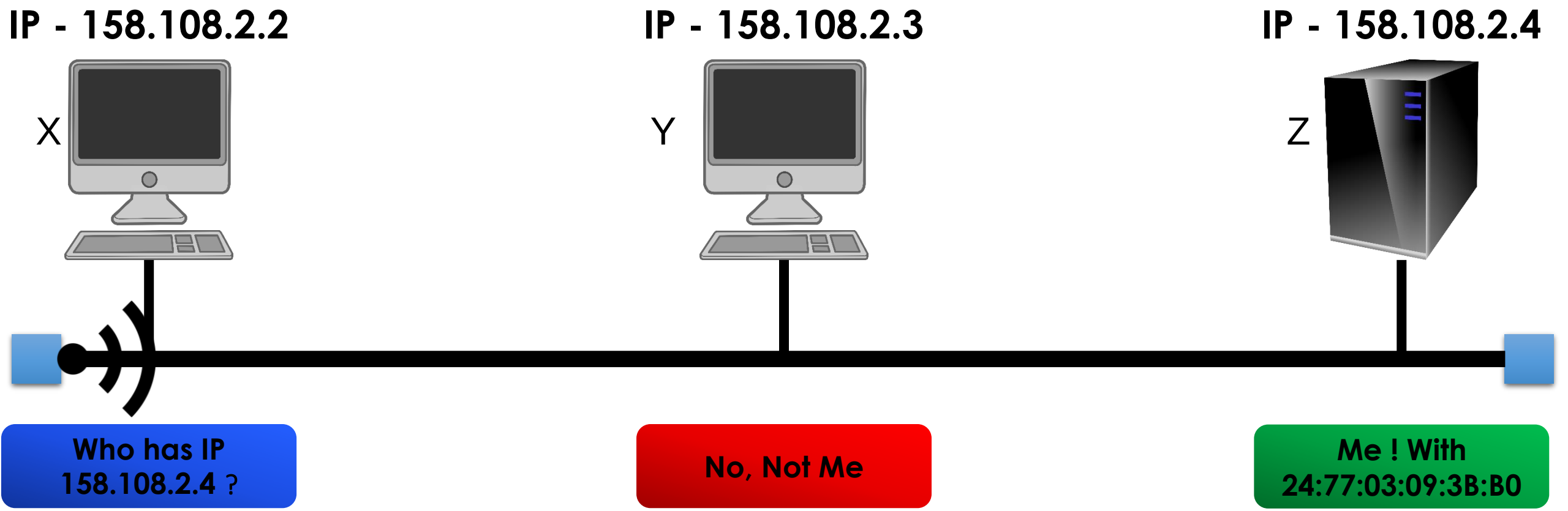
- In computer networking, the **Stream Control Transmission Protocol** (**SCTP**) is a transport-layer protocol, serving in a similar role to the popular protocols TCP and UDP. It is standardized by IETF in RFC 4960.

Address Resolution Protocol (ARP)

- The address resolution protocol (**arp**) is a protocol used by the Internet Protocol (IP) [RFC826], specifically IPv4, to map IP network addresses to the hardware addresses used by a data link protocol. The protocol operates below the network layer as a part of the interface between the OSI network and OSI link layer.

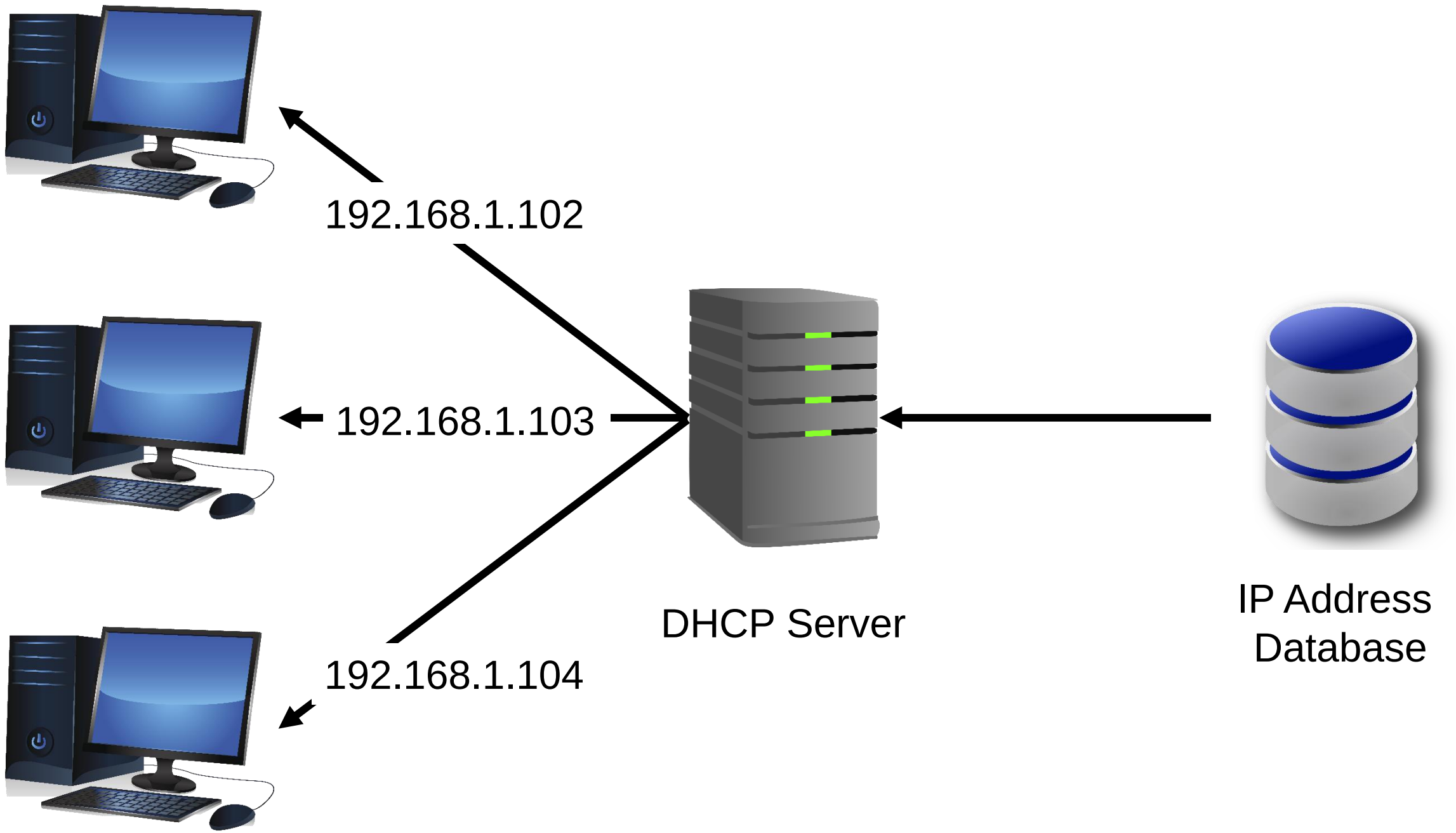
Address Resolution Protocol - ARP

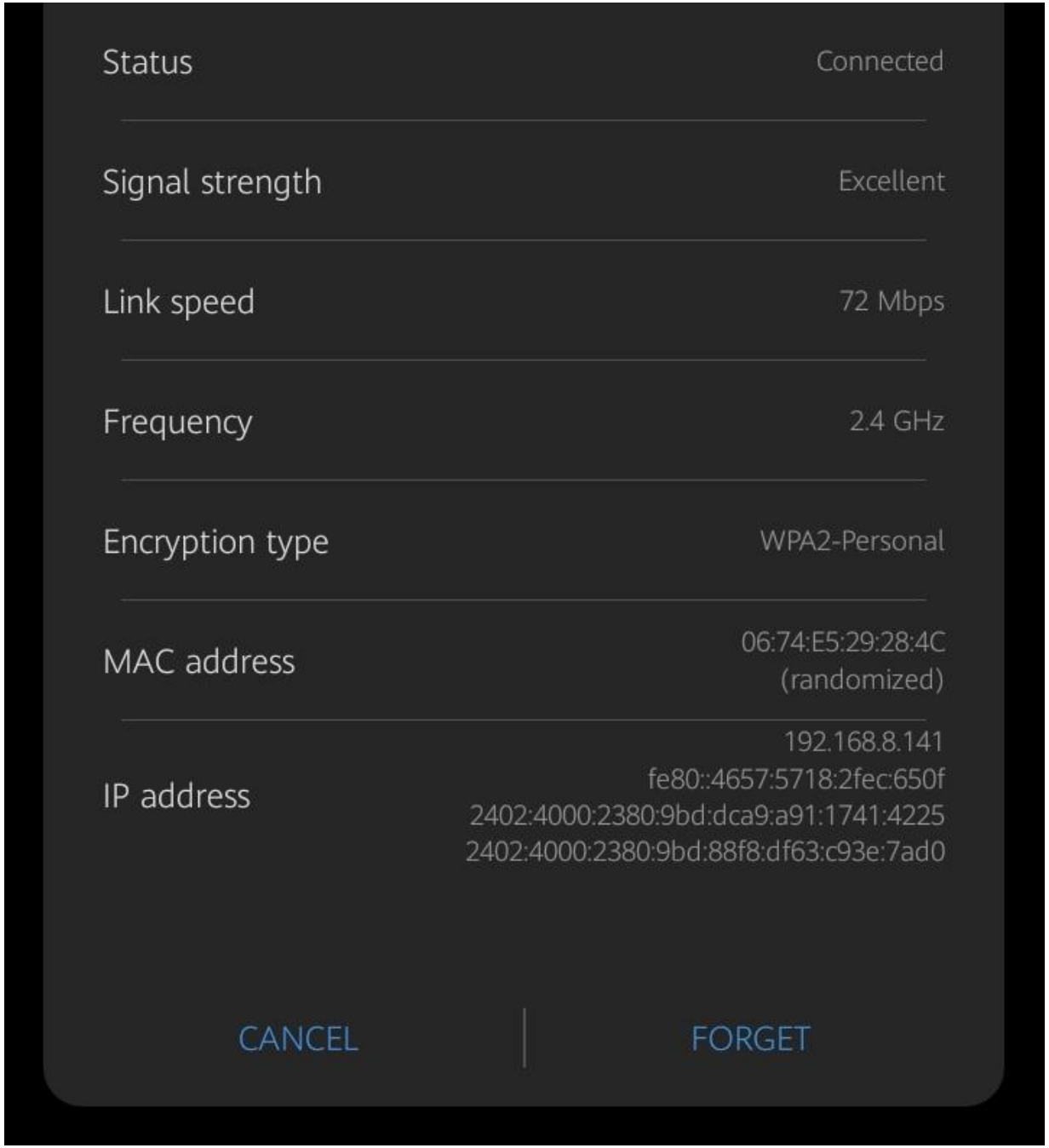
IP Over Ethernet



Dynamic Host Configuration Protocol (DHCP)

- Dynamic Host Configuration Protocol (**DHCP**) is a client/server protocol that automatically provides an Internet Protocol (IP) host with its IP address and other related configuration information such as the subnet mask and default gateway.


192.168.1.102
192.168.1.103
192.168.1.104
DHCP Server
IP Address
Database




```
Wireless LAN adapter Wi-Fi:

   Connection-specific DNS Suffix  . :
   IPv6 Address. . . . . . . . . . . : 2402:4000:2380:9bd:8b0:3d9e:2d9d:10b
   Temporary IPv6 Address. . . . . . : 2402:4000:2380:9bd:599e:e41b:44cd:17e4
   Link-local IPv6 Address . . . . . : fe80::8b0:3d9e:2d9d:10b%5
   IPv4 Address. . . . . . . . . . . : 192.168.8.159
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . : fe80::68c0:e3ff:fea0:dd02%5
                                       192.168.8.1
```

MY IP | IP LOOKUP | HIDE MY IP | VPNS ▾ | TOOLS ▾ | LEARN ▾

My IP Address is:

IPv6: 2402:4000:2380:9bd:599e:e41b:44cd:17e4

IPv4: 175.157.44.33

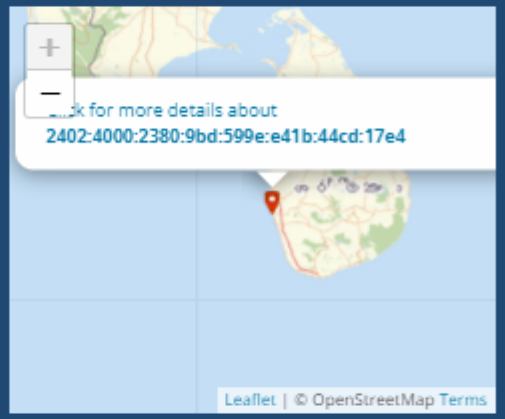
My IP Information:

ISP:	Dialog Telekom Plc
City:	Colombo
Region:	Western Province
Country:	Sri Lanka

Your private information is exposed!

HIDE MY IP ADDRESS NOW

Show Complete IP Details



Location not accurate?

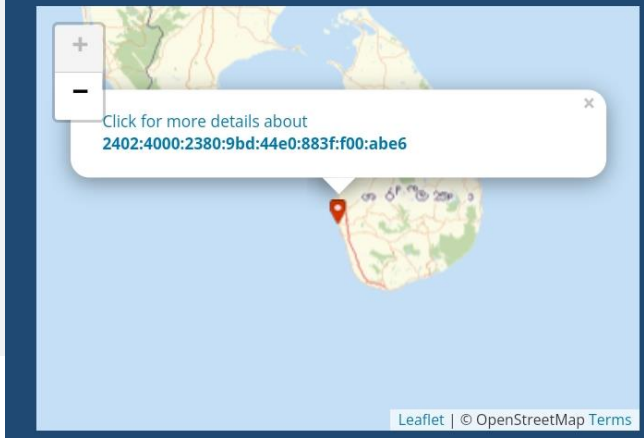
Update My IP Location

WhatIsMyIPAddress.com

My IP Address is:

IPv6: 2402:4000:2380:9bd:44e0:883f:f00:abe6

IPv4: 175.157.44.33



Contact Me ...

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THANK YOU