

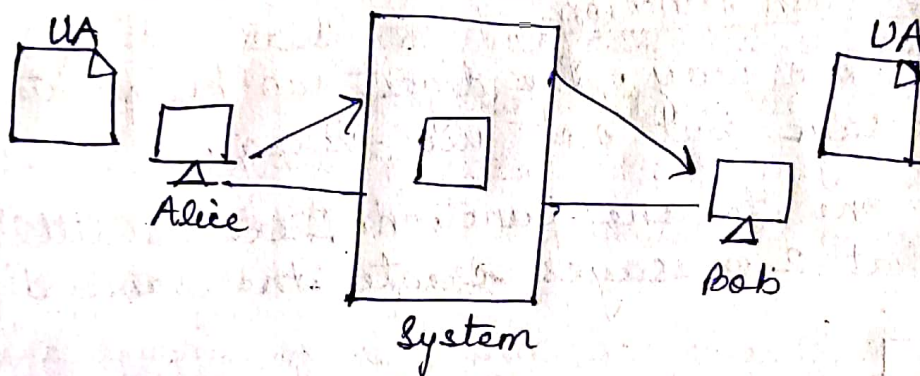
Electronic Mail

Email Architecture

In order to explain email architecture, 4 scenarios may be considered:
~~1. First Scenario~~

1. First Scenario

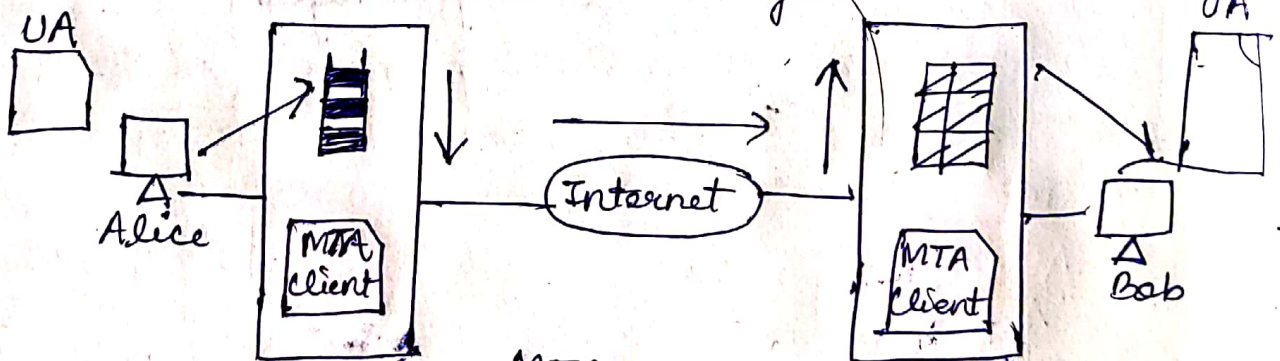
UA: user Agent



When sender or receiver of an email are on the same system, we need only 2 user agents.

2. Second Scenario

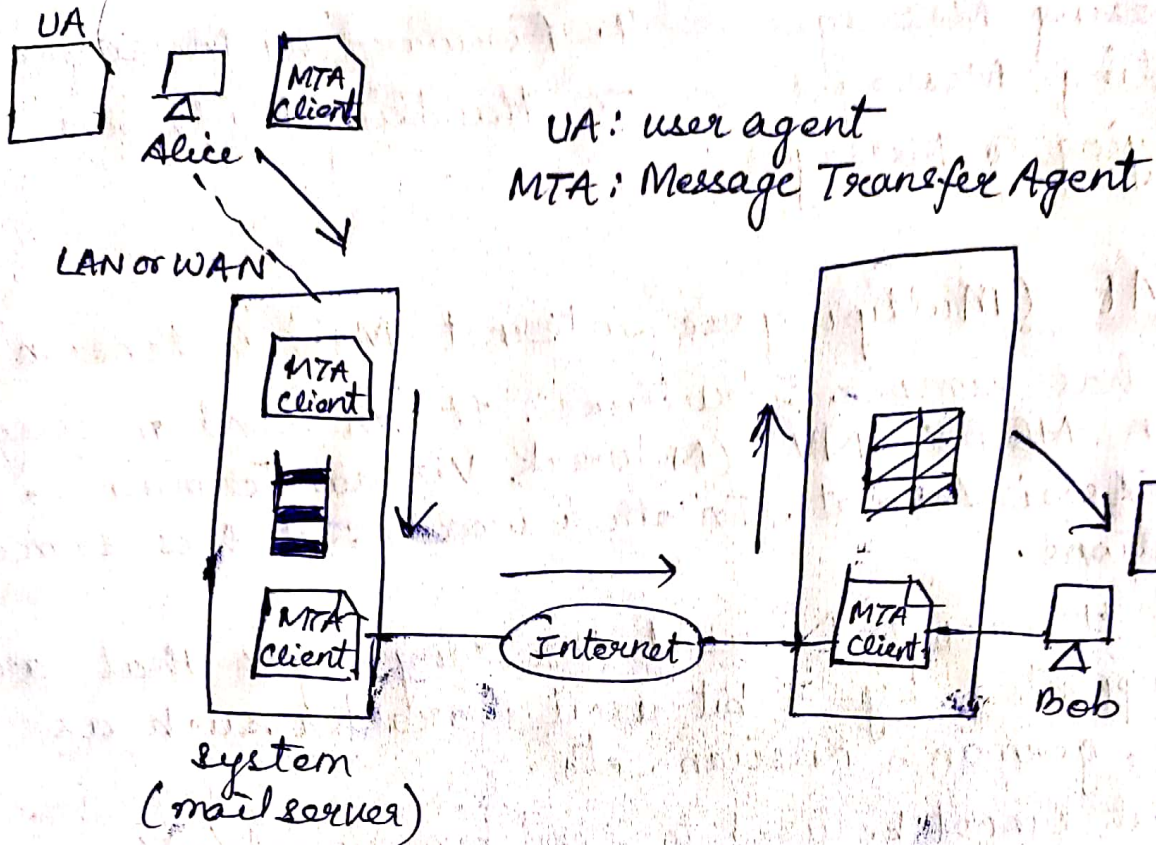
UA: user agent



MTA: Message Transfer Agent

When the sender and the receiver of an email are on different systems, we need 2 UA's and a pair of MTAs (client and server).

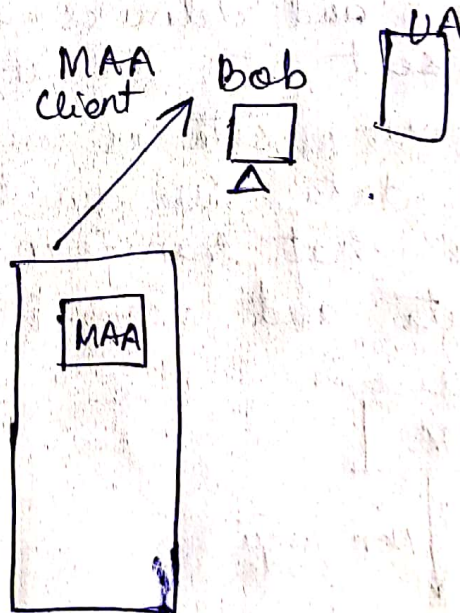
3. Third Scenario



When the sender is connected to the mail server via LAN or WAN, we need 2 user agents (UAs) and 2 pairs of MTAs (client and server).

4. Fourth Scenario

Rest same as 3rd scenario



When both sender and receiver are connected to the mail server via LAN or WAN, we need two UAs, a pair of MTAs and 1 pair of MAA (Mail Access agent).

Services of User Agent

1. Composing Messages
2. Reading Messages
3. Replying to Messages
4. Forwarding Messages
5. Handling Mailboxes

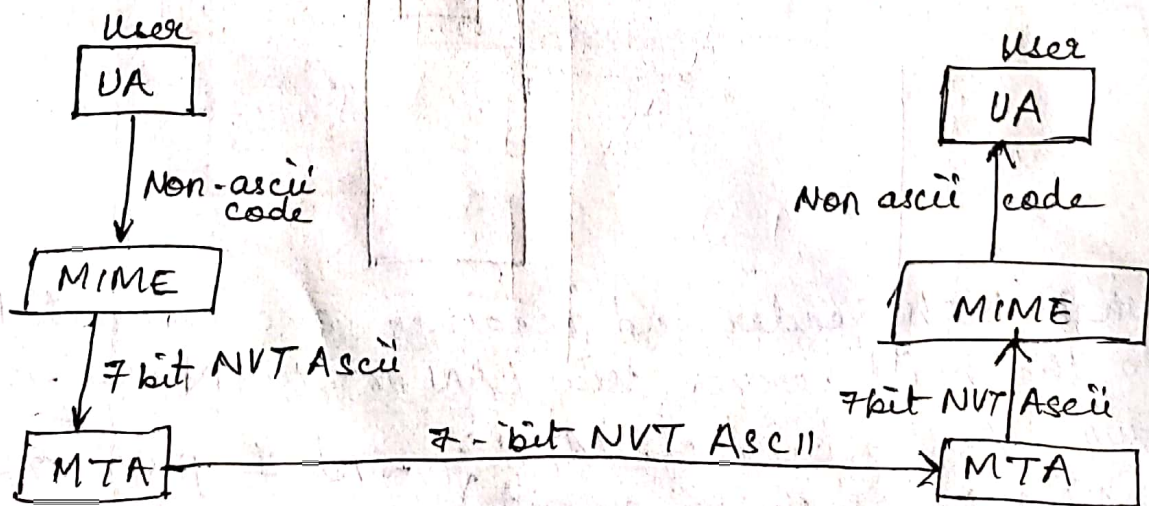
MIME (Multipurpose Internet Mail Extension)

Email has simple structure. It can send messages only in ~~ASCII~~ NVT (Network Virtual Terminal), 7 bit Ascii format. In other words, it has some limitations.

For eg. It cannot be used for languages that are not supported by 7 bit ascii character such as french, german, Russian, etc.

Also, it cannot be used to send binary file/video or audio data.

MIME is a supplementary protocol that allows non ascii data to be sent through email. MIME transforms non-ascii data at the sender site to NVT ascii data and delivers them to client MTA to be sent to the internet. The message at the receiving site is transformed back to the original data. We can treat mime, set of s/w functions that transforms non-ascii data to ascii data and vice-versa.



MIME Header

Mime defines 5 headers that can be added to the original email header section to define the transformation parameters.

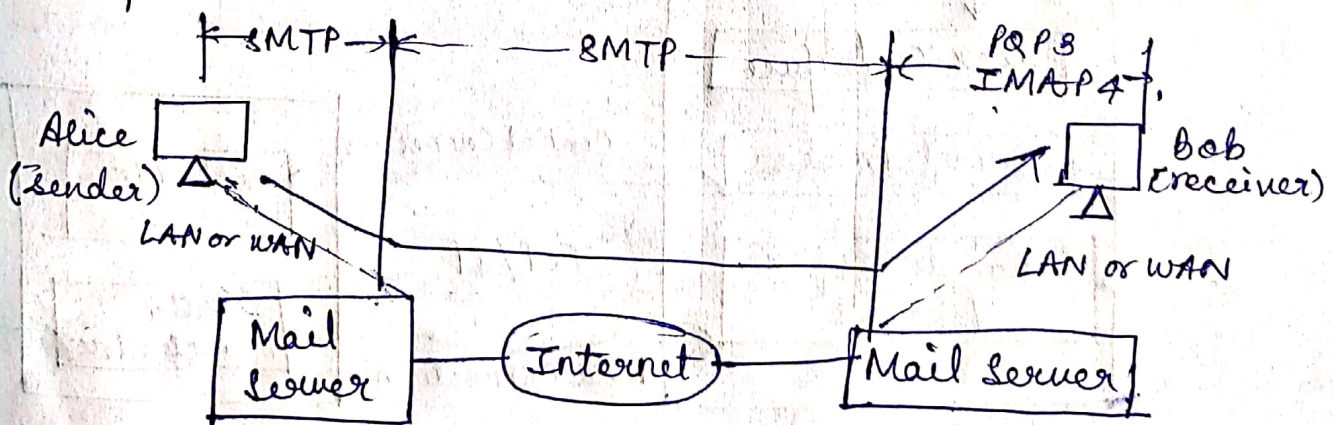
- ① MIME-Version
- ② Content-Type
- ③ Content-Transfer-Encoding
- ④ Content-Id
- ⑤ Content-Description

SMTP

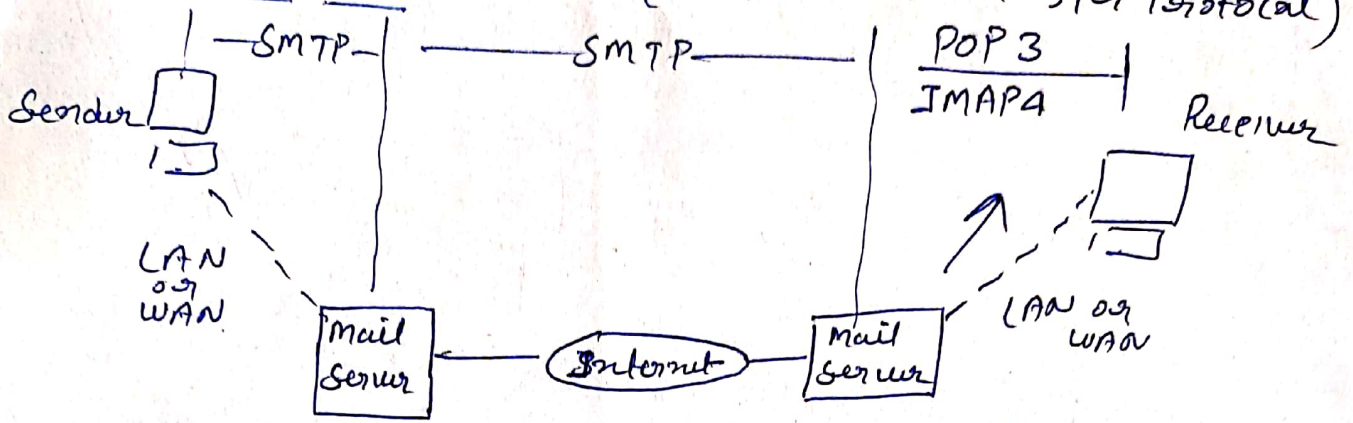
The actual mail transfer is done through MTA. To send mail ~~assistance~~ a system must have client MTA and to receive mail, a system must have server MTA.

The protocol that defines MTA client and server is called SMTP.

SMTP simply defines how commands and responses must be sent back and forth. Each network is free to choose a software packets for implementation.



Transfer Agent: SMTP (Simple Mail Transfer Protocol)



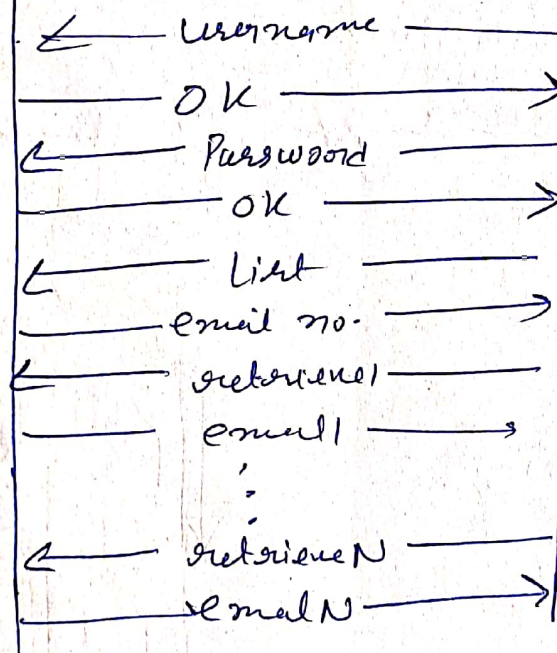
Commands and Responses

Message Access Agent: (POP and IMAP)

Mail Server

POP3
Server

POP3
Client



IMAP (Internet Messaging Access Protocol)

- **Emails are stored on the server.**
- **Sent messages are stored on the server.**
- **Messages can be synced and accessed across multiple devices.**

POP3 (Post Office Protocol)

- **Emails are stored on a single device.**
- **Sent messages are stored on a single device.**
- **Emails can only be accessed from a single device.**
- **If you want to keep messages on the server, make sure the setting "Keep email on server" is enabled or all messages are deleted from the server once downloaded to the app or software.**
- **Pop3 vs. IMAP: Which is better?**
- **IMAP is short for Internet Message Access Protocol. With IMAP, the message does not remain on the local device, such as a computer, it remains on the server.**
- **POP3 is short for Post Office Protocol. With POP3 mail, it will connect and attempt to keep the mail located on the local device (computer or mobile).**

IMAP is better if you are going to be accessing your email from multiple devices, such as a work computer and a smart phone. POP3 works better if you are only using one device, but have a very large number of emails. It is also better if you have a poor internet connection and need to access your emails offline. For most people, IMAP will suit their needs better.