Internet Email

email
- 1. n. Electronic mail automatically passed through computer networks and/or via modems over common-carrier lines.
- 2. vt. To send electronic mail.
- 3. French n. A hard enamel obtained by heating special paints in a furnace

emailed
- 1. vt. Sent electronic mail.
- 2. adj. Embossed (with a raised pattern) or perhaps arranged in a net or open work.

Overview

- Before The Internet: Isolation and Early Contact
- The Agents And Their Assignments
- SMTP: Pass It On
- Basic Text Message Format: Opening The Envelope
- Post Office Protocol

- MIME: See Attached
- IMAP: Full Mailbox Control

Pre-Internet: The Dark Ages of Isolation

Intra-Office Email Systems

- Lotus Notes, Novell Groupware, Microsoft Exchange
- even Unix

	Notes	
Exchange		Novell
Novell		Unix
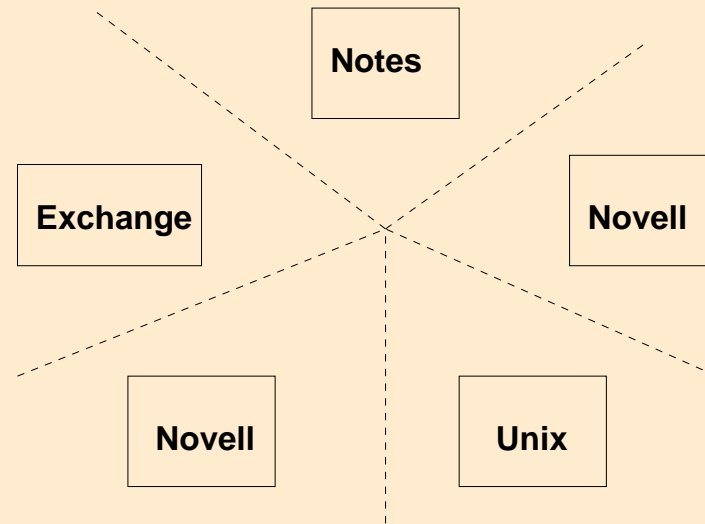
- ISO X.400 - Email by Committee

UUCP: Early Contact

- Unix-to-Unix Copy

- Machines dial each other

- Store and Forward

- Each machine only knows a few others

- Bang Paths

Direct lineage to both USENET and SMTP

The Agents and their Assignments

- **(MUA) Mail User Agent**
  - Pine, Mutt, Elm, Eudora, Outlook
- **(MTA) Mail Transport Agent**
  - Sendmail, Exim, Postfix, Qmail
- **(MDA) Mail Delivery Agent**
  - /bin/mail, mail.local, deliver, procmail
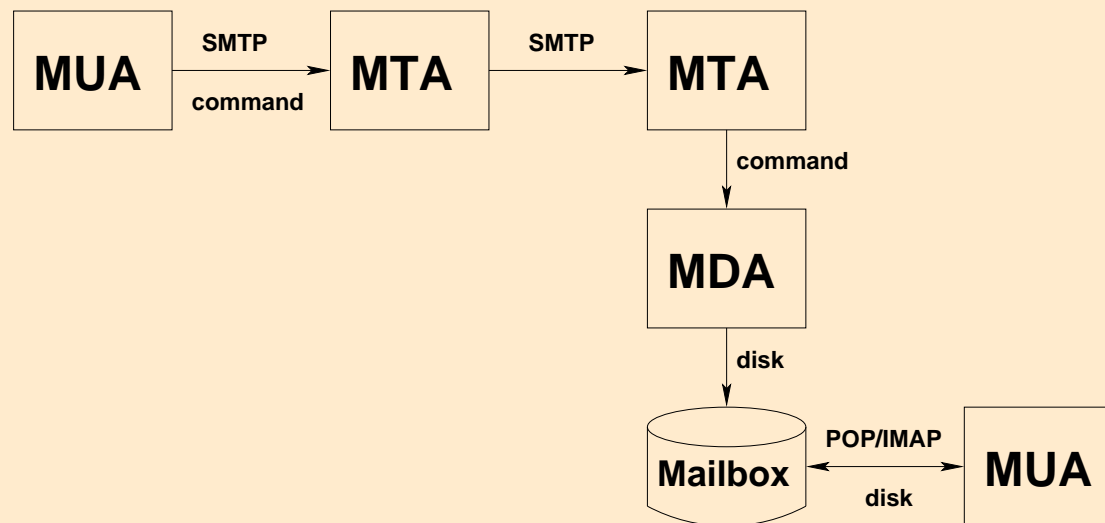
SMTP: Pass It On

Simple Mail Transport Protocol - RFC 821 (1982)

- Relay message to another MTA
  - And then another...
    - And then another...

- Envelope - Sender and Recipient addresses
- Semi-Opaque Data inside
- End data with lone ".", double any existing lone "."

- First MTA adds Date and Message-ID headers if not already there

- Each MTA adds Received header identifying itself

- TCP port 25

SMTP Session

220 server.funknet.net ESMTP Sendmail
HELO client.funknet.net
250 server.funknet.net Hello client.funknet.net
MAIL FROM: <rfunk@funknet.net>
250 <rfunk@funknet.net> sender ok
RCPT TO:<cantonlinux@yahoogroups.com>
250 <cantonlinux@yahoogroups.com> recipient ok
RCPT TO:<colug@colug.net>
250 <colug@colug.net> recipient ok
DATA
354 Enter message, ending with "." on a line by itself
Subject: hi!

hey there
.
250 OK Got Message
QUIT
221 server.funknet.net closing connection

Basic Text Message Format - RFC 822

- **Address Format**
  - Bare: rfunk@funknet.net
  - Comments: rfunk@funknet.net (Robert M. Funk)
  - Brackets: Rob Funk <rfunk@funknet.net>
  - Quotes: "Robert M. Funk" <rfunk@funknet.net>

- **Must be able to pass through old/weird gateways**
  - 7-bit ASCII Text
  - More than 256 chars/line risks cutoff

- **Headers**
  - Name: value
  - Initial blank continues previous line
- **Body**
  - Blank line separates from headers

Post Office Protocol version 3

POP3 - For recipients with intermittent connections

- ■ USER rfunk
- ■ PASS MyPasWrd

- ■ STAT
  - Get number of messages and total size
- ■ LIST [1]

  - List message numbers and sizes

- ■ LAST
  - (obsoleted) Get last message number seen
- ■ UIDL [1]

  - List unique IDs of messages, for client-side tracking

Post Office Protocol version 3

- **RETR 1**
  - Retrieve message 1
- **TOP 6 2**
  - Get the headers and first 2 body lines of message 6

- **RSET**
  - unmark deletions
- **QUIT**