

Email

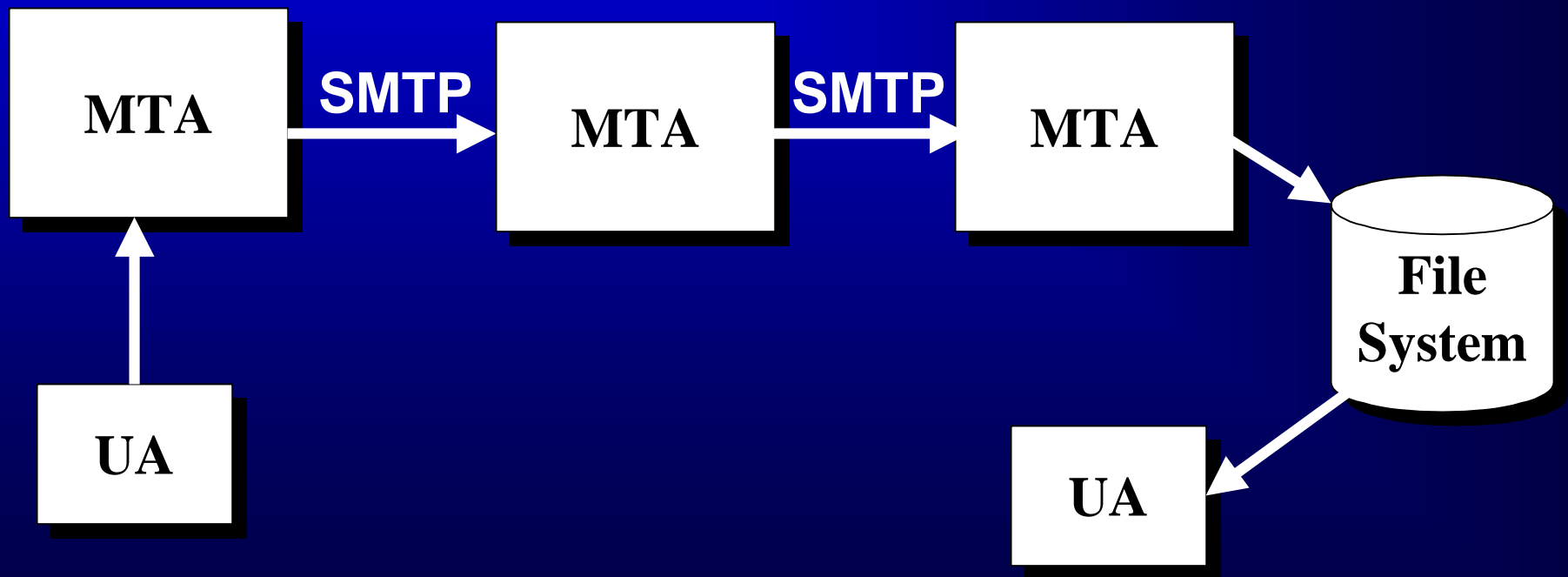
- SMTP - Simple Mail Transfer Protocol
 - RFC 821
- POP - Post Office Protocol
 - RFC 1939
- Also:
 - RFC 822 *Standard for the Format of ARPA Internet Text Messages*
 - RFCs 1521, 1522 *Mime*

Terminology

- User Agent: end-user mail program
- Message Transfer Agent: responsible for communicating with remote hosts and transmitting/receiving email (both a client and server).
- Mail Exchanger: host that takes care of email for a domain.

SMTP

Used to exchange mail messages between mail servers (Message Transfer Agents).



SMTP Protocol

- SMTP sender is the client
- SMTP receiver is the server.
- Alternating dialogue:
 - client sends command and server responds with command status message.
 - Order of the commands is important!
 - Status messages include ascii encoded numeric status code (like FTP) and text string.

SMTP Commands

- HELO - identifies sender
- MAIL FROM: - starts a mail transaction and identifies the mail originator
- RCPT TO: - identifies individual recipient. There may be multiple RCPT TO: commands.
- DATA - sender ready to transmit a series of lines of text, each ends with \r\n. A line containing only a period '.' indicates the end of the data.

Data Format

- ASCII only- must convert binary to an ASCII representation to send via email.
- What if we want to send a line containing only a period?
 - Sender prepends a period to any line starting with a period (in the message).
 - Receiver strips the leading period in any line that starts with a period and has more stuff.

Typical Exchange

```
z3.cs.rpi.edu> telnet mail.cs.rpi.edu 25
Trying 128.213.8.2...
Connected to fred.cs.rpi.edu.
Escape character is '^]'.
220 cs.rpi.edu ESMTP Sendmail 8.8.8/8.8.8; Sat, 14 Mar
    1998 21:28:41 -0500 (EST)
HELO z3.cs.rpi.edu
250 cs.rpi.edu Hello hollingd@z3.cs.rpi.edu
    [128.213.4.203], pleased to meet you
MAIL FROM: TheKingOfSiam
250 TheKingOfSiam... Sender ok
RCPT TO: hollingd
250 hollingd... Recipient ok
DATA
354 Enter mail, end with "." on a line by itself
Hi dave - this message is a test of SMTP
.
250 VAA07541 Message accepted for delivery
```

Leading Period

DATA

354 Enter mail, end with "." on a line by itself

Hi dave - this message is a test of SMTP

..

..foo

..

.

250 VAA0771 Message accepted for delivery

- Resulting Message:

```
Hi dave - this message is a
test of SMTP
```

```
.
```

```
.foo
```

```
.
```

Other Commands

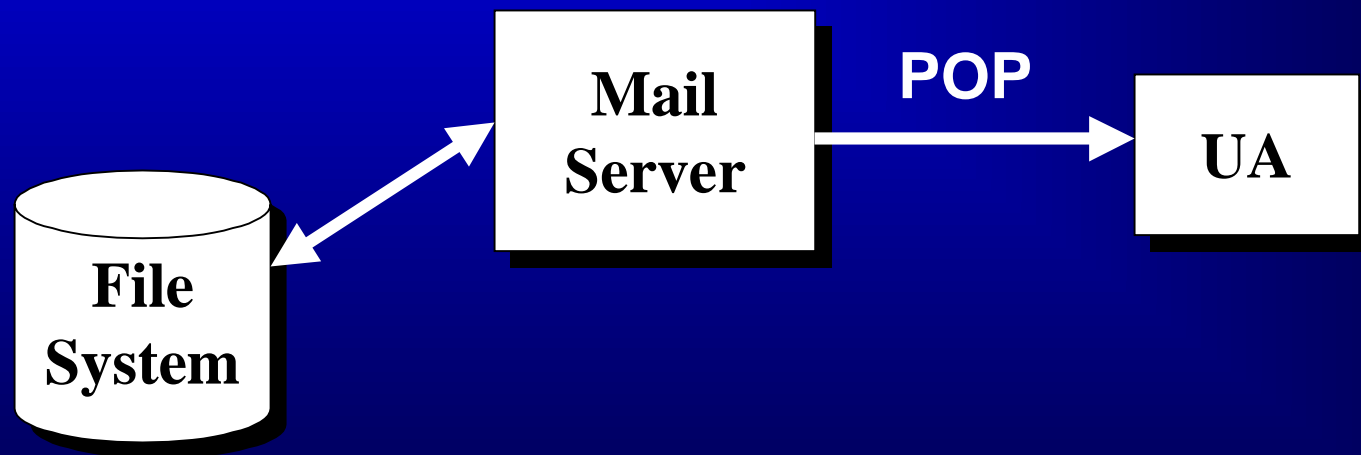
- VRFY - confirm that a name is a valid recipient.
- EXPN - expand an alias (group email address).
- TURN - switch roles (sender <-> receiver).
- SOML - Send Or Mail
 - if recipient is logged in, display message on terminal, otherwise email.
- SAML - Send and Mail
- NOOP - send back a positive reply code.
- RSET - abort current transaction.

Mail Headers

- Email messages contain many headers, some headers are created by the UA, some are automatically added by the MTA.
- Every MTA adds (at least) a “Received:” header.
- Some of the headers are read by (parsed) intermediate MTAs, but the content is ignored and passed on transparently.

POP

- Used to transfer mail from a mail server to a UA.



POP (version 3)

- Similar to SMTP command/reply lockstep protocol.
- Used to retrieve mail for a single user
 - requires authentication
- Commands and replies are ASCII lines.
 - Replies start with "+OK" or "-ERR".
 - Replies may contain multiple lines.

POP-3 Commands

- USER - specify username
- PASS - specify password
- STAT - get mailbox status
 - number of messages in the mailbox.
- LIST - get a list of messages and sizes.
 - One per line, termination line contains '.' only.
- RETR - retrieve a message

More POP-3 Commands

- DELE - mark a message for deletion from the mailbox.
- NOOP - send back positive reply
- RSET - reset. All deletion marks are unmarked.
- QUIT - remove marked messages and close the (TCP) connection.

Optional Commands

- TOP - send header lines from messages.
- APOP - alternative authentication
 - message digest based on opening greeting sent from POP server.
 - Requires shared secret!
 - No cleartext password on the network.
 - Does not authenticate the server!!!!