

Simple Mail Transfer Protocol

Vermont Technical College
Peter C. Chapin

Why?

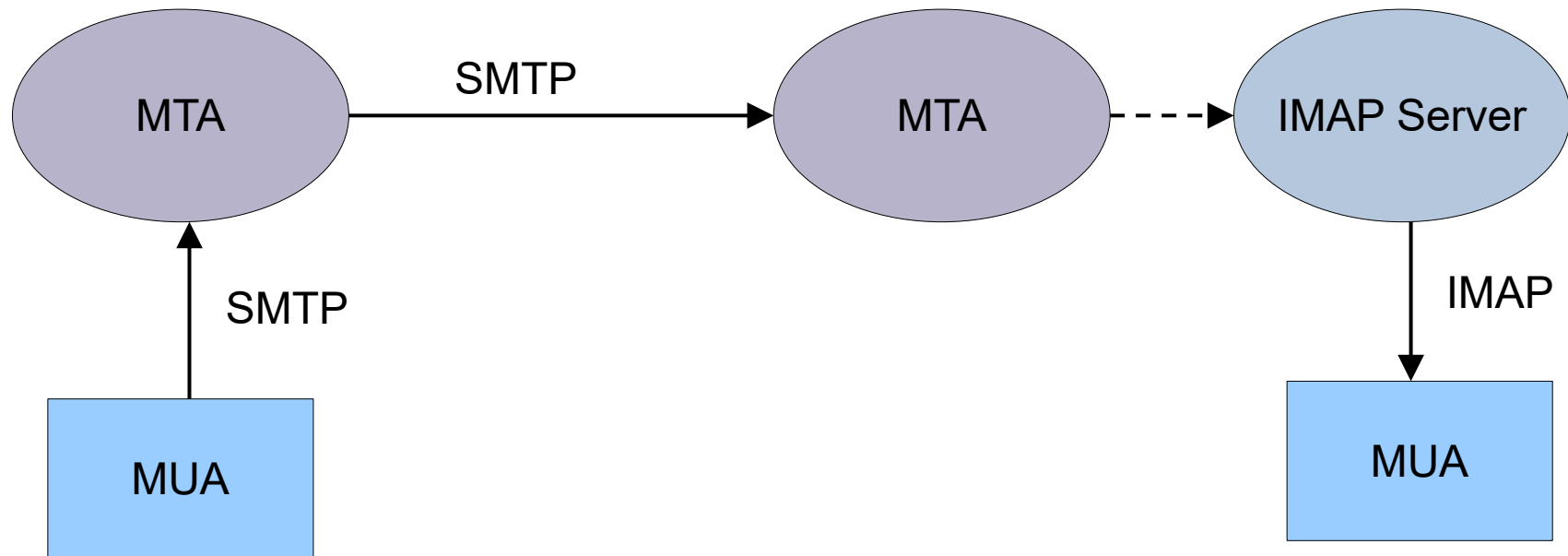
- SMTP is an application protocol.
 - So far we've talked about protocols at the transport layer and below.
 - SMTP is above the transport layer.
 - Assumes a reliable, bidirectional channel for data exchange.
 - Normally done over TCP, but could be any transport connection with appropriate reliability properties.
 - SMTP is below still higher level protocols
 - Format of mail messages.
 - MIME
 - We will talk about the higher level protocols too.

Quick References

- This slide set needs elaboration. For now...
 - <http://tools.ietf.org/html/rfc5321>
 - The above link is to the latest SMTP RFC
 - Note especially...
 - The sample SMTP sessions in Appendix D.
 - Section 4 is where the protocol itself is described.

MTA vs MUA

- MTA = Mail Transport Agent (aka Mail Server)
- MUA = Mail User Agent (aka Mail Client)



Additional Notes

- SMTP is a text protocol.
 - Client and server exchange lines of ASCII text
 - **Note character set used: ASCII.**
 - Creates problems for international email.
 - Those problems are addressed by the MIME standard.
 - Each line terminated with CR/LF.
 - Line lengths might be limited.
 - Possible to interact with an SMTP server using a terminal and telnet.
 - `telnet smtp.vsc.edu 25`
 - Must manually type SMTP commands.
 - Good for debugging and learning.

Sample SMTP Conversation

```
S: 220 foo.com Simple Mail Transfer Service Ready
C: EHLO bar.com
S: 250-foo.com greets bar.com
S: 250-8BITMIME
S: 250-SIZE
S: 250-DSN
S: 250 HELP
C: MAIL FROM:<Smith@bar.com>
S: 250 OK
C: RCPT TO:<Jones@foo.com>
S: 250 OK
C: RCPT TO:<Green@foo.com>
S: 550 No such user here
C: RCPT TO:<Brown@foo.com>
S: 250 OK
C: DATA
S: 354 Start mail input; end with <CRLF>.<CRLF>
C: Blah blah blah...
C: ...etc. etc. etc.
C: .
S: 250 OK
C: QUIT
S: 221 foo.com Service closing transmission channel
```

Real World

- Today TLS is used for many SMTP connections
 - Encrypted so mail not read off wire during transport
 - Protection from tampering while on the wire
 - No protection while on the MTA host!
 - Mail security depends on security of the MTA host.
- SPAM prevention
 - Sender Policy Framework (SPF)
 - Domain Keys Identified Mail (DKIM)
 - Domain Based Message Authentication Reporting and Conformance (DMARC)