

CSc 450/550 Computer Networks Electronic Mail

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1

Review: HTTP & DNS

- HTTP
 - based on TCP
 - HTTP method
 - HTTP response
- DNS
 - DNS query based on UDP
 - DNS queries
 - DNS records

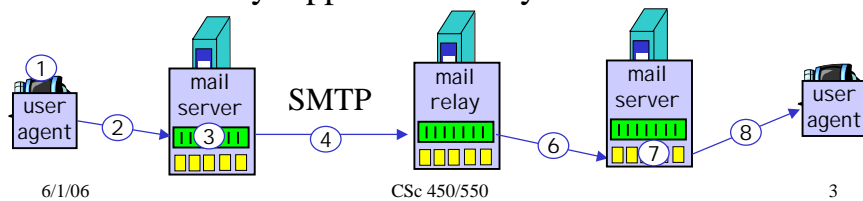
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2

Electronic Mail

- User agent (UA)
 - read and compose
- Mail transport agent (MTA)
 - mail server: mail box; mail queue
 - mail relay: application relay



SMTP

- Simple mail transfer protocol [RFC821]
 - use TCP port 25
 - command-response style
 - 7-bit ASCII text
- Procedures
 - handshaking: e.g., HELO
 - no authentication!
 - message transfer: e.g., DATA
 - closure: QUIT

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4

SMTP in action

```
S: 220 hamburger.edu
C: HELO crepes.fr
S: 250 Hello crepes.fr, pleased to meet you
C: MAIL FROM: <alice@crepes.fr>
S: 250 alice@crepes.fr... Sender ok
C: RCPT TO: <bob@hamburger.edu>
S: 250 bob@hamburger.edu ... Recipient ok
C: DATA
S: 354 Enter mail, end with "." on a line by itself
C: Do you like ketchup?
C:   How about pickles?
C: .
S: 250 Message accepted for delivery
C: QUIT
S: 221 hamburger.edu closing connection
```

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5

Email access

- Post Office Protocol (POP)
 - (plain-text) user authentication
 - mail retrieval (request-reply)
 - POP3: TCP port 110
- Internet Mail Access Protocol (IMAP)
 - more features
- HTTP: web mail
 - initially, hotmail; now many of them

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6

POP3

```
S: +OK POP3 server ready
C: USER carolyn
S: +OK
C: PASS vegetables
S: +OK login successful
C: LIST
S: 1 2505
S: 2 14302
S: 3 8122
S: .
C: RETR 1
S: (sends message 1)
C: DELE 1
C: RETR 2
S: (sends message 2)
C: DELE 2
C: RETR 3
S: (sends message 3)
C: DELE 3
C: QUIT
S: +OK POP3 server disconnecting
```

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Email: issues

- No sender authentication
 - forged sender
 - remedy: e.g., DomainKey
- “Push” model
 - unsolicited bulk email (spam)
 - the victim of spam and the fight against spam
- No information protection
 - remedy: e.g., PGP

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8

This lecture

- Email
 - UA, MTA
 - SMTP; POP3
- Explore further
 - MIME
 - telnet mailserver 25
 - telnet mailserver 110
 - be careful with the plain-text password!

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9

Next lecture

- Transport Layer
 - TCP
 - read CN Chapter 6

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10