
SMTP & FTP

CS 352
Spring 2004

Email

- Email is transferred from one host to another using the Simple Mail Transfer Protocol (SMTP)
- SMTP, FTP and HTTP have a simple ASCII command and reply set to transfer messages between machines
- Think of a set of request strings and reply strings sent over the network
- SMTP transfers occur between:
 - sending host and dedicated email server
 - dedicated email servers
- They do not occur between receiving hosts and email servers
 - These are POP or IMAP protocols

SMTP Protocol

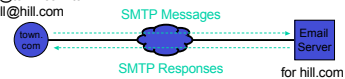
```
                220 hill.com SMTP service ready
HELO town.com
                250 hill.com Hello town.com, pleased to meet you
MAIL FROM: <jack@town.com>
                250 <jack@town.com>... Sender ok
RCPT TO: <jill@hill.com>
                250 <jill@hill.com>... Recipient ok
DATA
                354 Enter mail, end with "." on a line by itself
From: jack@town.com
To: jill@hill.com
Subject: Please fetch me a pail of water

Jill, I'm not feeling up to hiking today. Will you please fetch me a pail of water?
.
                250 message accepted
QUIT
                221 hill.com closing connection
```

SMTP Direct Mode

Direct mode:

Sending email from
jack@town.com to
jill@hill.com

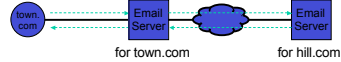


town.com first finds IP address for hill.com email server using DNS request (type=MX)
town.com opens TCP connection on SMTP port 25 and initiates SMTP protocol to transfer email message

SMTP Relay Mode

Relay mode:

Sending email from
jack@town.com to
jill@hill.com



town.com is configured to send all email messages through a local email server

The local email server buffers email messages and forwards them to other email servers

“open” relays can be used for spamming

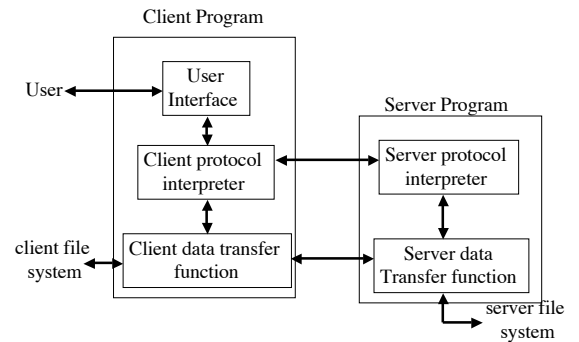
Retrieving Email

- Users retrieve email from their assigned email server
- Email retrieval does NOT use the SMTP protocol
- 3 common methods of retrieval
 - Email server adds received messages to a file stored on a shared file system (e.g., /var/mail/jill)
 - Email downloaded via the POP3 protocol
 - Email accessed via the IMAP protocol

File Transfer Protocol

- Download/upload files between a client and server
 - One of the first Internet protocols
- More complex than SMTP
 - ASCII control connection
 - Separate data connection performs presentation functions
 - E.g, formats and converts data depending on type

FTP Client/Server



Sample FTP Command Set

LIST	list directory
GET	get a file (download)
MGET	get multiple files
STOR	store (upload) a file
TYPE	set the data transfer type
USER	set the username
QUIT	End the session

Sample FTP Replies

200	Command OK
214	Help Message
331	Username OK, password required
425	Can't open data connection
452	Error writing file
500	Syntax error (unrecognized command)
502	Unimplemented MODE

Sample FTP Session

```
%ftp ftp.rutgers.edu
Connected to kublai.td.Rutgers.EDU.
220 ftp.rutgers.edu FTP server (Version wu-2.6.2(9) Thu Feb 7
    13:31:16 EST 2002)
    ready.
Name (ftp.rutgers.edu:rmartin): anonymous
331 Guest login ok, send your complete e-mail address as
    password.
Password:
230 Guest login ok, access restrictions apply.
Remote system type is UNIX.
ftp> cd /pub/redhat/linux/9/en/os/i386/images
ftp> get bootdisk.img
local: bootdisk.img remote: bootdisk.img
227 Entering Passive Mode (165,230,246,3,149,67)
150 Opening BINARY mode data connection for bootdisk.img
    (1474560 bytes).
226 Transfer complete.
1474560 bytes received in 00:01 (767.79 KB/s)
ftp> quit
```