

Lecture 09: Server services, cont'd

Hands-on Unix system administration DeCal

2012-03-19

Final project

❖ Final project

Mail

- if you signed up, directions to connect to VM¹ are in lab
- if you haven't signed up, please see Felix after class

¹Virtual Machine, we have several “virtual computers” which run on a single physical computer

- ❖ Final project

Mail

- ❖ SMTP
- ❖ Message format
- ❖ Address format
- ❖ Process, part 1
- ❖ Process, part 2
- ❖ Process, part 3
- ❖ Complexities

Mail

SMTP

❖ Final project

Mail

❖ SMTP

❖ Message
format

❖ Address
format

❖ Process, part
1

❖ Process, part
2

❖ Process, part
3

❖ Complexities

- Simple Mail Transfer Protocol, first standard published 1982
- send and receive messages
- different hosts
- store-and-forward

Message format

❖ Final project

Mail

❖ SMTP

❖ Message
format

❖ Address
format

❖ Process, part
1

❖ Process, part
2

❖ Process, part
3

❖ Complexities

- envelope: metadata mail systems see
 - ❖ sender and recipient addresses
- header: metadata you see
 - ❖ fields: To, From, Subject, Date...
- body: the stuff

Address format

❖ Final project

Mail

❖ SMTP

❖ Message
format

❖ Address
format

❖ Process, part
1

❖ Process, part
2

❖ Process, part
3

❖ Complexities

- local part (e.g., username) **before** @ symbol
- FQDN² **after** @ symbol
 - ❖ receiving mail server is domain's MX³ DNS record

²Fully Qualified Domain Name

³Mail Exchange server

Process, part 1

❖ Final project

Mail

❖ SMTP

❖ Message
format

❖ Address
format

❖ Process, part
1

❖ Process, part
2

❖ Process, part
3

❖ Complexities

- Alice MUA⁴ \Rightarrow Alice ISP MSA⁵
 - ❖ Alice sends message using a MUA to MSA run by Alice's ISP
- Alice ISP MSA \Rightarrow Alice ISP MTA⁶

⁴Mail User Agent, e.g., Mozilla Thunderbird

⁵Mail Submission Agent, accepts mail to send out

⁶Mail Transfer Agent, i.e., relay server

Process, part 2

❖ Final project

Mail

❖ SMTP

❖ Message
format

❖ Address
format

❖ Process, part
1

❖ Process, part
2

❖ Process, part
3

❖ Complexities

- Alice ISP MTA \Rightarrow Bob ISP MTA (MX)
 - ❖ Alice's ISP's MTA resolves MX record for Bob's address FQDN and passes on to Bob's ISP's MX MTA
- Bob ISP MTA \Rightarrow Bob ISP MDA⁷

⁷Mail Delivery Agent, stores message locally

Process, part 3

❖ Final project

Mail

❖ SMTP

❖ Message
format

❖ Address
format

❖ Process, part
1

❖ Process, part
2

❖ Process, part
3

❖ Complexities

- Bob ISP MDA \Rightarrow Bob mailbox
 - ❖ Bob's ISP's MDA accepts message and delivers to Bob's mailbox
- Bob MUA \Leftarrow Bob mailbox
 - ❖ Bob checks mailbox using a MUA from POP/IMAP/webmail service

Complexities

❖ Final project

Mail

❖ SMTP

❖ Message
format

❖ Address
format

❖ Process, part
1

❖ Process, part
2

❖ Process, part
3

❖ Complexities

- bounces: reporting undeliverable mail
- spoofing: forged senders
- file sizes and encodings
- privacy: encryption, or lack thereof
- unsolicited bulk email (spam), phishing, malware
- teenagers