# Homework 3
# Mail System

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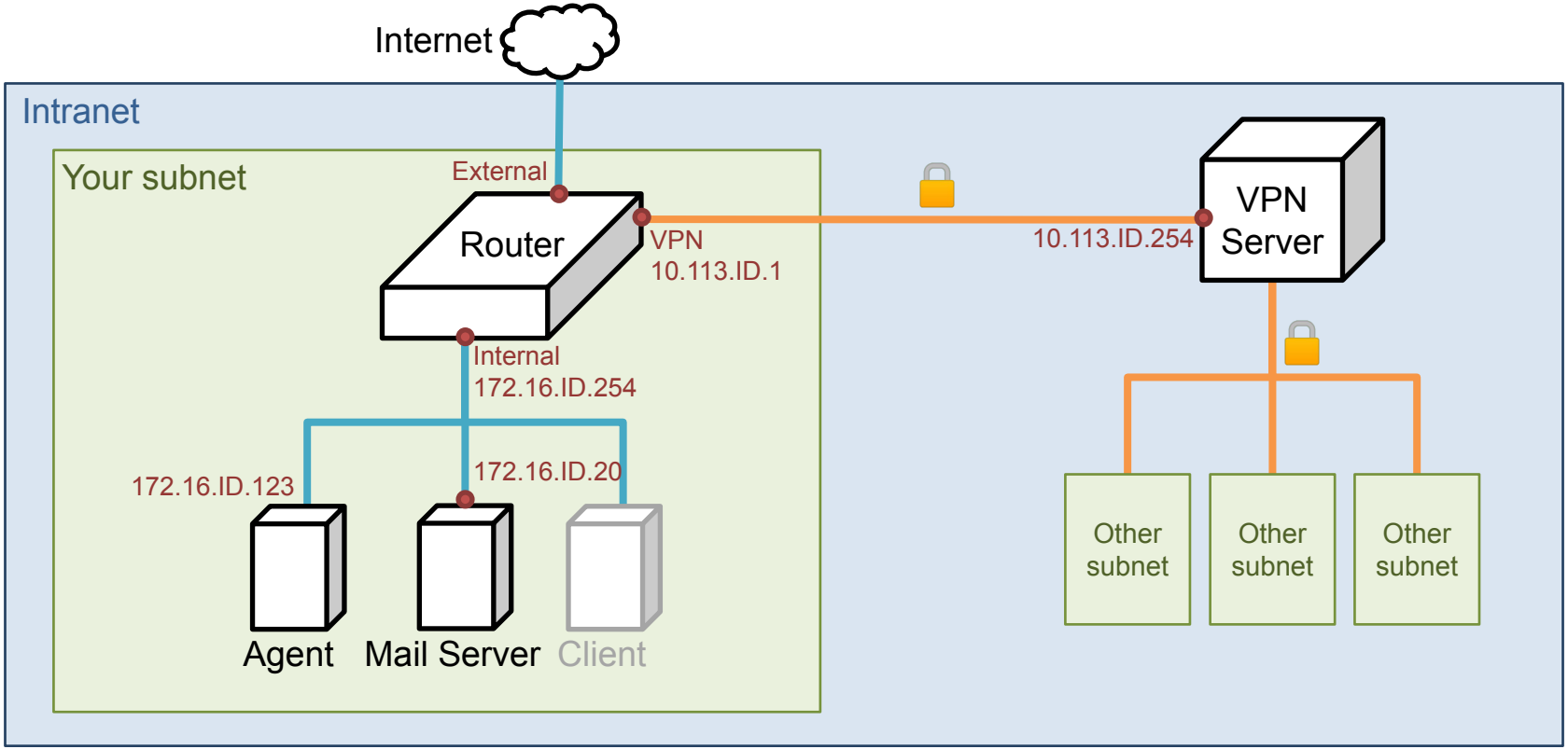
# Purposes

- Build a basic mail service
- Understand how to maintain Postfix service
- Understand how to maintain Dovecot service
- Understand how to protect your mail service

# Overview

- A simple Mail Server
  - Providing IMAP service
  - Providing SMTP service
  - Scanning virus
  - Detecting spam mails

# Overview - Architecture



# Requirements (1/8)

- Mail Server
  - IP: 172.16.{ID}.20/24
  - Hostname: mail.{ID}.nasa.
  - Mail domain: (10%)
    - @{ID}.nasa.
    - @mail.{ID}.nasa.
  - STARTTLS on IMAP/SMTP (5%)
    - Use self-signed certificate
  - User Authentication on IMAP/SMTP (10%)
    - Only send emails with authenticated username@
    - Avoid to fake other users on envelop from
  - No Open Relay (5%)

# Requirements (2/8)

- MX record (5%)
  - Set MX record on your domain
  - Sending mail to @{ID}.nasa will go to @mail.{ID}.nasa
- SPF (5%)
  - DNS SPF record
    - Allow only your server to send mails using your domain
    - Deny other servers from pretending you, and drop these invalid mail
  - Do SPF policy check on incoming email
    - {ID}.nasa. IN TXT <SPF-rules>

# Requirements (3/8)

- DKIM (10%)
  - Signing your outgoing email with your private key
  - A DNS TXT record for DKIM
  - DKIM policy check on the incoming email
- <selector>._domainkey.{ID}.nasa. IN TXT <DKIM-Information>

# Requirements (4/8)

- DMARC (10%)
  - A DNS TXT record for DMARC
    - Let others drop mails that does not pass DMARC policy check
  - Do DMARC policy check to the incoming email
- _dmarc.{ID}.nasa. IN TXT <DMARC-Rules>

# Requirements (5/8)

- Greylisting (5%)
  - For incoming mail from new mail server
  - Greylist for 30 seconds

# Requirements (6/8)

- Specific user TA, cool-TA (5%)
  - Set passwords to your VPN private key (TA_Password)
  - Retrieve the key from Online Judge
  - Keep all mails that TA and cool-TA received on your server
- Virtual alias (10%)
  - for any mail to NASATA@ alias to TA@
  - for any mail to <sth>|<user>@ alias to <user>@
    - e.g. i-am-a|TA@ send to TA@
- Sender rewrite (10%)
  - Rewrite @mail.{ID}.nasa to @{ID}.nasa
  - Rewrite cool-TA@ to notcool-TA@

# Requirements (7/8)

- Ingoing mail filter (5%)
  - Prepend "*** **SPAM** ***" in front of the subject if the mail contains virus or spam message
  - You can use amavisd-new / SpamAssassin / rspamd
- Test cases
  - https://github.com/apache/spamassassin/blob/trunk/sample-spam.txt

# Requirements (8/8)

- Outgoing mail filter (5%)
  - Reject mails whose subject contains keyword
    - "NCTU" or "陽交"

# Test your email services

- IMAP (143) Testing
  - https://wiki.dovecot.org/TestInstallation
  - *openssl s_client -connect mail.{ID}.nasa:143 -starttls imap*
- SMTP (25) Testing
  - http://www.postfix.org/INSTALL.html
  - *openssl s_client -connect mail.{ID}.nasa:25 -starttls smtp*
- Or just install a GUI / TUI mail client
  - Microsoft Outlook
  - Mozilla Thunderbird
  - mutt, etc

# Attention

- Your work will be tested by Online Judge system.
  - You can submit multiple judge requests. However, OJ will **cool down for several minutes** after each judge.
  - We will take the last submitted score instead of the highest score.
  - Late submissions will not be accepted.
- Make sure everything is fine after reboot.
- **Backup your VM before judge every time.**
  - We may do something bad when judging.
- Due date: 2022/05/07 Sat. 23:59:59

# Requirements (8/8)

- TA office hours: 15:30~17:20 Wed. at EC 324 (PC Lab).
  - We do not allow walk-ins except TA office hours or e-mail appointments.
- Questions about this homework.
  1. Make sure you have studied through lecture slides and the HW spec.
  2. Clarify your problems and google it to find out solutions.
  3. Ask them on https://groups.google.com/g/nctunasa .
     - Be sure to include all information you think others would need.
- We MIGHT give out hints on google group.
  - Be sure to join the group!
- Do not mail us unless it's personal or you're making an appointment.

# Good Luck!