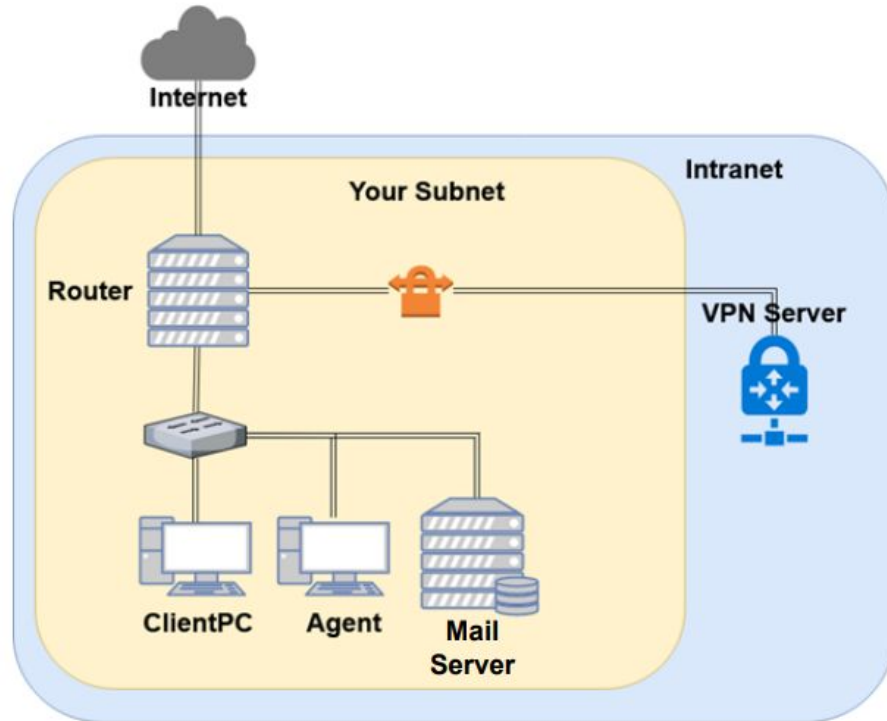# Homework 3
Network Administration

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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

Overview (cont.)

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

DNS Server Setting

- DNS server: 10.113.0.254
  - These RRs are on the server
    - $GENERATE 1-200 $ IN NS ns1.$
    - $GENERATE 1-200 $ IN NS ns2.$
    - $GENERATE 1-200 ns1.$ IN A 10.113.$.1
    - $GENERATE 1-200 ns2.$ IN A 10.113.$.2
  - You are required to redirect any DNS query within .nasa to this DNS server
  - Failed to do so will lead to failed Judge results

- Mail Server
  - IP: 10.113.ID.y/24 with static DHCP, where y is arbitary
  - Hostname: mail.{ID}.nasa.
  - Mail domain:
    - @{ID}.nasa.
    - @mail.{ID}.nasa.
  - STARTTLS on IMAP/SMTP
    - Use self-signed certificate
  - User Authentication on IMAP/SMTP
    - Only send emails with authenticated username@
    - Avoid to fake other users on envelop from
  - No Open Relay

- MX record
  - Set MX record on your domain
  - Sending mail to @{ID}.nasa will go to mail.{ID}.nasa
- SPF
  - 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 <u>incoming email</u>
    - {ID}.nasa. [TTL] IN TXT <SPF-rules>

- DKIM
  - 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>

- DMARC
  - 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
  - For incoming mail from new mail server
  - Greylist for 30 seconds

- Specific user TA, cool-TA
  - Set passwords to your VPN private key (WG_PRIVATE_KEY)
  - Retrieve the key from Online Judge
  - Keep all mails that TA and cool-TA received on your server
- Virtual alias
  - 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
  - Rewrite @mail.{ID}.nasa to @{ID}.nasa
  - Rewrite cool-TA@ to notcool-TA@

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

Requirements (8/8)

- Outgoing mail filter
  - 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

Submission

❑ Your work will be tested by our online judge system
- Submit a judge request when you are ready.
- You can submit request multiple times. However, **the score of the last submission instead of the submission with the highest score**, will be taken.
- **Late submissions are not accepted**.
- Please check your score at OJ after judge completed.

❑ Scoring start at : 2021/4/23 00:00

- The cool-down time is 30 Minutes

❑ Deadline: 2021/5/6 23:59

Help

❑ TA office hours: W78 (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 search it to find out solutions first.
3. Ask them on https://groups.google.com/g/nctunasa .
   - Be sure to include all the information you think others would need.