Homework 4
Mail System

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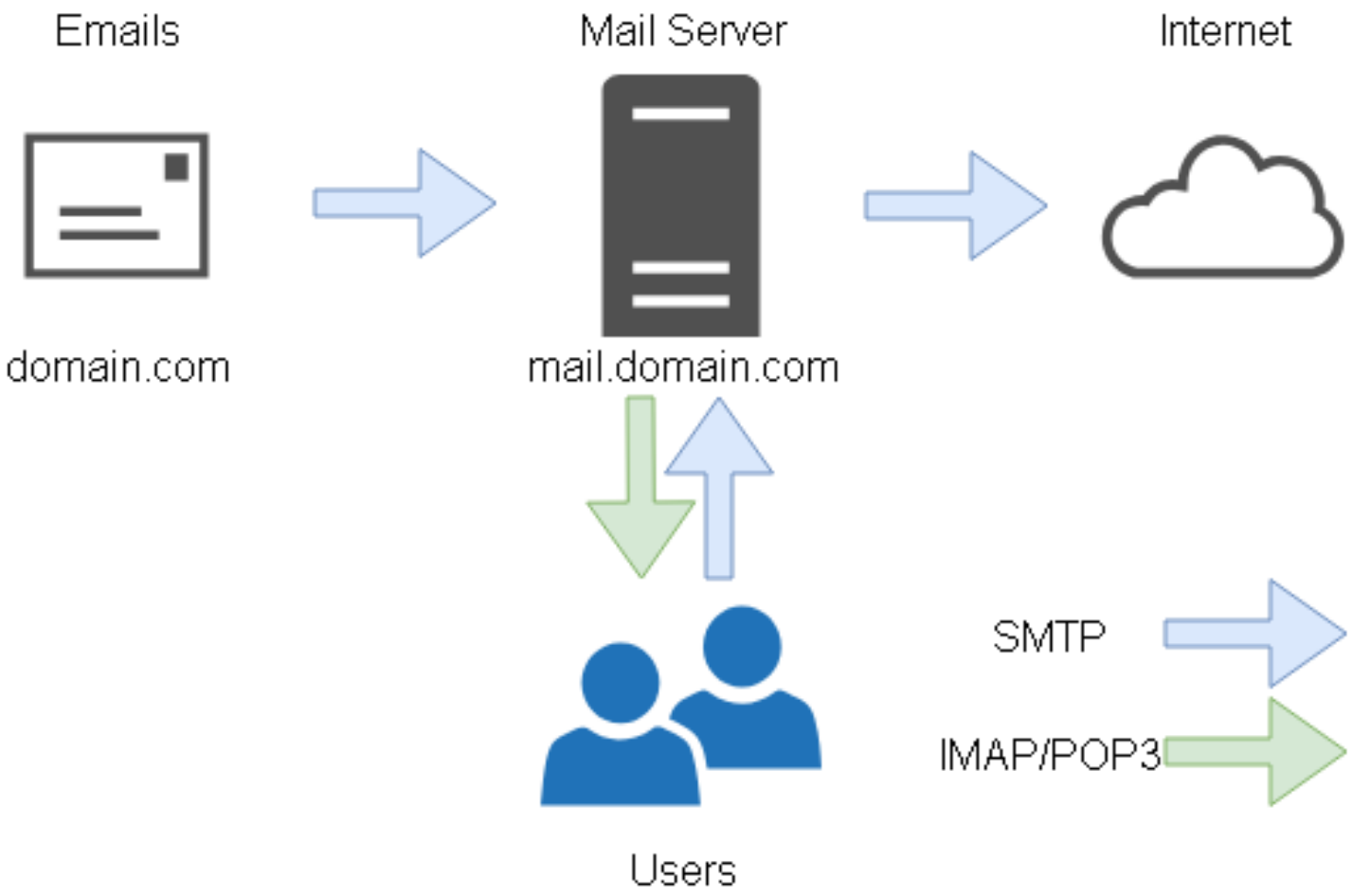
Architecture



Overview

- Secure your SMTP server
  - SMTP over TLS
  - SMTPs
  - SASL
- Retrieve your email
  - IMAP、IMAPs
  - POP3、POP3s
- Anti-Spam
- Anti-Spoofing
  - SPF
  - DKIM
  - DMARC

Preparation

- Before start, you need
  - Public IP Address
  - DNS Server
    - MX Record
    - …
  - Mail Server

SMTP Server

- Encrypted Connection
  - SMTP over TLS (25)
    - STARTTLS
  - SMTPs (465)
    - TLS connection
- Authentication
  - SASL
    - Run SASL only based on SMTP over TLS, or SMTPs
  - No Open Relay

Retrieve your email

- IMAP (143)、IMAPs (993)
  - Testing: https://wiki.dovecot.org/TestInstallation
  - nc {your_server} 143
  - Enable SSL support
  - openssl s_client -connect "{your_server:993}"
- POP3 (110)、POP3s (995)
  - Testing: https://wiki.dovecot.org/TestPop3Installation
  - nc {your_server} 110
  - Enable SSL support
  - openssl s_client -connect "{your_server:995}"

SMTP Server

- An account for sending / receiving mail
  - hw4user@{YourDomain} (password determined by your self)
  - hw4user forward mail to hw4user@naphw4.nctucs.net
  - hw4user left a mail copy on mail system
  - other user if you need…
- virtual alias
  - for any mail to .*demo.*@{YourDomain} alias to hw4user
  - for any mail to {USER}+.*@{YourDomain} alias to {USER}
    - e.g., hw4user+abc@{YourDomain} send to hw4user
- Sender Rewriting Schema
  - Do rewriting when mail from other domain forward to outside

Anti-Spam

- Sender address verification
  - Real-time Blackhole List (RBL)
    - https://www.spamhaus.org
- Greylisting
  - For incoming mail from new mail server
  - Greylist for 1 minute

Anti-Spoofing: SPF

- SPF
  - DNS TXT and DNS SPF record for SPF that
    - Allow your server to send mail as your domain's user
    - Deny other domains, and drop these invalid mail
  - Do SPF policy check to the incoming email

- {your_mail_domain} [TTL] IN TXT {SPF_rules}
- {your_mail_domain} [TTL] IN SPF {SPF_rules}

Anti-Spoofing: DKIM

- DKIM
  - Signing your outgoing email with your private key
  - A DNS TXT record for DKIM
  - Do DKIM policy check to the incoming email

- {selector}._domainkey.{your_mail_domain} IN TXT "<DKIM Information>"

Anti-Spoofing: DMARC

- DMARC
  - A DNS TXT record for DMARC
    - When others receive mail that does not pass DMARC policy check
      - Drop all the invalid email
  - Do DMARC policy check to the incoming email

- _dmarc.{your_mail_domain} IN TXT "DMARC_rules"

Bonus

- Webmail (5%)
  - Roundcube, RainLoop or other Webmail Systems you like…
  - HTTPS

Hand-in

- Demo
  - 06/06 (Wed.) 18:30~21:30
- Help
  - Register a Domain Name
    - nctucs.net http://www.nctucs.net (using CS account)
  - Email to ta@nasa.cs.nctu.edu.tw
  - Go to CSCC to ask professional 3F at office hour!
    - There will be no help on demo day.