



HW1-2 - Mail

phkoan

Outline

- Basic Configuration
- Authentication
- Email Sending
- Email Receiving
- Encryption
- Security
- Mailing List
- Email Filtering and Rewritten

Basic Configuration (Preflight, 0%)

- The mail server should be responsible for the emails sent to `{STUID}.nasa` and `mail.{STUID}.nasa`.
 - `{STUID}` is same as the ID you use in HW1-1.
 - In the following pages, `<domain>` refers to both of these domains.
- MX records should point to `smtp.{STUID}.nasa`.
- `smtp.{STUID}.nasa` and `imap.{STUID}.nasa` should be configured (not empty).
 - They will be described in the following pages.

Authentication (0%)

- No testcase for this.
- Add the following accounts to the email system (username : password).
 - admin:admin
 - test:test
- Allow the email system to authenticate via LDAP *[LDAP]*
 - The *[LDAP]* tag denotes that the testcase requires a LDAP server, the specifications for which will be released in HW1-3.
 - All users in **ta** groups under **dc={STUID}, dc=nasa** in LDAP should be able to send and receive emails.

Email Sending (6%) [LDAP]

- Preflight
 - No open relay.
 - If a user is not authenticated, it cannot send emails.
- You should provide the endpoint `smtp.{STUID}.nasa` in DNS for sending emails.
 - Both for local users (2%) and LDAP users [LDAP] in `ta` group (4%).
- Authenticated users are only permitted to send emails using `<username>@<domain>`.
- The domain `ta.nasa` should be resolved correctly and some testcases may send emails to `admin@ta.nasa`.

Email Receiving (8%)

- You should provide the endpoint `imap.{STUID}.nasa` for viewing emails.
- All users should be able to view their emails through IMAP.
 - Local (3%) LDAP (4%) [\[LDAP\]](#)
- All emails matching the pattern `<username>+<any>@<domain>` should be delivered to `<username>@<domain>`. (1%)

Encryption (4%)

- STARTTLS should be **enforced** for SMTP (on port 587). (2%)
 - Other testcases only test port 25.
- STARTTLS should be **enabled** for IMAP (on port 143). (2%)
- You should self-sign the certificates, and we will not verify them.

Security (5%)

- SPF (1%)
 - Specify the IP address of your SMTP server in SPF record. (same as `smtp.{STUID}.nasa`)
 - Set SPF policy to soft fail.
- DKIM (3%)
 - Use `2026-na` as the selector.
 - All emails should be signed with your key.
- DMARC (1%)
 - Emails that fail DMARC should be "quarantined".
 - Set RUA report address to `dmarc-report-rua@${STUID}.nasa`.
- The records should be added for both managed domains.

Mailing List (8%)

- You should provide a mailing list service.
- Mailing list is an email address that automatically forwards a single incoming message to multiple pre-defined recipient addresses (members).

Mailing List (8%)

- `local_users@<domain>` should be resolved to the users `admin` and `test`. (2%)
- You should provide an HTTP endpoint on `smtp.{STUID}.nasa:8000` for OJ to create and delete mailing lists. (6%) [\[LDAP\]](#)
 - `POST /list/create` with payload `{"name": <name>, "members": [<usernames>...]}`
 - Creates a mailing list named `<name>` with members `<usernames>`.
 - For example, `{"name": "ta", "members": ["phkoan", "ymlai"]}` creates a mailing list named "ta" with members "phkoan" and "ymlai".
 - `DELETE /list/<name>`
 - Deletes the mailing list named `<name>`.

Email Filtering and Rewriting (10%)

- If an email subject contains `[SPAM]`, it should be rejected in the SMTP session at the gateway. (4%)
 - In other words, the email should NOT be queued by any SMTP servers.
- If an email body contains identification number, replace it with `***` (3 asterisks) to protect privacy. (4%)
 - The pattern of identification number is `[A-Z]\d{9}`.
- If an email is sent from the user `test`, the subject should be prefixed with `[TEST]`. (2%)

Note

- It's guaranteed that using Postfix and Dovecot in Debian is sufficient to complete this assignment.
 - But you are encouraged to try alternative implementations, such as Stalwart.
- It's guaranteed that using exactly one machine is sufficient to complete this assignment.
 - But you are encouraged to design a system with more than one machines for this assignment, and we recommend to design the architecture prior to implementation.
- We ONLY grade on the behavior of your email servers, not your implementation.