OpenSMTPD over the clouds

the story of an HA setup

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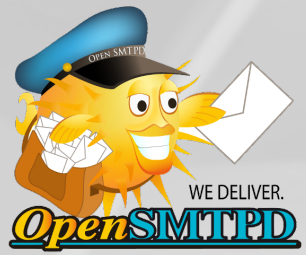


Historical setup

- some OpenBSD mail servers
- Postfix + Apache SpamAssassin + Amavisd-new + Courier Imap
- no shared storage
- no load balancer

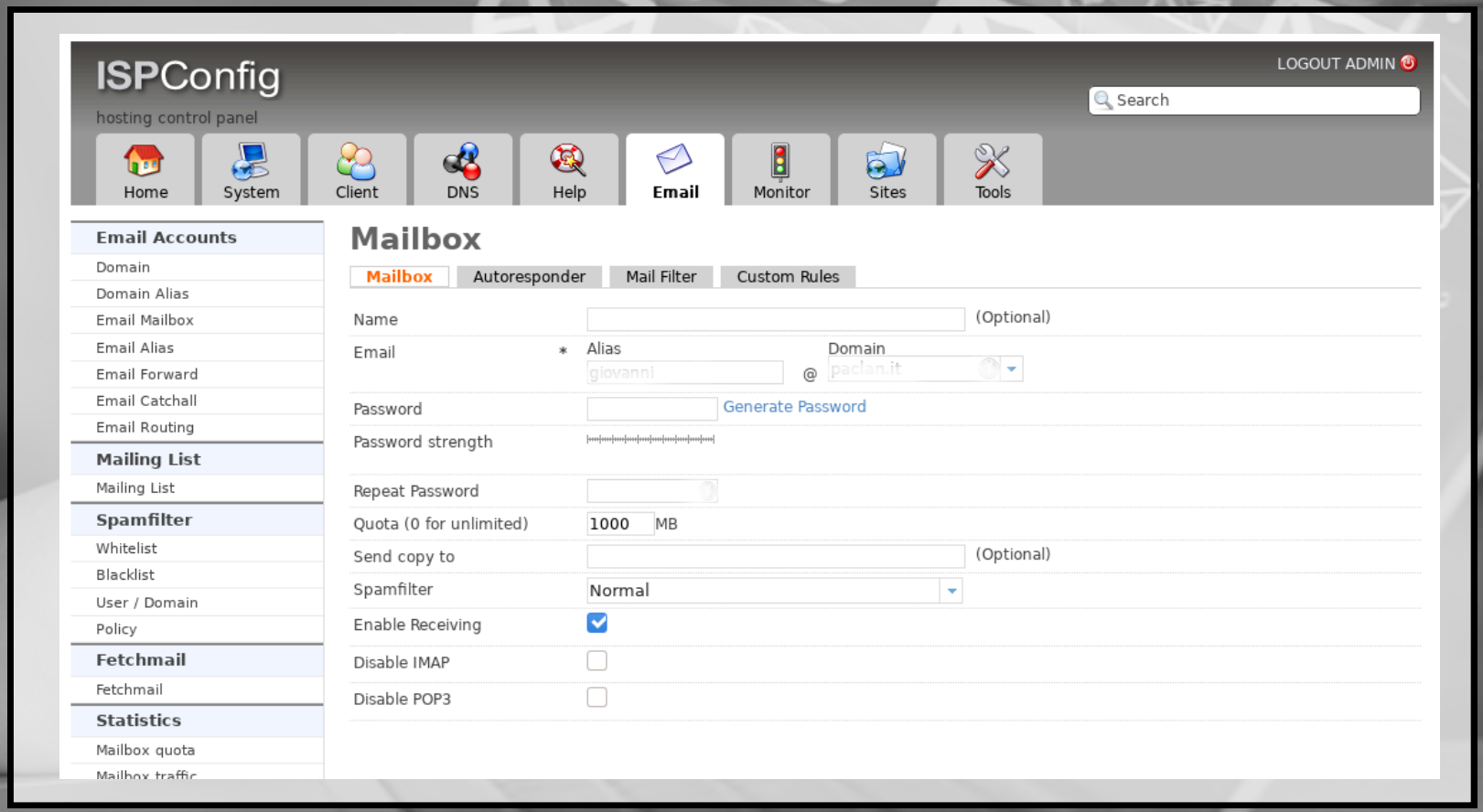
fixed pieces of the puzzle

- OpenBSD
- Apache SpamAssassin

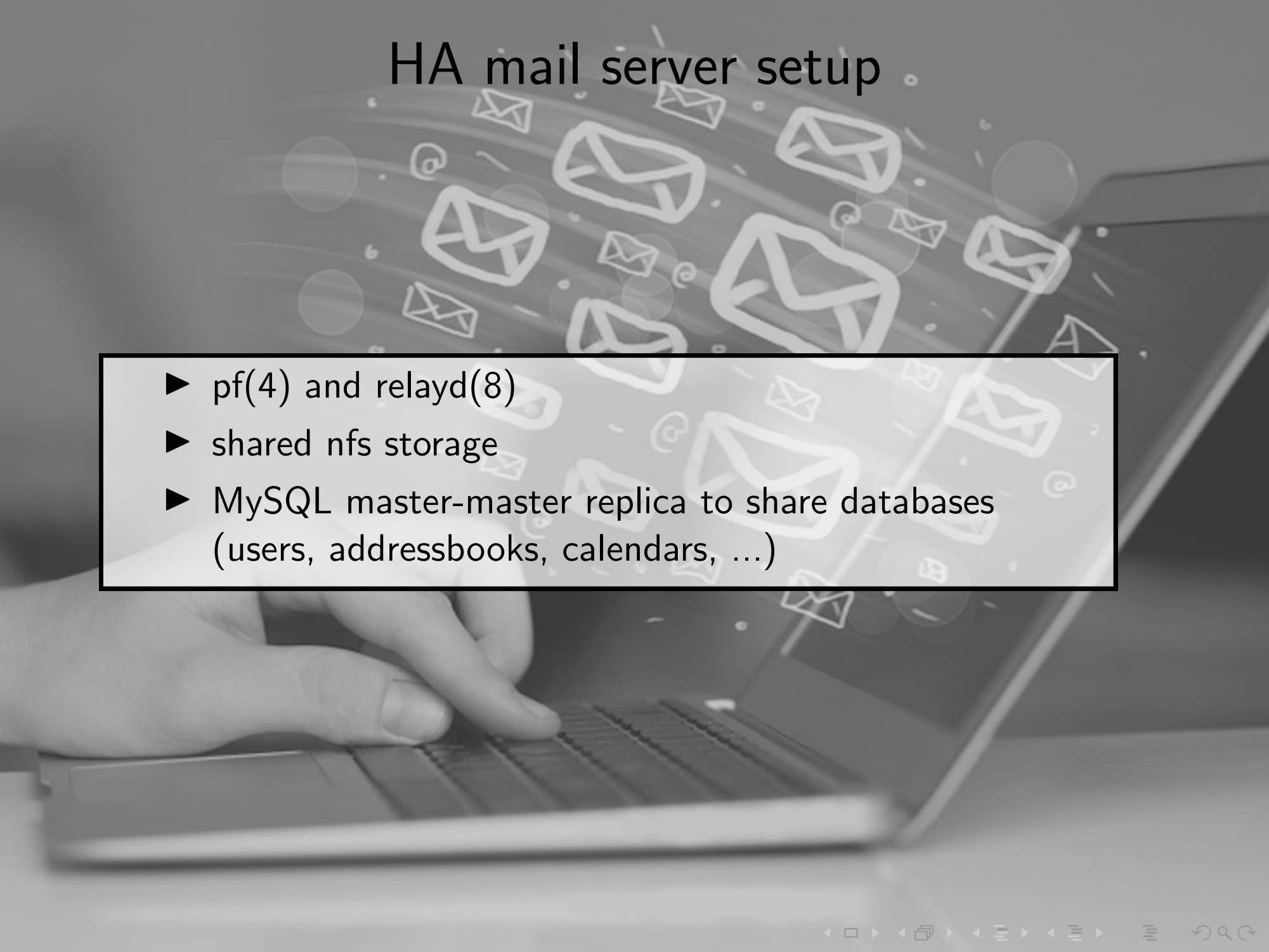
first steps towards smtpd(8)

- customers started sending marketing newsletters via the primary mail server
- some dedicated smtpd(8) mail servers to send out newsletters

[smtpd(8)] web gui



HA mail server setup



- pf(4) and relayd(8)
- shared nfs storage
- MySQL master-master replica to share databases (users, addressbooks, calendars, ...)

[relayd(8)] HA mail server setup

```
mx0_pub="1.2.3.4"
mx0_priv="10.0.0.4"
mx1_priv="10.0.0.5"

table <mx0> { $mx0_priv }
table <fallback-mx0> { $mx1_priv }

redirect mx0-smtp {
  listen on $mx0_pub port smtp \
   interface $if_pub sticky-address

  pftag RELAYD

  forward to <mx0> check tcp
  forward to <fallback-mx0> check tcp
}
```

[mysqld(8)] HA mail server setup

```
[mysqld]
server-id       = 1

binlog-do-db = dbispconfig
binlog-do-db = sogo

replicate-do-db = dbispconfig
replicate-do-db = sogo

auto_increment_increment= 2
auto_increment_offset   = 1
```

[mysqld(8)] HA mail server setup

```
mysql> CHANGE MASTER TO MASTER_HOST='10.0.0.5', \
 MASTER_PORT=3306, MASTER_USER='replica', \
 MASTER_PASSWORD='changeme', \
 MASTER_LOG_FILE='slave-bin.000831', \
 MASTER_LOG_POS=341, MASTER_CONNECT_RETRY=10;

mysql> CHANGE MASTER TO master_use_gtid=slave_pos;
```

[smtpd(8)] mail server setup

```
pki mx.domain.tld cert "/etc/.../fullchain.pem"
pki mx.domain.tld key "/etc/.../privkey.pem"

table aliases file:/etc/mail/aliases

table vusers mysql:/etc/mail/mysql.conf
table vdomains mysql:/etc/mail/mysql.conf
table valiases mysql:/etc/mail/mysql.conf
table credentials mysql:/etc/mail/mysql.conf
```

[smtpd(8)] mail server setup

```
host 127.0.0.1
username ispcsrv6
password XXX
database dbispconfig

# Alias lookup query
query_alias         SELECT destination FROM mail_valias \
                    WHERE source=?

# Domain lookup query
query_domain        SELECT domain FROM mail_domain \
                    WHERE domain=?;

# User lookup query
query_userinfo      SELECT uid,gid,maildir \
                    FROM mail_user WHERE \
                    REPLACE(login, '@', '_')=? \
                    AND server_id=6;

# Credentials lookup query
query_credentials   SELECT login, password FROM mail_user \
                    WHERE login=? AND disablesmtp='n';
```

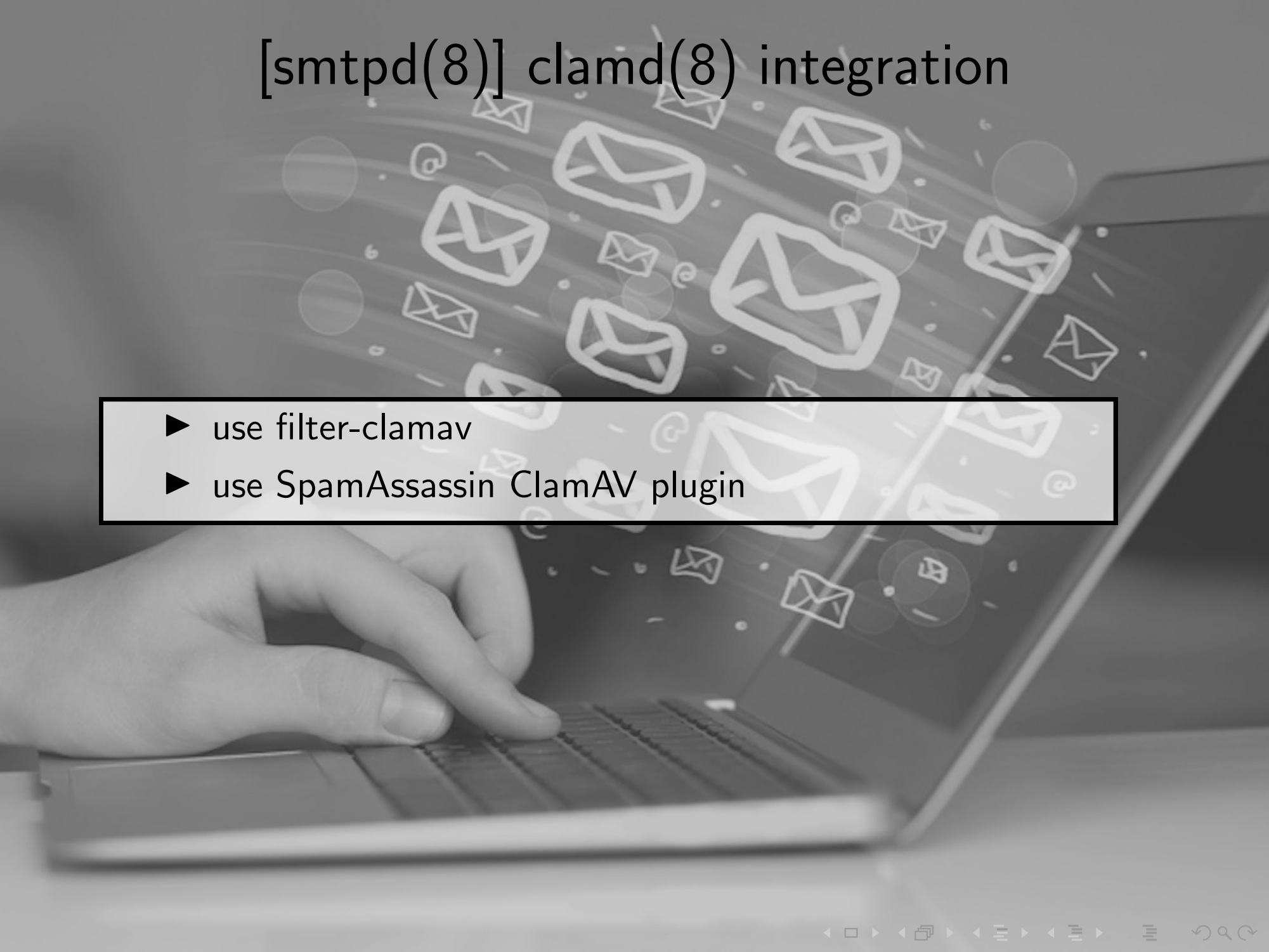
[smtpd(8)] antispam setup

```
filter check_dyndns phase connect match rdns \
    regex { '.*\.dyn\..*', '.*\.dsl\..*' } \
    disconnect "550 no residential connections"

filter check_rdns phase connect match !rdns \
    disconnect "550 no rDNS available"

filter "dkimsign" proc-exec "filter-dkimsign \
       -d domain.tld -s dkim \
       -k /etc/mail/dkim/key.pem" \
       user _dkimsign group _dkimsign

filter "spamassassin" proc-exec "filter-spamassassin"
```

[smtpd(8)] antispam setup

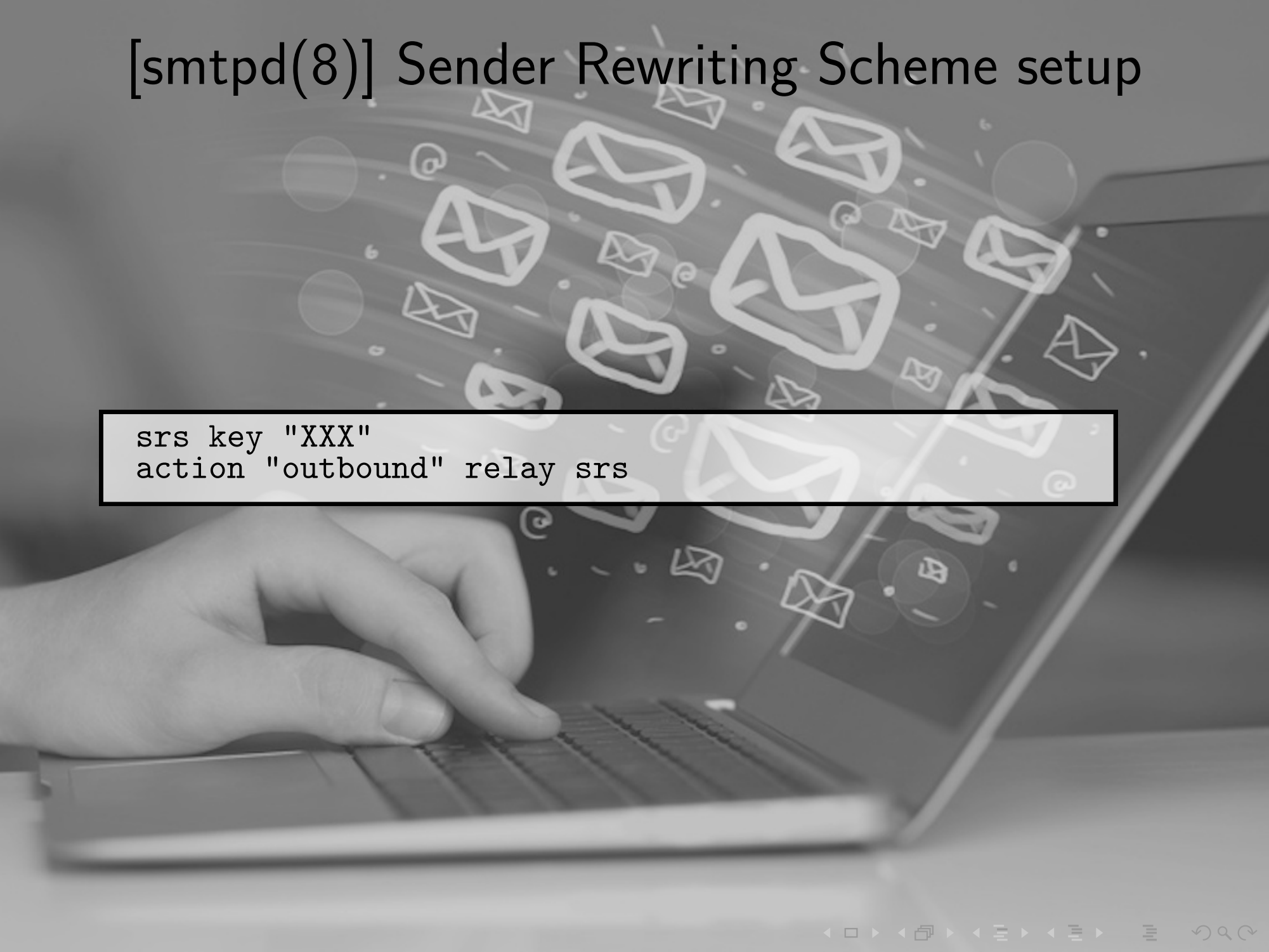
```
listen on socket filter "dkimsign"
listen on lo0 filter "dkimsign"
listen on egress filter { check_dyndns, check_rdns, \
  spamassassin } \
  tls pki mx.domain.tld
listen on egress filter { check_dyndns, check_rdns, \
  spamassassin } \
  smtps pki mx.domain.tld
listen on egress port submission filter "dkimsign" \
  tls auth <credentials> pki mx.domain.tld
```

[smtpd(8)] clamd(8) integration



- use filter-clamav
- use SpamAssassin ClamAV plugin

[smtpd(8)] Sender Rewriting Scheme setup



```
srs key "XXX"
action "outbound" relay srs
```

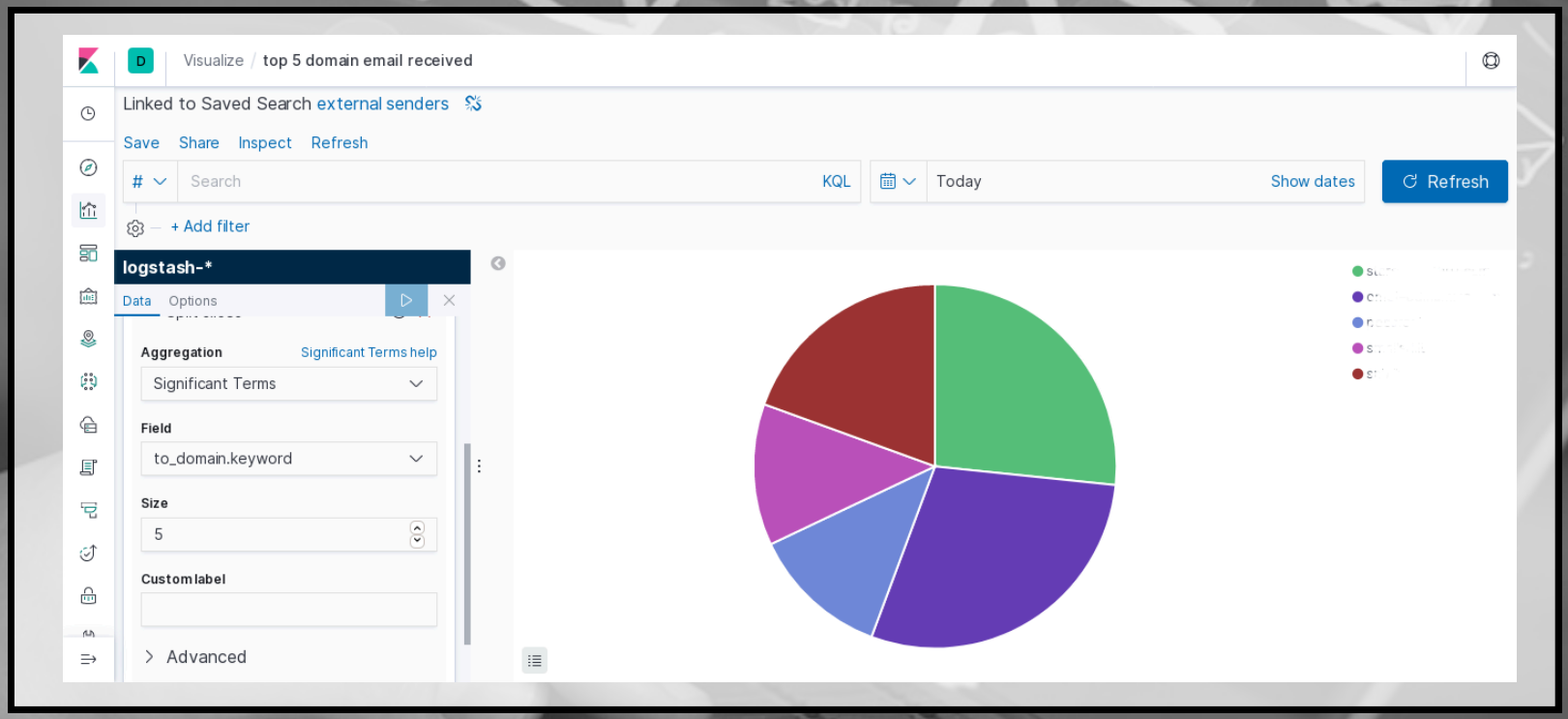
[smtpd(8)] mail server setup

```
action "deliver_local" mbox alias <aliases>

action "mymda" \
  mda "/usr/local/scripts/maildrop \
  -w 90 -d vmail '+' %{rcpt:lowercase} \
  %{user.username} %{dest.domain} %{sender}" \
  userbase <vusers> virtual <valiases>

action "outbound" relay srs

match from any for domain <vdomains> action "mymda"
match for local action "deliver_local"
match from auth for any action "outbound"
```

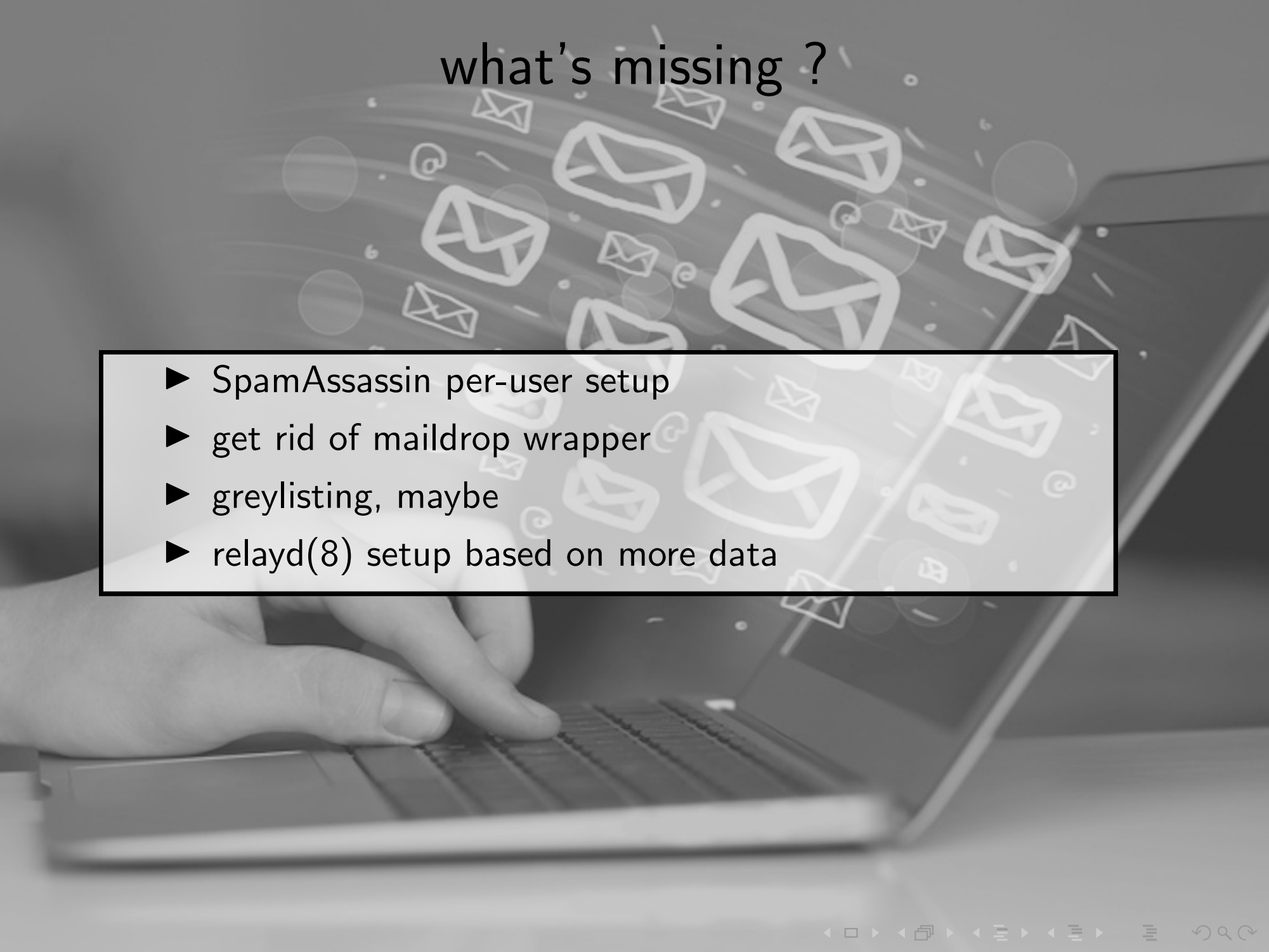
[smtpd(8)] log files

```
smtpd[89374]: f9f470e4d4702127 smtp connected address=199.185.178.25 \
 host=mail.openbsd.org
smtpd[89374]: f9f470e4d4702127 smtp tls \
 ciphers=TLSv1.2:ECDHE-RSA-AES256-GCM-SHA384:256

spamd[63035]: spamd: connection from ::1 [::1]:23701 to port 783, fd 5
spamd[63035]: spamd: processing message \
 <1a13f6ebf7bf3562d49f362f@yourdomain.tld> for (unknown):506
spamd[60192]: util: setuid: ruid=506 euid=506 rgid=506 506 506 egid=506 \
 506 506
filter-spamassassin[59437]: f9f470e4d4702127 result \
 Spam: False ; -15.9 / 6.0
spamd[63035]: spamd: clean message (-15.9/6.0) for (unknown):506 \
 in 2.7 seconds, 3062 bytes.
spamd[63035]: spamd: result: . -15 - BAYES_00,KAM_DMARC_STATUS, \
 MAILING_LIST_MULTI,RCVD_IN_DNSWL_MED,RCVD_IN_HOSTKARMA_W,\
 SPF_HELO_NONE,TXREP scantime=2.7,\
 size=3062,user=(unknown),uid=506,required_score=6.0,rhost=::1,raddr=::1,\
 rport=23701,mid=<1a13f6ebf7bf3562d49f362f@yourdomain.tld>,bayes=0.000000,\
 autolearn=ham autolearn_force=no,shortcircuit=no

smtpd[89374]: f9f470e5b1148f0e mda delivery evpid=94aab3d00b735a11 \
 from=<owner-hackers+M92599=me=mydomain.tld@openbsd.org>
 to=<me@mydomain.tld> \
 rcpt=<me@mydomain.tld> user=me_mydomain.tld delay=3s \
 result=Ok stat=Delivered
```

[smtpd(8)] log analysis



what's missing ?



- SpamAssassin per-user setup
- get rid of maildrop wrapper
- greylisting, maybe
- relayd(8) setup based on more data

Questions ?

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