Innopolis University

SYSTEM AND NETWORKING ENGINEERING

Classical Internet Applications

LABORATORY REPORT 7

Mail Transfer Agents (2)

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Contents

Introduction

An email loop is an infinite loop phenomenon, resulting from mail servers, scripts, or email clients that generate automatic replies or responses. Email loops may be caused accidentally or maliciously, causing denial of service. **qmail** introduces the automatic loop prevention feature, even on all hosts.

There are many reasons for wanting to virtualize email services, from hosting multiple domains with different users to simply extending the ability to apply policies to different sets of email. There are three basic techniques that are used with a standard qmail system for attaining different forms of virtualization: qmail's control/virtualdomains file, user-definable address extensions, and running multiple qmail instances on the same system.

Eliminating spam is one of the most important tasks of today's email administrators. There are two equally important facets to eliminating spam: preventing it from being sent by your server and preventing it from being delivered to your users. There have been many ideas for reliably verifying email senders. The two most popular are the **Sender Policy Framework** (SPF) and **DomainKeys**.

Initial Settings:

- MTA: **qmail**
- IP-address: **188.130.155.46**
- DNS implementation: **Unbound+NSD**
- Email: **sergey@st13.os3.su**
- Group members:
  - Ilya Radostev:
    - MTA: **Exim**
    - IP-address: **188.130.155.45**
    - Email: **ilya@st12.os3.su**
  - Bagdat Bimaganbetov
    - MTA: **Postfix**
    - IP-address: **188.130.155.36**
    - Email: **postmaster@st3.os3.su**

1 Mailing Loops

Create an email loop within your own group by sending email from domain to domain using email aliases.

Result:

```
# cd /var/qmail/alias
# vim .qmail-loop
loop@st3.os3.su
```

1. Now send an email to the loop using your own email address and see what happens on your MTA.

   Result: Sending email from **sergey@st13.os3.su** to **loop@st3.os3.su**

   Message:

```
From sergey@st13.os3.su Mon Sep 18 16:21:50 2017
Date: Mon, 18 Sep 2017 16:21:50 +0300
From: sergey <sergey@st13.os3.su>
To: loop@st3.os3.su
Subject: Loop Testing
Message-ID: <20170918132150.GA23345@ns1.st13.os3.su>
MIME-Version: 1.0
Content-Type: text/plain; charset=us-ascii
Content-Disposition: inline
User-Agent: Mutt/1.9.0 (2017-09-02)
Status: RO
Content-Length: 33
Lines: 3

Hey, it's a LOOOOP!!!!

la-La-la
```

   ***qmail** log file*

```
...
@4000000059bfc87819278d64 new msg 8653742
@4000000059bfc8781927d3b4 info msg 8653742: bytes 398 from <sergey@st13.os3.su> qp 23360 uid 1000
@4000000059bfc8782026fadc starting delivery 4: msg 8653742 to remote loop@st3.os3.su
@4000000059bfc8782026fec4 status: local 0/10 remote 1/20
@4000000059bfc87a01d8c164 delivery 4: success: 188.130.155.36_accepted_message./Remote_host_said:_250_2.0.0_Ok:_queued_as_E8BFAC820A4/
@4000000059bfc87a01da3094 status: local 0/10 remote 0/20
@4000000059bfc87a01da57a4 end msg 8653742

@4000000059bfc87c10cae594 new msg 8653742
@4000000059bfc87c10cae97c info msg 8653742: bytes 2049 from <sergey@st13.os3.su> qp 23363 uid 1002
@4000000059bfc87c17c6ad74 starting delivery 5: msg 8653742 to local loop@st13.OS3.su
@4000000059bfc87c17c6b15c status: local 1/10 remote 0/20

@4000000059bfc87c1ed25f8c new msg 8653743
@4000000059bfc87c1ed25f8c info msg 8653743: bytes 2149 from <sergey@st13.os3.su> qp 23369 uid 1001
@4000000059bfc87c25ce2f3c starting delivery 6: msg 8653743 to remote loop@st3.os3.su
@4000000059bfc87c25ce3324 status: local 1/10 remote 1/20
@4000000059bfc87c25ce3324 delivery 5: success: did_0+1+0/qp_23369/
@4000000059bfc87c25cedf04 status: local 0/10 remote 1/20
@4000000059bfc87c25cedf04 end msg 8653742

@4000000059bfc87d16e7e24c delivery 6: success: 188.130.155.36_accepted_message./Remote_host_said:_250_2.0.0_Ok:_queued_as_300C0C820A4/
@4000000059bfc87d16e7ee04 status: local 0/10 remote 0/20
@4000000059bfc87d16e7f1ec end msg 8653743

@4000000059bfc8852063ec6c new msg 8653742
@4000000059bfc8852063f054 info msg 8653742: bytes 4573 from <> qp 23376 uid 1002
@4000000059bfc8852660d24c starting delivery 7: msg 8653742 to local sergey@st13.os3.su
@4000000059bfc8852660d634 status: local 1/10 remote 0/20
@4000000059bfc8852ae0287c delivery 7: success: did_1+0+0/
@4000000059bfc8852ae02c64 status: local 0/10 remote 0/20
@4000000059bfc8852ae0304c end msg 8653742
```

***Postfix** log file*

```
...
Sep 18 16:21:51 st3.os3.su postfix/cleanup[15181]: E8BFAC820A4: message-id=<20170918132150.GA23345@ns1.st13.os3.su>
Sep 18 16:21:52 st3.os3.su postfix/qmgr[15143]: E8BFAC820A4: from=<sergey@st13.os3.su>, size=615, nrcpt=1 (queue active)
...
Sep 18 16:21:53 st3.os3.su postfix/qmgr[15143]: 87800C820A6: from=<sergey@st13.os3.su>, size=918, nrcpt=1 (queue active)
Sep 18 16:21:53 st3.os3.su postfix/cleanup[15181]: 926D5C820A4: message-id=<20170918132150.GA23345@ns1.st13.os3.su>
Sep 18 16:21:53 st3.os3.su postfix/local[15186]: 87800C820A6: to=<loop@st3.os3.su>, relay=local, delay=0.12, delays=0.07/0.01/0/0.04,
  ↪    dsn=2.0.0, status=sent (forwarded as 926D5C820A4)
Sep 18 16:21:53 st3.os3.su postfix/qmgr[15143]: 926D5C820A4: from=<sergey@st13.os3.su>, size=1040, nrcpt=1 (queue active)
Sep 18 16:21:53 st3.os3.su postfix/qmgr[15143]: 87800C820A6: removed

Sep 18 16:21:54 st3.os3.su postfix/smtp[15187]: 926D5C820A4: to=<loop@st12.os3.su>, orig_to=<loop@st3.os3.su>,
  ↪    relay=mail.st12.os3.su[188.130.155.45]:25, delay=0.49, delays=0.04/0.01/0.22/0.22, dsn=2.0.0, status=sent (250 OK
  ↪    id=1dtvzl-0005Mw-V6)
Sep 18 16:21:54 st3.os3.su postfix/qmgr[15143]: 926D5C820A4: removed
...
Sep 18 16:22:02 st3.os3.su postfix/pickup[15142]: BCFC6C820A6: uid=182 from=<sergey@st13.os3.su>
Sep 18 16:22:02 st3.os3.su postfix/pipe[15182]: 300C0C820A4: to=<loop@st3.os3.su>, relay=spamassasin, delay=7.6, delays=0.19/0/0/7.4,
  ↪    dsn=2.0.0, status=sent (delivered via spamassasin service)
Sep 18 16:22:02 st3.os3.su postfix/cleanup[15181]: BCFC6C820A6: message-id=<20170918132150.GA23345@ns1.st13.os3.su>
Sep 18 16:22:02 st3.os3.su postfix/qmgr[15143]: 300C0C820A4: removed
Sep 18 16:22:02 st3.os3.su opendkim[14189]: BCFC6C820A6: key retrieval failed (s=x, d=st13.os3.su): 'x._domainkey.st13.os3.su' record
  ↪    not found
Sep 18 16:22:02 st3.os3.su postfix/qmgr[15143]: BCFC6C820A6: from=<sergey@st13.os3.su>, size=2686, nrcpt=1 (queue active)
Sep 18 16:22:03 st3.os3.su postfix/local[15186]: BCFC6C820A6: to=<loop@st3.os3.su>, relay=local, delay=0.28, delays=0.24/0/0/0.04,
  ↪    dsn=5.4.6, status=bounced (mail forwarding loop for loop@st3.os3.su)
Sep 18 16:22:03 st3.os3.su postfix/cleanup[15181]: 061ECC820A4: message-id=<20170918132203.061ECC820A4@st3.os3.su>
Sep 18 16:22:03 st3.os3.su postfix/bounce[15191]: BCFC6C820A6: sender non-delivery notification: 061ECC820A4
Sep 18 16:22:03 st3.os3.su postfix/qmgr[15143]: 061ECC820A4: from=<>, size=4523, nrcpt=1 (queue active)
Sep 18 16:22:03 st3.os3.su postfix/qmgr[15143]: BCFC6C820A6: removed
Sep 18 16:22:03 st3.os3.su postfix/smtp[15187]: 061ECC820A4: to=<sergey@st13.os3.su>, relay=mail1.st13.os3.su[188.130.155.46]:25,
  ↪    delay=0.52, delays=0.03/0/0.4/0.09, dsn=2.0.0, status=sent (250 ok 1505740923 qp 23376)
Sep 18 16:22:03 st3.os3.su postfix/qmgr[15143]: 061ECC820A4: removed
...
```

2. Can you change the behaviour of your MTA in response to this loop?

   Answer:

   qmail has automatic loop prevention feature

Q 2: missing

Yes it is possible. **qmail** uses a **qmail-local** program that reads a mail message and delivers it to user. **qmail-local** accepts a message on standard input with envelope information, delivery location, and default delivery instructions supplied as arguments. Before attempting delivery, it constructs a *Delivered-To* field based on the envelope and checks the message for an identical *Delivered-To* field. If it finds one, it bounces the message to prevent a **mail loop**. To change the behavior of **qmial** in response to the loop it is required change C-source code in the file **qmail-local.c**, compile it, and then copy the resulting binary file to **/var/qmail/bin** directory.

2 Virtual Domains

3. (a) Creating the new subdomain within my domain and adding the MX entry to it.

```
$ cd /usr/local/etc/nsd
$ systemctl stop nsd
$ sudo vim st13.os3.su.zone
```

```
    ...
@       IN      MX      0       virtual
virtual IN      A       188.130.155.46
    ...
```

```
$ sudo -u nsd ldns-signzone st13.os3.su.zone
 ↪  Kst13.os3.su.+008+15514 Kst13.os3.su.+008+36381
$ sudo systemctl start nsd
```

(b) Extending MTA configuration to handle the virtual domains

```
# cd /var/qmail/control
# vim virtualdomains
virtual.st13.os3.su:sergey
# vim rcpthosts
...
virtual.st13.os3.su
# qmailctl reload
# exit
$ cd
$ touch .qmail-sergey
```

(c) Send the message using innopolis mailbox

Message Format:

```
From: <s.grebennikov@innopolis.ru>
To: <sergey@virtual.st13.os3.su>
Subject: Virtual Domains

Hello!!!! Is it a virtual domain?
```

***qmail** log file:*

```
@4000000059c0a8a215a1ecfc new msg 8653746
@4000000059c0a8a215a21024 info msg 8653746: bytes 2343 from <s.grebennikov@innopolis.ru> qp 8085 uid 1002
@4000000059c0a8a21b1ee4dc starting delivery 14: msg 8653746 to local sergey-sergey@virtual.st13.os3.su
@4000000059c0a8a21b1ee8c4 status: local 1/10 remote 0/20
@4000000059c0a8a2201bead4 delivery 14: success: did_1+0+0/
@4000000059c0a8a2201beebc status: local 0/10 remote 0/20
@4000000059c0a8a2201beebc end msg 8653746
```

Message:

```
From: Sergey Grebennikov <s.grebennikov@innopolis.ru>
To: "sergey@virtual.st13.os3.su" <sergey@virtual.st13.os3.su>
Subject: Virtual Domains
Thread-Topic: Virtual Domains
Thread-Index: AQHTMQZrRT1TP2GH8Eedrzha0a1etw==
Date: Tue, 19 Sep 2017 05:17:46 +0000
Message-ID: <1505798266829.65779@innopolis.ru>
Accept-Language: ru-RU, en-US
X-MS-Has-Attach:
X-MS-TNEF-Correlator:
x-ms-exchange-transport-fromentityheader: Hosted
MIME-Version: 1.0

--_000_15057982668296577 9innopolisru_
Content-Type: text/plain; charset="koi8-r"
Content-Transfer-Encoding: quoted-printable

Hello!!!! Is it a virtual domain?
...
```

3 SPAM and Security

For many people unsolicited commercial email, or rather SPAM, is a big problem. There are many ways to filter SPAM, each one having advantages and disadvantages. Examples include domain keys, SPF records, DNS block lists, greylisting, reverse checks, tarpitting, Bayesian filters, whitelists, etc.

A lot of viruses and malware are transported over email (as well as the World Wide Web). Because viruses can cause a lot of trouble, discarding viral messages is a nice service to offer to your users.

4. (a) Write a small paragraph that highlights the advantages and disadvantages of SPF and DomainKeys Identified Mail (DKIM).

   Answer:

   SPF allows to deal with SPAM using the DNS TXT record. The domain should specify exactly which servers are authorized to send its e-mail. But its disadvantages is it breaks forwarding, and not just for SPF users, but for anyone contacting an SPF-using domain. DKIM cryptographically signs all messages using a public key encryption system, where the signature states that the server approved by the domain sent an e-mail. Unlike SPF, this allows emails to be forwarded without being modified. DKIM is compatible with the existing e-mail infrastructure and allows to deal with SPAM, phishing. But DKIM does not provide protection after verification of the signature.

   (b) What would you choose at a first glance and why?

   Answer:

   SPF would be chosen at a first glance as it can be implemented quickly and easily, but DKIM is the preferred way to protect the mail infrastructure.

   (c) Configure your system to support only one or both simultaneously. Your system must support it for both sending and receiving email. You might need additional software packages or patches.

   Configuring SPF

```
# qmailctl stop
# cd /usr/local/src/
# wget http://www.qmail.org/netqmail-1.06.tar.gz
# rm -rf netqmail-1.06
# tar xvf netqmail-1.06.tar.gz
# cd netqmail-1.06/other-patches/
# wget https://www.ckdhr.com/ckd/qmail-103.patch
# wget http://www.saout.de/misc/spf/qmail-spf-rc5.patch
# cd ..
# patch < other-patches/qmail-103.patch
# patch < other-patches/qmail-spf-rc5.patch
# make setup check
# ./config-fast st13.os3.su
# cd /var/qmail/control
# echo 1 > spfbehavior
# echo "include:spf.trusted-forwarder.org" > spfrules
# echo "a/24 mx/24 ptr" > spfguess
# echo "550 the expanded SPF explanation (#5.7.1)" > spfexp
# ls
concurrencyincoming  me           spfexp
defaultdelivery      plusdomain   spfguess
defaultdomain        rcpthosts    spfrules
locals               spfbehavior  virtualdomains
# cd /usr/local/etc/nsd/
# vim vim st13.os3.su.zone
```

```
...
; TXT Record for SPF
st13.os3.su.  IN TXT "v=spf1 mx a ptr include:st12.os3.su include:st3.os3.su ~all"
```

```
# ldns-signzone st13.os3.su.zone Kst13.os3.su.+008+15514 Kst13.os3.su.+008+36381
# nsd-control reload
# qmailctl start
```

(d) Provide full email/MTA headers to prove that SPF/DKIM were implemented correctly on your system (sending and receiving).

Receiving email from **vkaser@yandex.com**:

```
From vkaser@yandex.com Tue Sep 19 17:08:26 2017
Return-Path: <vkaser@yandex.com>
Delivered-To: sergey@st13.os3.su
Received: (qmail 5949 invoked from network); 19 Sep 2017 17:08:26 -0000
Received: from forward101o.mail.yandex.net (37.140.190.181)
  by st13.os3.su with SMTP; 19 Sep 2017 17:08:26 -0000
Received-SPF: pass (st13.os3.su: SPF record at _spf-ipv4.yandex.ru designates 37.140.190.181 as permitted sender)
Received: from mxback9g.mail.yandex.net (mxback9g.mail.yandex.net [IPv6:2a02:6b8:0:1472:2741:0:8b7:170])
        by forward101o.mail.yandex.net (Yandex) with ESMTP id F27261343A8C
        for <sergey@st13.os3.su>; Tue, 19 Sep 2017 20:08:24 +0300 (MSK)
Received: from web60o.yandex.ru (web60o.yandex.ru [95.108.205.240])
        by mxback9g.mail.yandex.net (nwsmtp/Yandex) with ESMTP id gAYm2b67Tw-8Oc4EOUo;
        Tue, 19 Sep 2017 20:08:24 +0300
DKIM-Signature: v=1; a=rsa-sha256; c=relaxed/relaxed; d=yandex.com; s=mail; t=1505840904;
        bh=7rfqZNwoSwnYfoElOwO66bL1htx1IzR2/4IAh01p8uA=;
        h=From:To:Subject:Message-Id:Date;
        b=POPvo4GFNDiYqhJD2W6Hhh+H2yb1lRAFB4+co6eAqpLYRZrJAiotRcOJI9l9XHOWM
         kH/Q1+S7U1htCX63X7HqsIw1QlBAvBFzy0C+pNTGEUyzi92R+dp/+b1zirQ/ZmR301
         p5v417dCWxoB9WQkjDPRQ+Edyrhtc8zPDhRl7Q3g=
Authentication-Results: mxback9g.mail.yandex.net; dkim=pass header.i=@yandex.com
Received: by web60o.yandex.ru with HTTP;
        Tue, 19 Sep 2017 20:08:24 +0300
From: =?utf-8?B?0KHQtdGA0LPQtdC5INCT0YDQtdCx0LXQvdC90LjQutC+0LI=?= <vkaser@yandex.com>
Envelope-From: vkaser@yandex.ru
To: sergey <sergey@st13.os3.su>
Subject: Recieving check SPF
MIME-Version: 1.0
Message-Id: <1167171505840904@web60o.yandex.ru>
X-Mailer: Yamail [ http://yandex.ru ] 5.0
Date: Tue, 19 Sep 2017 19:08:24 +0200
Content-Transfer-Encoding: 7bit
Content-Type: text/plain
Status: RO
Content-Length: 16
Lines: 1

Test message!!!
```

Sending email to **DKIMvalidator**:

SPF Information:

Using this information that I obtained from the headers

Helo Address = st13.os3.su

From Address = sergey@st13.os3.su

From IP = 188.130.155.46

SPF Record Lookup

Looking up TXT SPF record for st13.os3.su

Found the following namesevers for st13.os3.su: ns1.st13.os3.su sub.st13.os3.su

Retrieved this SPF Record: zone updated 20170919 (TTL = 71347) using authoritative server (ns1.st13.os3.su) directly for SPF Check

Result: pass (Mechanism 'mx' matched)

Result code: pass

Local Explanation: st13.os3.su: 188.130.155.46 is authorized to use 'sergey@st13.os3.su' in 'mfrom' identity (mechanism 'mx' matched)

spf-header = Received-SPF: pass (st13.os3.su: 188.130.155.46 is authorized to use 'sergey@st13.os3.su' in 'mfrom' identity (mechanism 'mx' matched)) receiver=dkimvalidator.com; identity=mailfrom; envelope-from="sergey@st13.os3.su"; helo=st13.os3.su; client-ip=188.130.155.46

Q 5,6: no output

5. Investigate what generic anti-spam open source software packages are out there, choose one, download it (compile it if necessary) and configure your MTA to use it. Make sure that in your MTA group there are 2 different anti-spam solutions implemented!

   Implementation:

   Anti-spam open source software package **spamdyke** is designed to work with **qmail**

   Downloading and Installing:

```
# cd /usr/local/src/
# wget https://www.spamdyke.org/releases/spamdyke-5.0.1.tgz
# tar xvf spamdyke-5.0.1.tgz
# cd spamdyke-5.0.1/spamdyke
# ./configure
# make
# cp spamdyke /usr/local/bin/
# cd ..
# cd spamdyke-qrv/
# ./configure
# make
# cp spamdyke-qrv /usr/local/bin/
```

   Configuring:

```
# chown root /usr/local/bin/spamdyke-qrv
# chmod u+s /usr/local/bin/spamdyke-qrv
# vim /service/qmail-smtpd/run
```

```
#!/bin/sh

QMAILDUID=`id -u qmaild`
NOFILESGID=`id -g qmaild`
MAXSMTPD=`cat /var/qmail/control/concurrencyincoming`
LOCAL=`head -1 /var/qmail/control/me`

if [ -z "$QMAILDUID" -o -z "$NOFILESGID" -o -z "$MAXSMTPD" -o -z "$LOCAL" ]; then
    echo QMAILDUID, NOFILESGID, MAXSMTPD, or LOCAL is unset in
    echo /var/qmail/supervise/qmail-smtpd/run
    exit 1
fi

if [ ! -f /var/qmail/control/rcpthosts ]; then
    echo "No /var/qmail/control/rcpthosts!"
    echo "Refusing to start SMTP listener because it'll create an open relay"
    exit 1
fi

exec /usr/local/bin/softlimit -m 4444000000 \
    /usr/local/bin/tcpserver -v -R -l "$LOCAL" -x /etc/tcp.smtp.cdb -c "$MAXSMTPD" \
        -u "$QMAILDUID" -g "$NOFILESGID" 0 smtp \
                /usr/local/bin/spamdyke -f /etc/spamdyke.conf \
                        /var/qmail/bin/qmail-smtpd 2>&1
```

```
# vim /etc/spamdyke.conf
reject-empty-rdns
reject-unresolvable-rdns
reject-sender=no-mx
log-level=info
```

```
idle-timeout-secs=300
dns-blacklist-entry=zen.spamhaus.org
dns-blacklist-entry=b.barracudacentral.org
# qmailctl reload
```

Output:

```
   oct 12 11:00:23 ns1 spamdyke[18613]: TLS_ENCRYPTED from: (unknown) to: (unknown) origin_ip:
 ↪  209.85.216.181 origin_rdns: mail-qt0-f181.google.com auth: (unknown) encryption: TLS_PASSTHROUGH
 ↪  reason: (empty)
oct 12 11:04:51 ns1 spamdyke[19001]: TLS_ENCRYPTED from: (unknown) to: (unknown) origin_ip:
 ↪  77.88.28.100 origin_rdns: forward100p.mail.yandex.net auth: (unknown) encryption:
 ↪  TLS_PASSTHROUGH reason: (empty)
```

Remember to keep an exact log of your actions, highlighting the problems you've encountered and how you solved them.

Somewhat related to the filtering of SPAM is the authentication and encryption of SMTP sessions. There are numerous SMTP extensions like SMTP-AUTH or TLS/SSL that take care of authentication and/or encryption. SMTP-AUTH is primarily used for authentication using a username/password combination. The STARTTLS command starts the encryption during an SMTP session. These methods are often combined. By using TLS the outside world cannot see how the SMTP-AUTH is established.

6. Investigate these methods and add authentication to your MTA.

   s/qmail release supports SMTP Authentication out-of-the-box. **s/qmail** (pronounced skew-mail) is a Mail Transfer Agent (MTA) based on Qmail suited for high-speed and confidential email transport over IPv4 and IPv6 networks.

   (a) Installing s/qmail

```
# cd /package
# wget -c
 ↪  http://www.fehcom.de/ipnet/ucspi-ssl/ucspi-ssl-0.99b.tgz
# tar xvf ucspi-ssl-0.99b.tgz
# mv host/superscript.com/net/ucspi-ssl-0.99b/ /package/
# rm -rf host
# cd /package/ucspi-ssl-0.99b/
# openssl dhparam -check -text -5 1024 -out /etc/ssl/dh1024.pem
# apt install libperl-dev
# package/compile
# package/install
# package/man
# cd /package
# wget -c
 ↪  http://www.fehcom.de/ipnet/ucspi-tcp6/ucspi-tcp6-1.04a.tgz
# tar xvf ucspi-tcp6-1.04a.tgz
# mv /host/ucspi-tcp6-1.04a/ /package
# rm -rf host
# package/install
# cd /package
# qmailctl stop
# wget -c http://www.fehcom.de/sqmail/sqmail-3.3.13.tgz
# tar xvf sqmail-3.3.13.tgz
# cd mail/sqmail/sqmail-3.3.13/
```

```
# vim conf-ucspissl
/package/ucspi-ssl
# package/ucspissl
# addgroup sqmail
# package/compile
# package/legacy
# package/man
# compile/qmail-showctl
# compile/ipmeprint
# useradd -g nofiles -d /var/qmail sqmtls
```

(b) Installation of POP server

mutt settings

```
# exit
$ cd
$ vim .muttrc
set mbox_type=Maildir
set folder="~/Maildir"
set mbox="~/Maildir"
set from="sergey@st13.os3.su"
set spoolfile="~/Maildir"
set hostname="st13.os3.su"
set realname="Sergey Grebennikov"
set sendmail="/var/qmail/bin/qmail-inject"
$ su
Password:
```

Installation of qmail-pop3d

```
# vim /var/qmailcontrol/defaultdelivery
./Maildir/
# cd /usr/local/src/
# wget -c http://cr.yp.to/checkpwd/checkpassword-0.90.tar.gz
# tar xvf checkpassword-0.90.tar.gz
# cd checkpassword-0.90
# patch < /usr/local/src/netqmail-1.06/other-patches/
 ↪  checkpassword-0.90.errno.patch
# make
# make setup check
# cd /var/qmail/supervise/
# mkdir qmail-pop3d
# vim qmail-pop3d/run
```

```
#!/bin/sh
exec /usr/local/bin/softlimit -m 5000000 \
    /usr/local/bin/tcpserver -v -R -H -l 0 0 110
     ↪  /var/qmail/bin/qmail-popup \
        pop.st13.os3.su /bin/checkpassword
         ↪  /var/qmail/bin/qmail-pop3d Maildir 2>&1
```

```
# mkdir qmail-pop3d/log/
```

```
# vim qmail-pop3d/log/run
```

```
 #!/bin/sh
exec /usr/local/bin/setuidgid qmaill /usr/local/bin/multilog t \
    /var/log/qmail/pop3d
```

```
# chmod +t /var/qmail/supervise/qmail-pop3d
# mkdir /var/log/qmail/pop3d
# chown qmaill /var/log/qmail/pop3d
# chmod 755 /var/qmail/supervise/qmail-pop3d/run
# chmod 755 /var/qmail/supervise/qmail-pop3d/log/run
# ln -s /var/qmail/supervise/qmail-pop3d /service
# vim /var/qmail/bin/qmailctl
```

Add the following lines to different sections:

```
#!/bin/sh
...
case "$1" in
  start)
   ...
    if svok /service/qmail-pop3d ; then
      svc -u /service/qmail-pop3d /service/qmail-pop3d/log
    else
      echo qmail-pop3d supervise not running
    fi
    ;;
  stop)
    ...
    echo "  qmail-pop3d"
    svc -d /service/qmail-pop3d /service/qmail-pop3d/log
    ;;
  stat)
    ...
    svstat /service/qmail-pop3d
    svstat /service/qmail-pop3d/log
    ;;
    ...
  pause)
    ...
    echo "Pausing qmail-pop3d"
    svc -p /service/qmail-pop3d
    ;;
  cont)
    ...
    echo "Continuing qmail-pop3d"
    svc -c /service/qmail-pop3d
    ;;
  restart)
    ...
    echo "* Restarting qmail-pop3d."
    svc -t /service/qmail-pop3d /service/qmail-pop3d/log
```

```
    ;;
        ...
    exit 1
    ;;
esac
```

STARTTLS:

```
# qmailctl start
#exit
$ telnet localhost 25
Trying 127.0.0.1...
Connected to localhost.
Escape character is '^]'.
220 st13.os3.su ESMTP
ehlo localhost
250-st13.os3.su
250-STARTTLS
250-PIPELINING
250-8BITMIME
250 SIZE 0
starttls
220 ready for tls
quit
```

POP3:

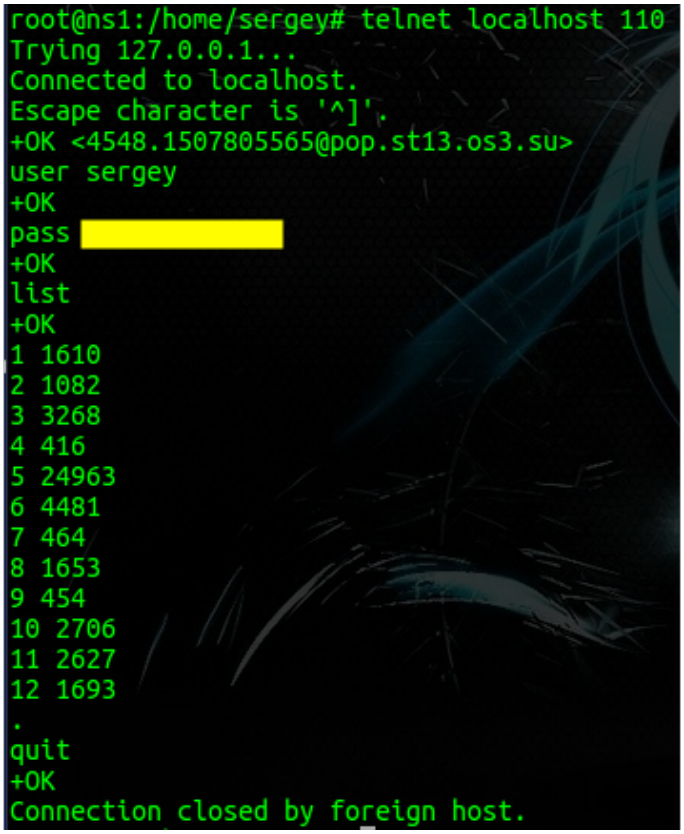

Figure 1: POP3

4 Conclusion

qmail is a very modular program. Its broken down into multiple tiny programs that govern a very specific piece of the MTA process. Due to its modularity, **qmail** is one of the most secure MTAs.

Unfortunately, **qmail**-compatible software for blocking specific validated senders does not exist. But it can be realized with the **Sender Policy Framework** (**SPF**) and **DomainKey Identified Mail (DKIM)**. In addition, there are various anti-spam software packages with open source for fighting spam, which can be added to qmail.

5 References

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