Dovecot Pigeonhole Sieve

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Contents

1 Introduction

The IMAP server **Dovecot** can be used to filter mail. The functionality is called Sieve, a script language for mail filtering. For Sieve to work, not Postfix but Dovecot needs to be used to deliver mail to the mailbox or the mail directory as a local delivery agent (LDA) or via local mail transfer protocol (LMTP). If you do not know, whether you should use LDA or LMTP the rule of thumb is: if you have a small mail server (preferably one user) use LDA; if you have to serve many mails, users use LMTP. This means you have to configure your mail transfer agent (MTA), Postfix for example, to use Dovecot to deliver mails and not itself.

There are at least two cons in terms of dovecot-lda in comparison to LMTP.

1. Since dovecot-lda is usually invoked with one user, error messages are less detailed. For example you cannot use Postfix `reject_unverified_recipient` with `pipe` and LDA.
2. Multi UID setups require workarounds, as MTAs usually do not run a LDA as root.

A remark: even though some configuration of LDA is done in a section `protocol lda`, LDA is not a protocol. Thus `protocols = imap lda` throws an error. While `protocols = imap lmtp` does not.

In case you are looking for a replacement of Thunderbird filters, you have to know that Dovecot Sieve filter rules are only active when new mail arrives and can not be applied to sort the `INBOX` for already received mails.

2 Postfix + Dovecot via LMTP

After it is clear whether to use LDA or LMTP, the MTA needs to be configured to actually use Dovecot. In case of Postfix, one needs to know if only local domains or also the virtual domains need to be configured.

The installation of Sieve is straightforward.

```
aptitude install dovecot-sieve
```

This will create:

- `/etc/dovecot/conf.d/90-sieve.conf`
- `/etc/dovecot/conf.d/90-sieve-extprograms.conf`

2.1   90-sieve.conf

After installation this basically includes:

```
plugin {
  sieve = file:~/sieve;active=~/.dovecot.sieve
}
```

2.2   90-sieve-extprograms.conf

After installation this basically is:

```
plugin {
}
```

2.3   Postfix + Dovecot LDA {untested}

If you are **not** using LMTP, this is the way to install and use LDA. For LDA **no** additional package has to be installed.

For Postfix, local domains are configured usually in `main.cf`, while virtual domains need configuration in `main.cf` and `master.cf`:

main.cf:

```
mailbox_command  =  /usr/lib/dovecot/dovecot-lda  -f  "$SENDER"  -
a "$RECIPIENT"
virtual_transport = dovecot
```

master.cf:

```
dovecot    unix  -    n      n      -      -      pipe
  flags=DRhu  user=vmail:vmail  argv=/usr/lib/dovecot/dovecot-lda  -
f ${sender}\
 -d ${recipient}
```

(See Dovcot Wiki for details.)

2.4   Postfix + Dovecot LMTP

On the mail server install in addition to `dovecot-sieve` also `dovecot-lmtpd`. The package `dovecot-lmtpd` basically contains 2 major files: `lmtp` and `20-lmtp.conf`.

```
apt-file list dovecot-lmtpd
dovecot-lmtpd: /usr/lib/dovecot/lmtp
dovecot-lmtpd: /usr/share/bug/dovecot-lmtpd
```

```
dovecot-lmtpd: /usr/share/doc/dovecot-lmtpd/changelog.Debian.gz
dovecot-lmtpd: /usr/share/doc/dovecot-lmtpd/changelog.gz
dovecot-lmtpd: /usr/share/doc/dovecot-lmtpd/copyright
dovecot-lmtpd: /usr/share/dovecot/conf.d/20-lmtp.conf
```

The installation is just:

```
aptitude install dovecot-lmtpd
```

This will create the file `/etc/dovecot/conf.d/20-lmtp.conf` with an empty protocol configuration. You have to add the Sieve module to it. Best done in `/etc/dovecot/local.conf`, like so.

```
protocol lmtp {
  mail_plugins = $mail_plugins sieve
}
```

There should be a service defined, so that Postfix can find it in its change root environment.

```
service lmtp {
  unix_listener /var/spool/postfix/private/dovecot-lmtp {
    group = postfix
    mode = 0660
    user = postfix
  }
}
```

On systems other than Debian we might need to tell Dovecot to manage `lmtp` like the configuration below. On Debian however this is done by the package, that adds a file in `/usr/share/dovecot/protocols.d/` with the name `lmtpd.protocol`. So the following entry is **not** needed on Debian.

```
protocols = $protocols lmtp
```

The transfer protocol is easier to configure in Postfix. Usually `master.cf` already contains the `lmtp` configuration line like:

```
lmtp      unix  -       -       y       -       -       lmtp
```

Then in `main.cf` only the transport via a local Unix socket needs to be defined in `mailbox_transport`. If virtual domains are used then additionally in `virtual_transport`.

```
mailbox_transport = lmtp:unix:private/dovecot-lmtp # for non virtual
virtual_transport = lmtp:unix:private/dovecot-lmtp # in case of virtual user
```

This is probably better than `lmtp:inet:localhost` over the network.

2.5 Configuration

The configuration of Sieve depends how and by whom Sieve should be used. If it is just one user, the admin for example, additions like `managesieved` are not needed. Managed-sieve is a concept that allows Sieve clients to add and change filter rules on the server. This adds of course complexity and needs to be configured properly to lower risks. For now this guide will **not** explain how to install and configure the package `dovecot-managesieved`.

The next thing to consider is, if the manage sieve daemon is not used, how many mail users the mail server has. If it has only one user, then a global Sieve file is OK. If it has more than one user, who wants to filter mails, an individual file is appropriate. If there are more than one user or even many, then `managesieve` would be better. An individual Sieve script and a global script with the directive `sieve_global` is mutual exclusive. However, there are ways to add global scripts before or after individual script execution. This is not discussed here.

For the sake of simplicity we will use the individual configuration for one user. As we do not want filtering for system users, like root, postmaster, abuse.

One major aspect of configuration is the storage location of the individual Sieve script. For this it is important to understand that the mail directory and the home directory of a user can be identical, but also can be different. For some mail storage format, like `mbox`, which is just a file it might be advantageous to store this into the home directory. In this case the mail directory and home directory are identical and in addition to the mail directory, we have a file. Here of course the Sieve script will be saved into the mail directory and the home directory do not need to be defined. On `Maildir` storage's the `Maildir` directory is a directory by it self. And since some files can be stored in the home directory via the OS (like from `/etc/skel`), the OS might interfere with mail directory content, if the mail directory and the home directory are identical. On this systems it is advised to have different locations. However it is quite common to store the `Maildir` directory inside the home directory. For this configuration we assume the last case. The `/etc/dovecot/local.conf` should define:

```
# Linux User Home Directory (aka $HOME): _home directory_
mail_home = /home/%n
# Dovecot Maildir directory, called 'Maildir': _mail directory_
mail_location = maildir:/home/%n/Maildir
```

Be aware that the location of `%n` is taken from the `IMAP` password file. For this the value of the 6th column need to be correct. Postfix ignores this column. Therefore the value of

the home directory is configured in Postfix and Dovecot separately and should match.

The location of a Sieve directory or Sieve script is defined on Debian in `/etc/dovecot/conf.d/90-sieve.conf` as:

`sieve = file:~/sieve;active=~/.dovecot.sieve`

This means, that Dovecot `lmtp` will look first in the `$HOME/sieve` **directory** or if the directory do not exist it will use `$HOME/.dovecot.sieve` as a script. If the file `$HOME/.dovecot.svbin` exists, it will use the pre-compiled version. If the binary version is missing it will create a binary version. To create the binary file yourself use `sievec`.

```
cd $HOME
sievec .dovecot.sieve
```

However the idea behind a **visible** Sieve directory in the home directory is that `dovecot-manage-sieved` will manage this directory by adding scripts and creating **one** symlink from `.dovecot.sieve` to the active script inside `~/sieve`. For example like `ln -s /home/user/sieve/last.sieve /home/user/.dovecot.sieve`. So there can be only one active Sieve script.

This is an example Sieve script that might be used for testing.

```
require ["fileinto"];

if header :matches "Subject" ["*SIEVE*"] {
    fileinto "Trash";
}
```

An e-mail, send from an external host, with the subject that includes "SIEVE" should be moved to the `Trash` directory in the `IMAP` `INBOX`. Be aware that the value of `fileinto` might depend on the `INBOX` structure of your mail setup.

Successful execution looks like this in the Dovecot log file on Debian 10 (Buster) [some strings have been removed, like date, PID, 'Debug: sieve:']:

```
lmtp(u@dom.tld): Pigeonhole version 0.5.4 () initializing
lmtp(u@dom.tld): include: sieve_global is not set; it is currently not possible
  to include `:global' scripts.
lmtp(u@dom.tld): file storage: Storage path `/home/u//sieve' not found
lmtp(u@dom.tld): file storage: Sieve storage path `/home/u//sieve' not
  found, but the active script `/home/u//.dovecot.sieve' is a regular file, so
  this is used for backwards compatibility.
lmtp(u@dom.tld): file storage: Using Sieve script path:
```

```
 /home/u/.dovecot.sieve
lmtp(u@dom.tld): file script: Opened script `.dovecot' from
  `/home/u/.dovecot.sieve'
lmtp(u@dom.tld): Using the following location for user's Sieve script:
  /home/u/.dovecot.sieve
lmtp(u@dom.tld): Opening script 1 of 1 from `/home/u/.dovecot.sieve'
lmtp(u@dom.tld): Loading script /home/u/.dovecot.sieve
lmtp(u@dom.tld): Script binary /home/u/.dovecot.svbin successfully
  loaded
lmtp(u@dom.tld): binary save: not saving binary /home/u/.dovecot.svbin,
  because it is already stored
lmtp(u@dom.tld): Executing script from `/home/u/.dovecot.svbin'
lmtp(u@dom.tld): Debug: Mailbox Trash: Mailbox opened because: lib-
lda delivery
```

2.6   Testing and Debugging

1. After installing and configuration, restart Dovecot and Postfix.
2. Make sure an external standard mail is delivered to the mail server that was changed
3. Look at the Postfix, Dovecot and `syslog` log files (add verbosity where needed) Are there errors?
4. Test if the example Sieve script is OK (See below `sieve-test`) Is the script okay?
5. Send a mail that should trigger your Sieve script. Is `lmtp` executed (see log files, usually Dovecot). Are there any errors? See above for an example without errors.
6. In case `lmtp` was executed. Was it executed without error? If not have a look in the Sieve log (See below `.dovecot.sieve.log`).
7. Use `postconf` to check the Postfix configuration
8. Use `doveconf` to check the Dovecot configuration

2.7   Debug Logging for Dovecot

To enable debug logging, add `mail_debug = yes` to `/etc/dovecot/local.conf` and to change the locations, add the following:

```
mail_debug = yes
log_path = /var/log/dovecot.log
# If not set, use the value from log_path
info_log_path = /var/log/dovecot-info.log
# If not set, use the value from info_log_path
debug_log_path = /var/log/dovecot-debug.log
```

Restart Dovecot.

2.8 sieve-test

After sending a mail that should trigger the Sieve filter, do a grep on the command line for that mail in your mail storage, so that the file name of the mail can be understood.

Example Test 018:

```
cd $HOME
grep -r 'test 018' Maildir
Binary file Maildir/.Trash/dovecot.index.cache matches
Maildir/.Trash/cur/1673444162.M431092P29340.smtp,S=2668,W=2726:2,:Subject:\
 test 018 SIEVE
Maildir/.Trash/cur/1673444162.M431092P29340.smtp,S=2668,W=2726:2,:test
↪   018
```

The file is `Maildir/.Trash/cur/1673444162.M431092P29340.smtp,S=2668,W=2726:2,` and since it is in `.Trash` we understand that the Sieve script worked.

Example Test 016:

This mail was send before Sieve was active.

```
grep -r 'test 016' Maildir
Binary file Maildir/dovecot.index.cache matches
Maildir/cur/1673443420.M696259P28433.smtp,S=2710,W=2768:2,S:Subject: test
↪   016\
 SIEVE
Maildir/cur/1673443420.M696259P28433.smtp,S=2710,W=2768:2,S:test 016
```

The mail for test 016 is in the `INBOX` and was delivered when `lmtp` was not configured or the Sieve script was not found at that time. We can test if it would have been correctly delivered if the Dovecot configuration was perfect. We execute it as user root and tell that we would like to do it on behalf of user `u` .

```
sieve-test -u u .dovecot.sieve
  Maildir/cur/1673443420.M696259P28433.smtp,S=2710,W=2768:2,S
sieve-test(u)<1118><>: Debug: auth USER input: u@dom.tld local_port=0
↪   uid=1000
  gid=1000 home=/home/u/
sieve-test(u)<1118><>: Debug: changed username to u@dom.tld
sieve-test(u)<1118><>: Debug: Added userdb setting: plugin/local_port=0
sieve-test(root): Debug: Effective uid=1000, gid=1000, home=/home/u/
sieve-test(root): Debug: Namespace inbox: type=private, prefix=, sep=,
```

```
  inbox=yes, hidden=no, list=yes, subscriptions=yes
  location=maildir:/home/u/Maildir
sieve-test(root): Debug: maildir++: root=/home/u/Maildir, index=,
↪  indexpvt=,
  control=, inbox=/home/u/Maildir, alt=

Performed actions:

 * store message in folder: Trash

Implicit keep:

  (none)

sieve-test(root): Info: final result: success
```

This will test only and not move.

2.9 .dovecot.sieve.log

If you can see that the `lmtp` is executed, but an error is indicated, look into `$HOME/.dovecot.sieve.log` for the error message.

3 Pigeonhole

Is Pigeonhole the same as Sieve? No, pigeonhole is the project and Sieve is the mail filter language. The Pigeonhole project develops dovecot-sieve and `dovecot-managesieved`. It is possible to just use dovecot-sieve alone. In this case the user needs to create and edit a Sieve script on the mail server. With `dovecot-managesieved,` it is possible that the user supply a script remotely (via telnet or Thunderbird plugin).

4 RFC

There are many ways to filter e-mails. One way is to filter mail on the mail server with the IMAP server Dovecot by using the tools of the pigeonhole project. The project implements the mail filter language called Sieve (RFC5228 and updates RFC5229, RFC5429, RFC6785, RFC9042) so that Dovecot can filter mail: for example move a mail from the IMAP INBOX folder to a different folder.

rfc3028 (is obsolete, now RFC5228) Obsoleted by: 5228, 5429

5   Sieve Scripts

Sieve scripts are easy to understand. See Wikipedia for example. With `manageesieve` and the Thunderbird extension this scripts can be managed on the client.

```
1  require "fileinto";
2  if header :contains "X-Spam-Flag" "YES" {
3      fileinto "Junk";
4  }
```

6   Debian Packages

- `dovecot-lmtpd` : Locale mail transfer protocol daemon
- `dovecot-managesieved` : Dovecot ManageSieve server
- `dovecot-sieve` : Sieve filters support for Dovecot

7   Further Read

- Sieve clients

8   Glossary

- **DB**: Database
- **DIR**: Directory
- **DOM**: Domain
- **GID**: Group ID
- **ID**: Identification
- **LDA**: Local delivery agent
- **LMTP**: Local mail transfer protocol
- **MTA**: Mail transfer agent
- **PVT**: Private
- **TLD**: Top level domain
- **UID**: User ID

9   History

Version	Date	Notes
0.1.2	2024-05-31	Initial release for Quick Guide
0.1.1	2023-01-11	Install Dovecot Sieve + lmtpd with Postfix
0.1.0	2020-11-21	Initial release

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