

# CIA Lab Assignment: Mail Transfer Agents (1)\*

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Feedback deadline:  
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## Abstract

Email is one of the most important services a System Engineer has to provide for the user base. If mail cannot be sent or received, users invariably cannot perform their duties. A working mail server is therefore of high importance. This week we will be looking at Mail Transfer Agents (MTAs). We will work in groups of three and compile, install and configure three different MTAs, namely Sendmail, Postfix, and Exim. We will also set up mail backups using MX fallback, research mailing loops, support virtual domains, and investigate security and spam prevention.

## 1 Mail Transfer Agents

There are many different MTAs available<sup>1</sup>, both open source and proprietary. In this assignment we will be looking at three well known open source MTAs. *Sendmail* is the most complex of the three, and is also the oldest. *Exim* was originally based on the Smail MTA, but has since diverged. *Exim* is also the default MTA for Debian, and is currently the most used. *Postfix* is one of most secure MTAs. *Postfix* is somewhat different from other MTAs in that it consists of many small programs. This setup agrees with the UNIX philosophy, but it also complicates an integration into the UNIX daemon configuration.

You will be working in groups of three. Each student must pick one of the three MTAs and install it *from source*<sup>2</sup> under Ubuntu on the experimentation server. Installing an MTA you have not installed or configured before is preferable. Also note that each student *must* install a different MTA, so that the group will install all three MTAs. During installation, pay attention to the following:

1. As per usual, explain *everything* you have done in your log, and how.
  - (a) First make sure that your system does not contain a pre-installed version of the MTA of your choice, if so, remove it before you continue.

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\*Based on earlier work by E.P. Schatborn and A. van Inge. Version September 29, 2017.

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<sup>1</sup>Try a search on Wikipedia for “mail server” or “mail daemon”

<sup>2</sup>This means you have to compile it yourself using the most recent sources from the web!

- (b) Make sure the source code is retrieved from a secure location. Use the official website for the MTA of your choice.
  - (c) Because it is important that an MTA be correct and secure it is often signed using a digital PGP signature. If your MTA is signed then make sure<sup>3</sup> you have downloaded the correct sources by checking the validity of the key and the signature.
  - (d) There are a number of options that you will have to enter before compilation, so that the functionality can be compiled into the program. Make sure the basic install holds all the necessary functionality. Show the options you configured.
2. Most of the options for an MTA can be found in a configuration file that will be loaded when the MTA starts. It is recommended to start with an example configuration that looks a lot like what you need for now. Show how you adapt it to your needs.
3. (a) Add a local account on your experimental machine and make sure that the MTA can deliver mail to it. Show the required configuration.
- (b) Add to your log an email received by this account. **Do not forget the full headers!**
- (c) Also make sure that any email intended for `postmaster@<city>.prac.os3.nl` is delivered to this account. Show the full email as delivered to the new account and the required configuration.

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<sup>3</sup>Within reason, please do *not* email the authors.

## 2 Mail Backup

You should now have a working MTA for your domain. If your server is not reachable for whatever reason, you would not want email sent to you to be returned to sender immediately. To remedy this we will configure backup MTAs on other servers. One of these backup MTAs will receive email intended for your domain when your own MTA is offline. Note that a backup MTA should not be confused with a server that makes backups of your mail, they have different functions.

Setting up two backup MTAs should be enough. Roughly follow the following steps to set up a backup MTA:

- Adapt the DNS information for your domain, so that the backup MTAs can be found.
- Configure the MTA on the backup mail server so that it accepts mail for relay for the domain it is backup for.

With a group of three and two backup MTAs, each server will be backup for the other two domains.

### Question

4. First, describe you have done *on your own server* to create two backup MTAs for your domain. **Please do not describe how you made your server fallback for the other domains at the same time, that is the next question.** This makes grading easier for the lab teachers.
5. Afterwards, describe what you have done *on your own server* to make it act as a backup for the two other domains.
6. Shutdown your MTA, send a mail to your domain and show
  - (a) The email is delivered to one of your colleagues.
  - (b) The email is delivered to your MTA when you turn it back on.

## 3 Client Access and MTA Internals

7. Choose a console mail client that is available in the Ubuntu repositories, install it and configure it to read mail for the account added before.
  - (a) Where does the client store read emails?
  - (b) In what format?

8. Briefly explain

- (a) what mail queues your mail server uses,
- (b) what is their purpose,
- (c) where are they located on your machine and
- (d) how can you interact with them?