

CIA Practicum Assignments

Mail Transfer Agents

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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 (MTA's). We will work in groups of four and compile, install and configure four different MTA's, namely `Sendmail`, `Postfix`, `QMail` and `Exim`. We will also set up mail backups using MX fallback, research mailing loops, support virtual domains and investigate the headers of a mailing list.

1 Email

Email as we use it today has been around for more than 20 years, but in the seventies there were already systems that could exchange electronic messages. These were reasonably spartan machines that could not decide on their own the route the mail had to take. The users had to provide that information themselves by adding the route to the email message. It was not until the eighties that the academic and military institutions started using email as we know it today.

An email message is made up of an SMTP envelope and the content. Just like a normal letter the envelope contains the addresses of the sender and the receiver, which are used for transmission. SMTP is short for Simple Mail Transfer Protocol. The protocol is indeed relatively simple, which is probably the reason it became the standard for email. You can find a thorough description in RFC 5321.

The content of an email message is specified in RFC 5322 and is made up of a *header* and a *body*. The header contains information on the email message, such as the addresses of the sender and the receiver, the subject, etcetera. Sometimes the sender and receiver information from the header is used for the SMTP envelope. The body of the email contains the message.

2 Mail Transfer Agents

There are many different MTA's available¹, both open source and proprietary. In this assignment we will be looking at four well known open source MTA's. Sendmail is the most complex of the four, and is used more than the others. Postfix and Qmail compete for the title of most secure MTA. Qmail, as well as Postfix although to a lesser degree, is different from the 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. Exim is based on the smail MTA.

You will be working in groups of four. Each student must pick one of the four MTA's and install it *from source*² under Ubuntu on the experimentation computer. 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 four MTA's. During installation, pay attention to the following:

→ As per usual, explain *everything* you have done in your log, and how.

- 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.
- Make sure the source code is retrieved from a secure location. Use the official website for the MTA of your choice.
- Because it is important that an MTA be correct and secure it is often signed using a digital PGP/GPG signature. If your MTA is signed then make sure³ you have downloaded the correct sources by checking the validity of the key and the signature.
- 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.
- 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. You can adapt it to your needs.

→ Add a local account on your experimental machine and make sure that the MTA can deliver mail to it. Add to your log an email received by

¹Try a search on Wikipedia for “mail server” or “mail daemon”

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

³Within reason, please do *not* email the authors.

this account. Also make sure that any email intended for postmaster@city.practicum.os3.nl is delivered to this mailbox. **Do not forget the full headers!**

Examine the headers and indicate which part was added by which MTA, MUA, etc.

3 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 MTA's on other servers. One of these backup MTA's 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 MTA's 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 MTA's 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.
- Within your group of four, decide who will be backup to your domain. Note that each server *must* be backup to at least two domains different besides its own. Describe what you have done *on your own server*, not what others have done on theirs.

4 Client access and MTA internals

→ Chose a console mail client that is available in the Ubuntu repositories, install it and configure it to read mail for the account added before. Where does the client store read emails ? In what format?

→ Briefly explain what mail queues your mail server uses, what is their purpose where are they located on your machine and how can you interact with them.