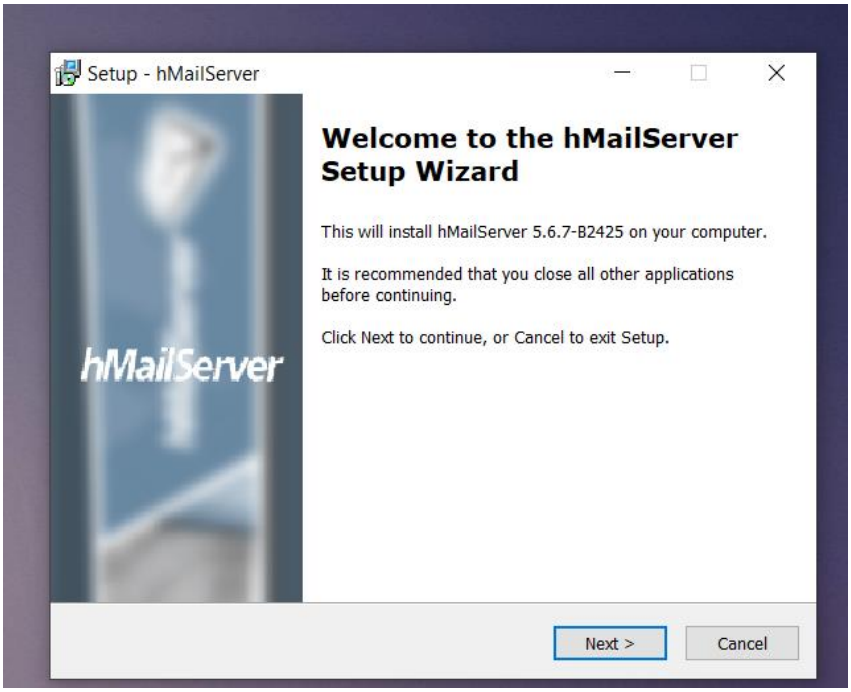
1. **Installation and working procedure of hMail and Thunderbird client**

Part 1: Install hMailServer

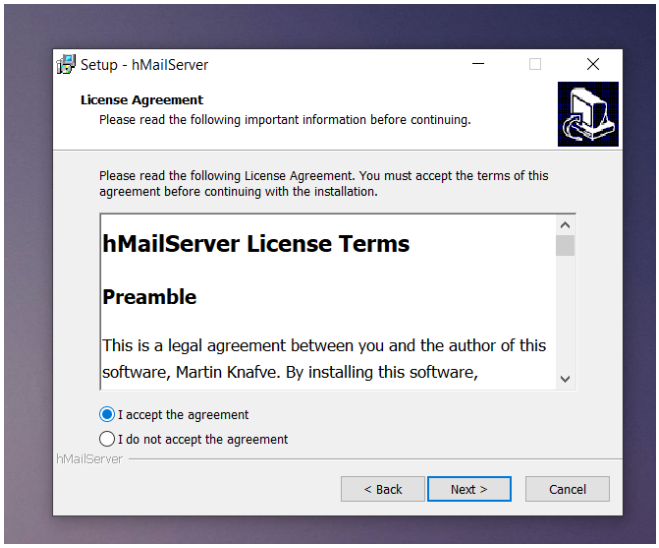
This part of the lab describes the steps for installing the hMailServer and then guides you with the configuration setup.

1. Go to the http://www.hmailserver.com/?page=download and download the latest stable binaries for the hMailServer onto your local machine. Double click the downloaded .exe file to start the installation of the hMailServer.

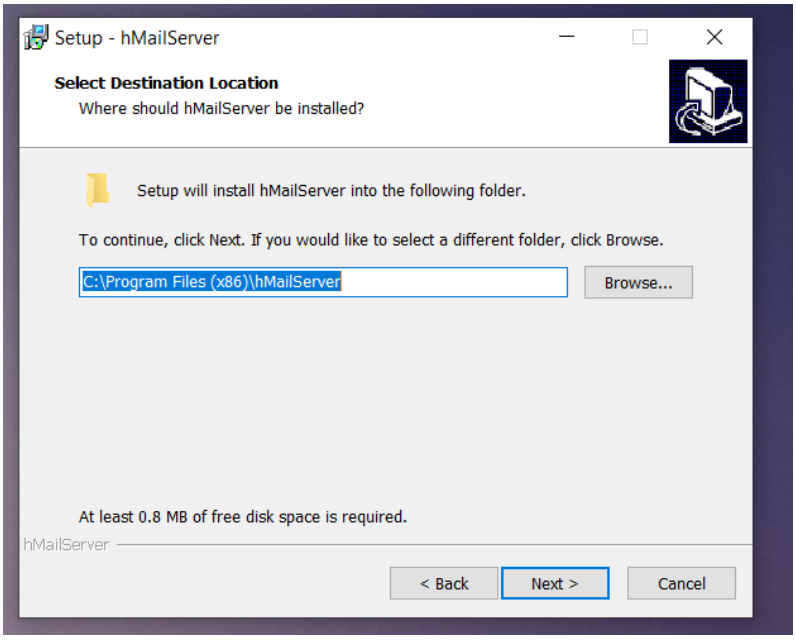
2. Follow the instructions on the Welcome screen and click Next.



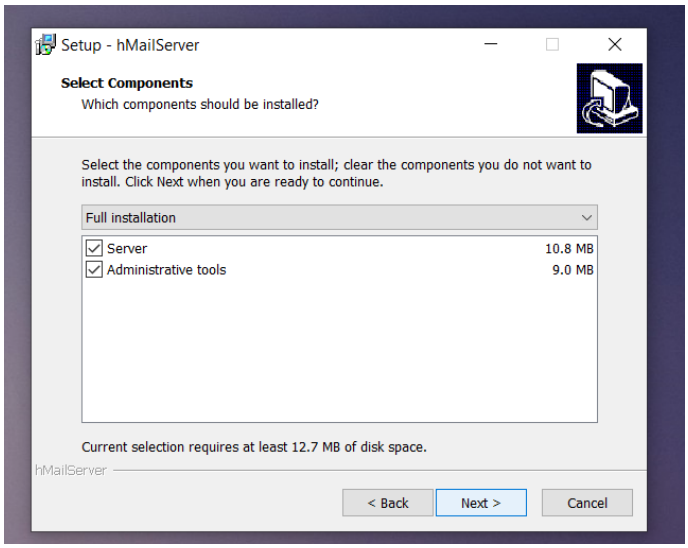
3. Accept the license agreement.



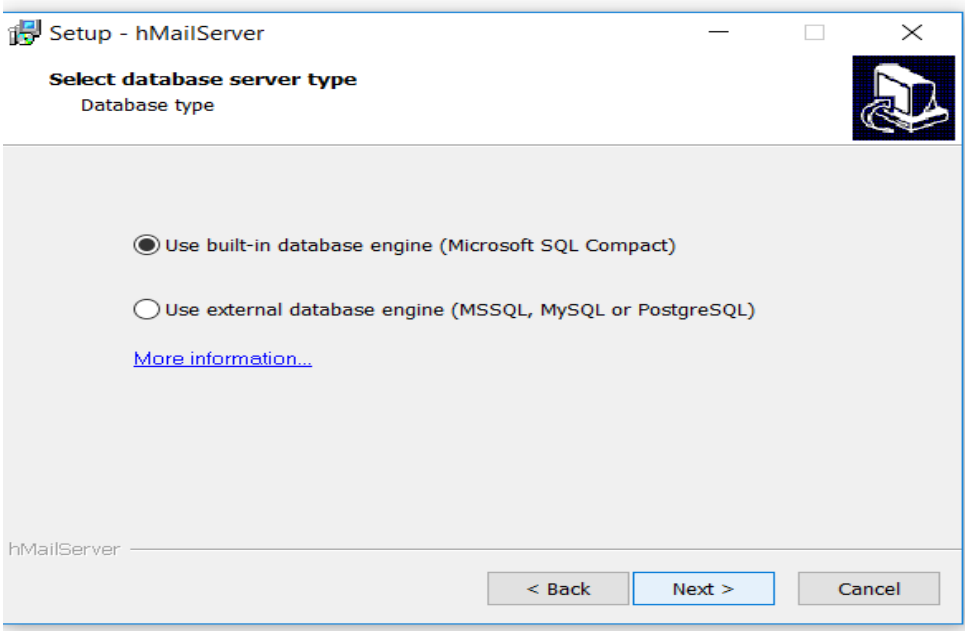
4. Accept the default value for the destination installation location and click next.



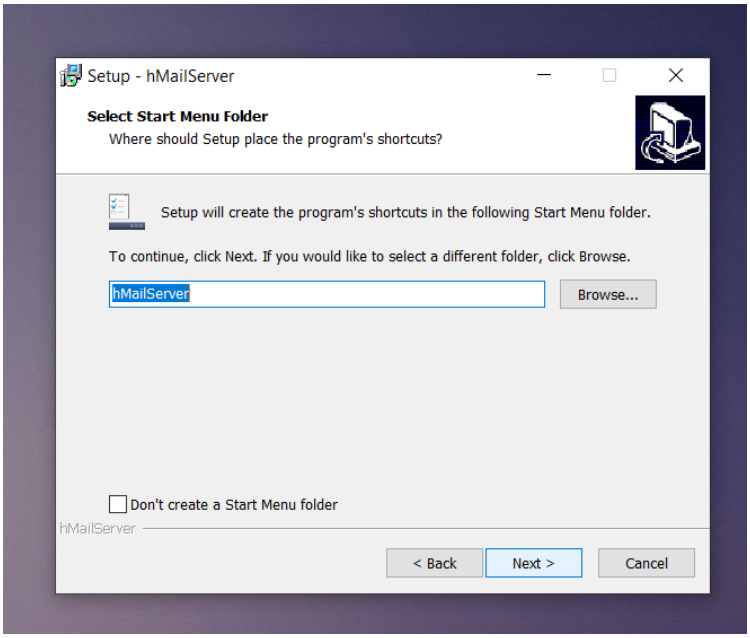
5. Ensure that the Full Installation is selected and the Server and Administrative tools components are checked for installation and click Next.



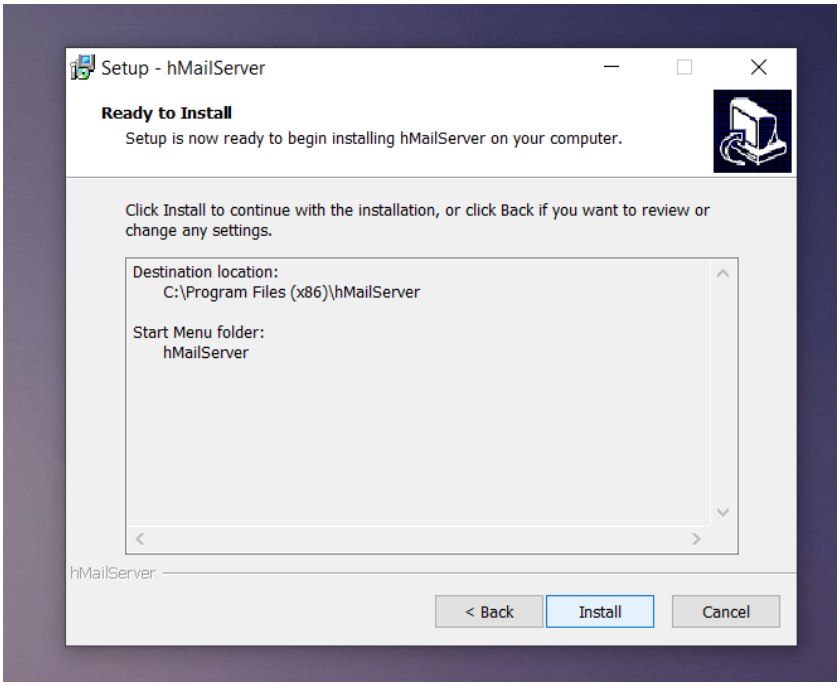
6. Make sure that the radio button next to Use built-in MYSQL database server (recommended) is selected and click Next.



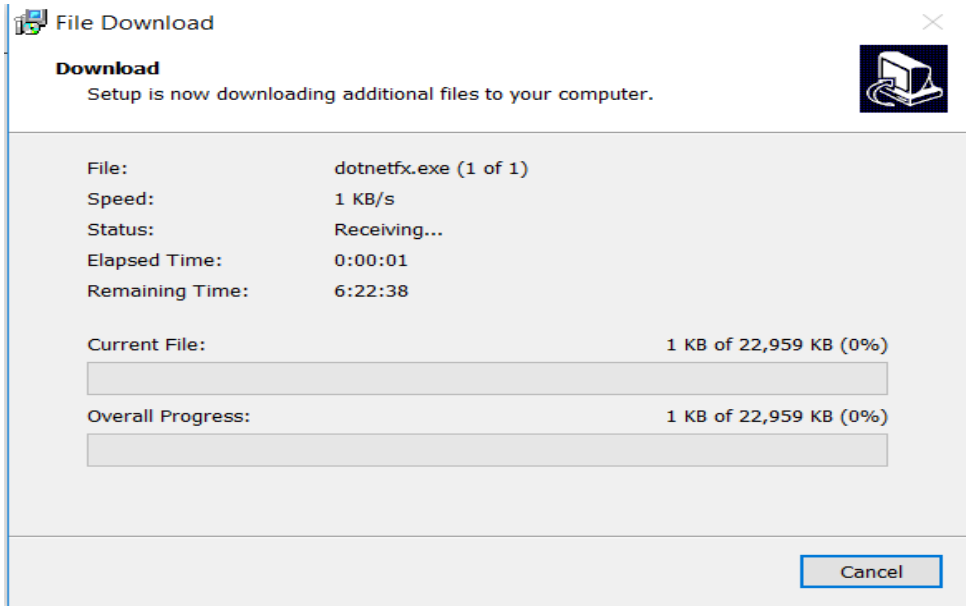
7. Click Next on the next screen to accept the default start menu folder.



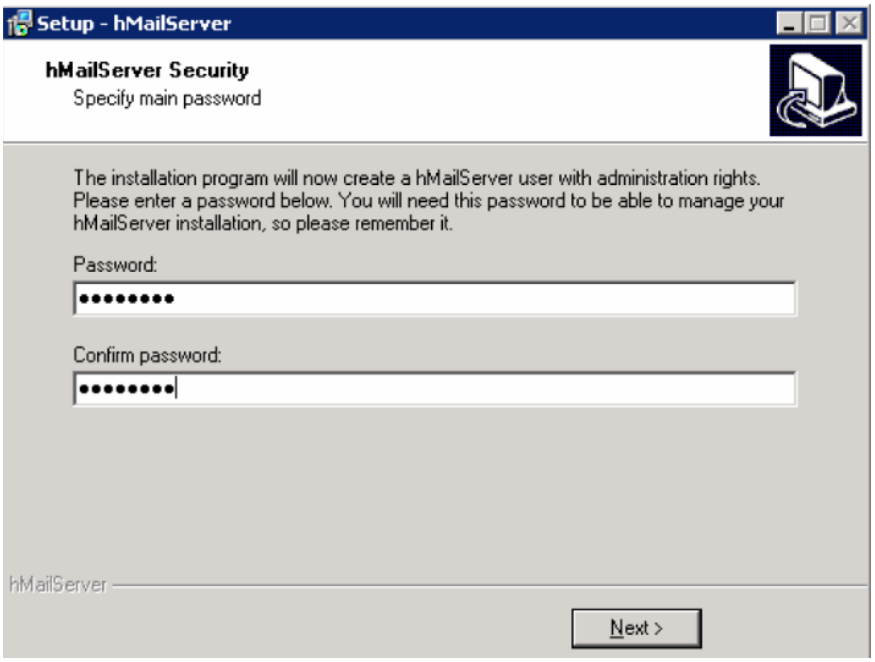
8. Verify and click Finish on the summary screen.



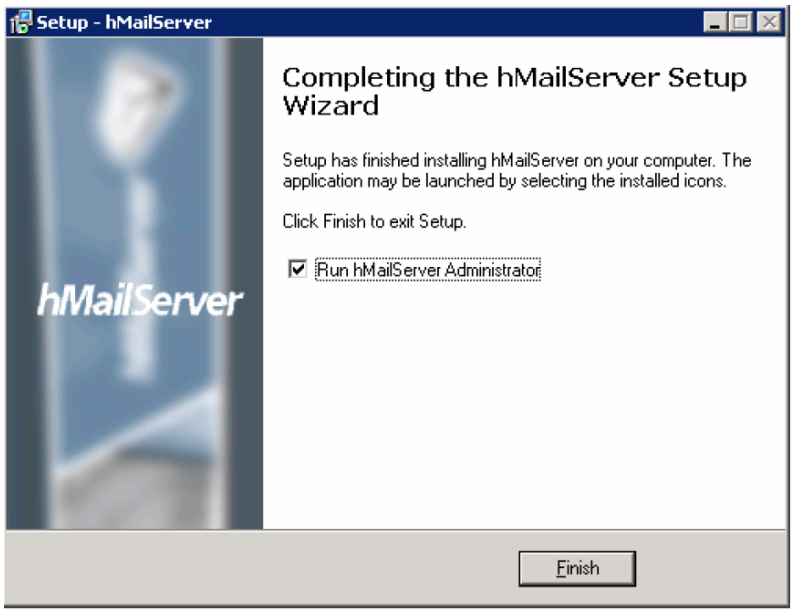
9. The installation takes less than a minute depending upon the system resources.



10. Enter any password for the administration rights in this screen

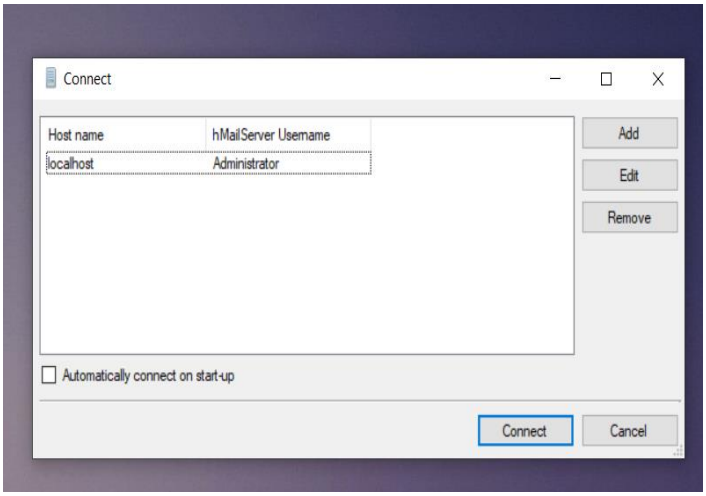


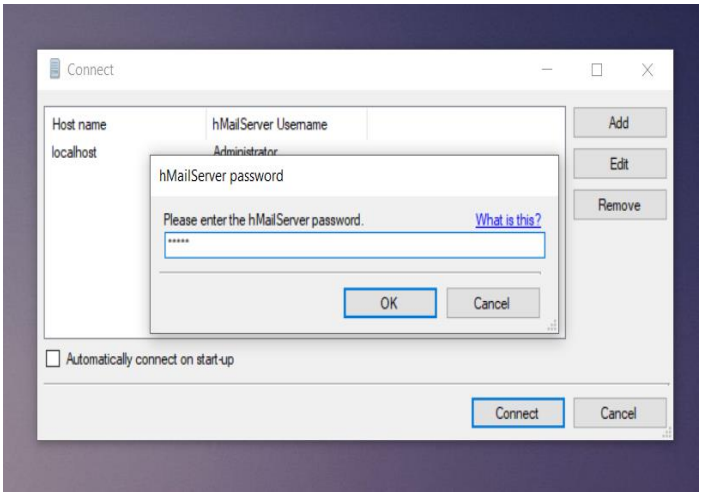
11. Ensure that the check box next to Run hMailServer Administrator is selected and click Finish to exit the setup



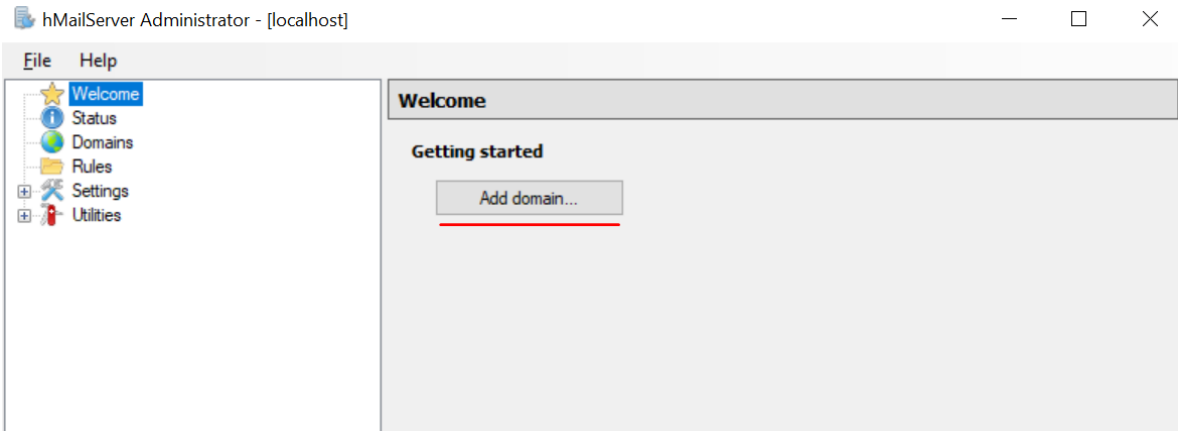
Part 2: Configure hMailServer

1. Select Start > Programs > hMailServer > hMailServer Administrator to open AdministratorConnect window (if not already open)
2. Ensure that the Host name localhost is selected and click Connect. If you do not see it already listed, click Add and enter localhost for the Name field. From Enter password window, enter the administration password given in step 8 of Part1 and click OK

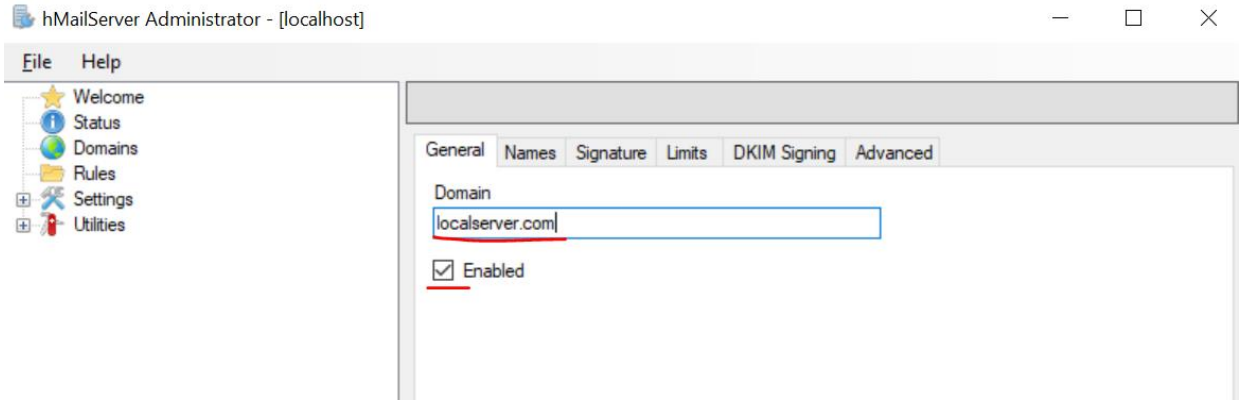




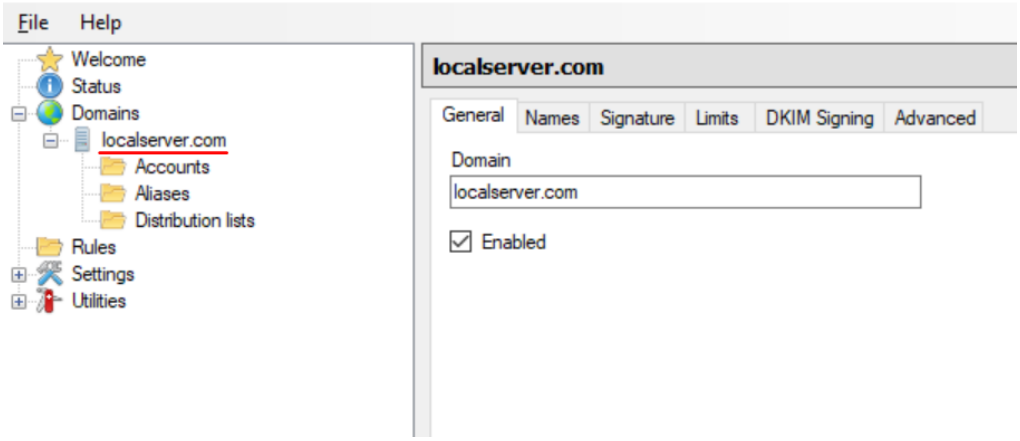
3. The hMailServer Administrator window is opened.



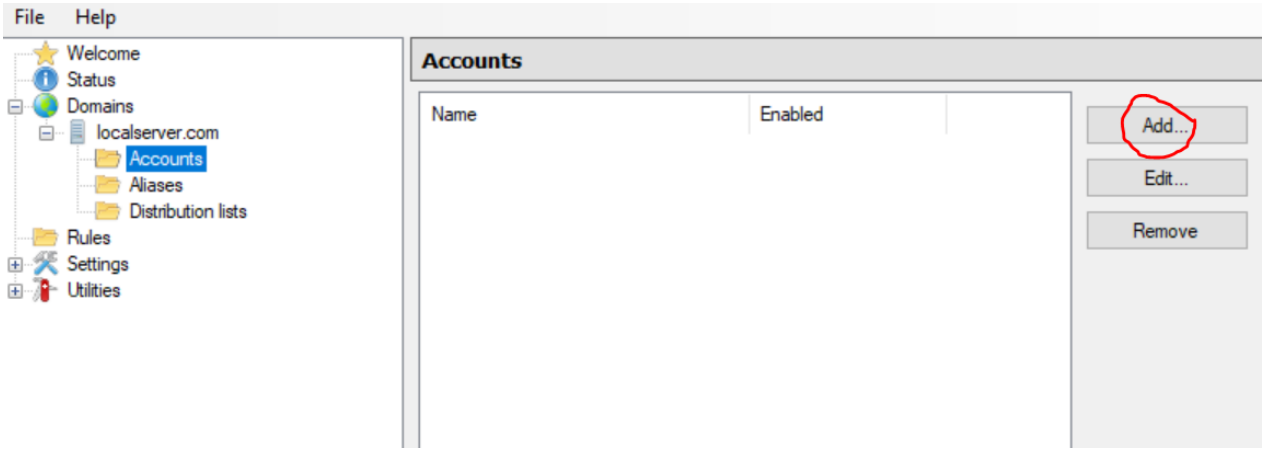
4. Click the Add domain… button and the Domain screen is opened



5. Enter your machine name for the Domain name and click Save
   - You will now see the domain listed under Domains in the left pane window

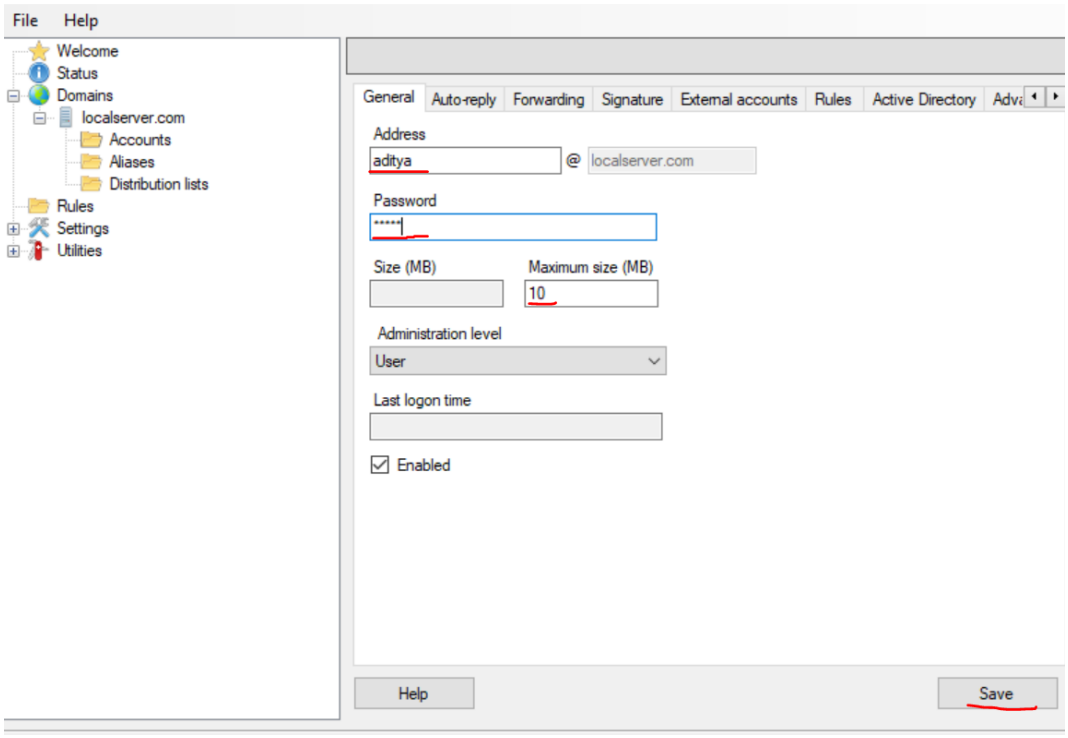


6. Click the Add account… button from the right-side window, Account: @ < domain name >is opened in your right side of the window.

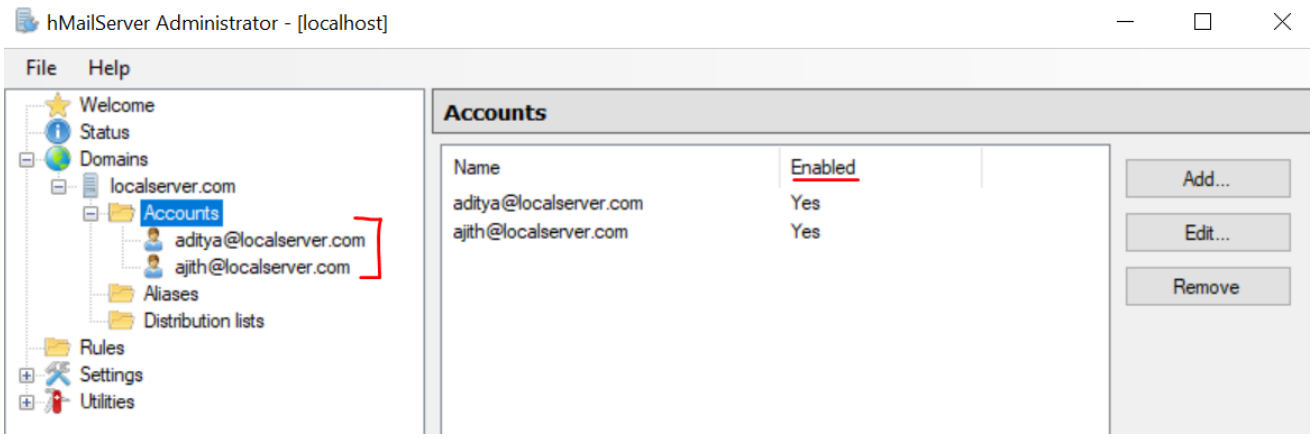


7. Enter these under General tab:

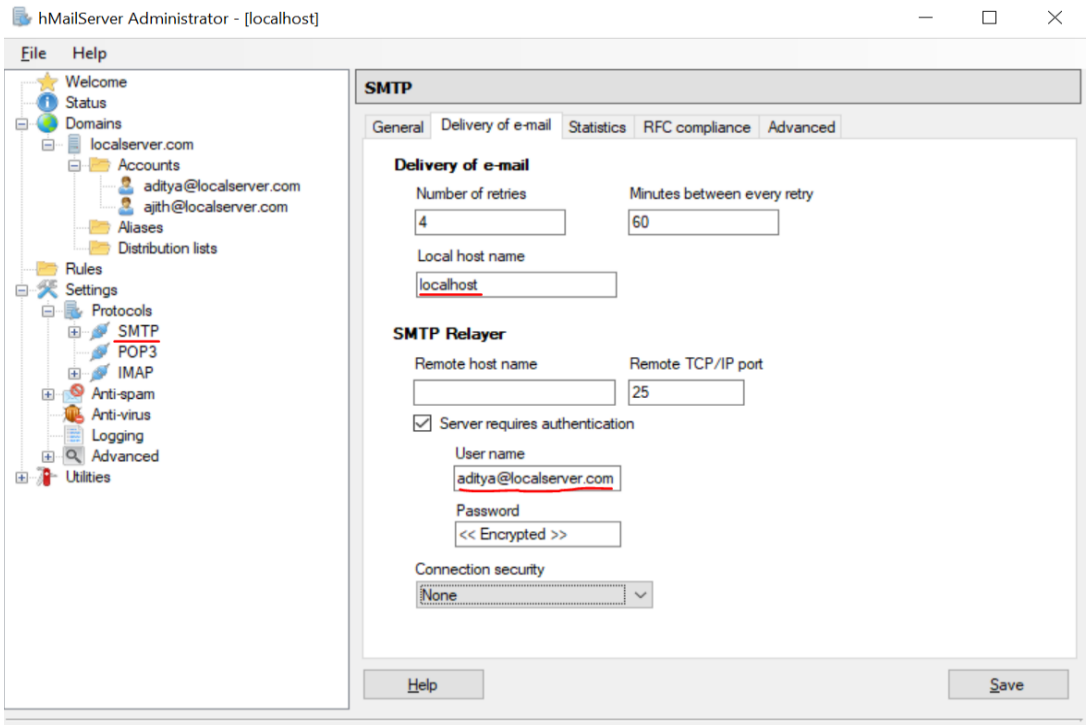
- Account address:
- Password:
- Maximum size (MB)
- Click Save at the bottom



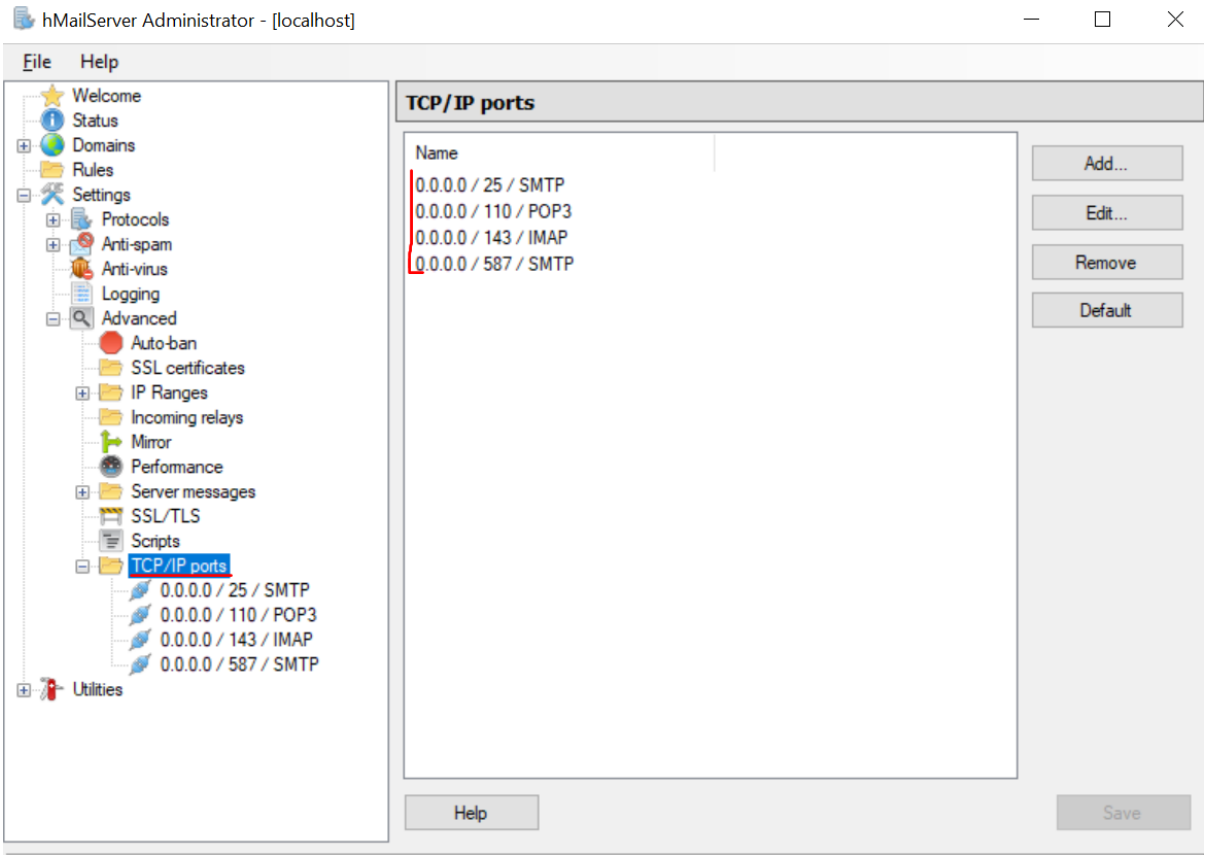
8. You will now see the account created under Domains > your domain > Accounts as shown below:



9. Select Settings > Protocols > SMTP on the left pane to open SMTP window on the right side
10. Select the Delivery of e-mail tab and see that the TCP Port is 25 (25 by default). If that port number is already being used, then give some other unused port number and give the same for the SMTP Port in the Advanced tab of SMTP window.
11. Enter localhost for Host name field
12. Select the check box next to Server requires authentication and enter these:
    - User name: <user>@<domain_name> (Ex: aditya@localserver.com)
    - Password: password for the user account.



13. Click Save at the bottom.
14. Select Settings > TCP/IP ports on the left pane and note the port numbers used for different protocols. You need to change these port numbers if they have already been used by some other application.

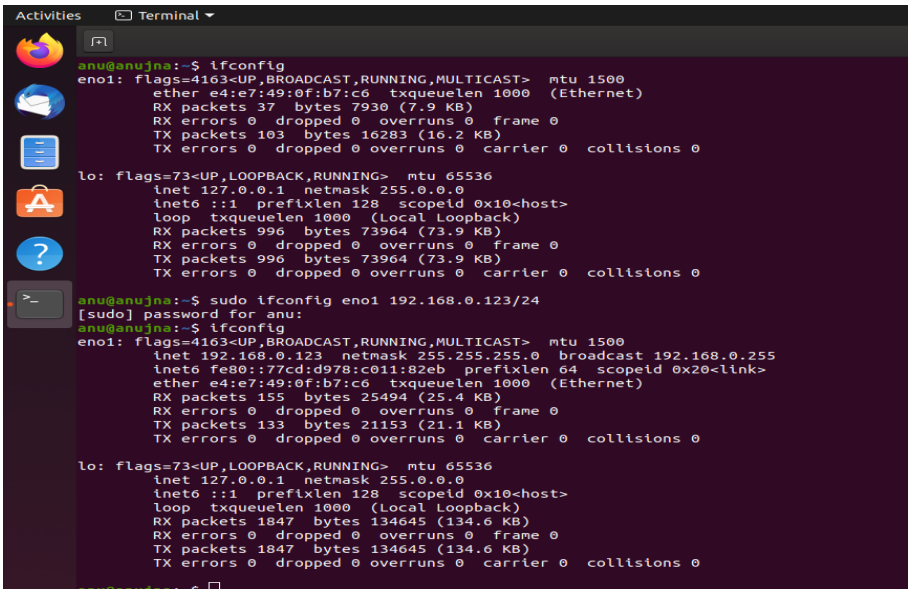


15. Finally hit the Exit button to close the Administrator window

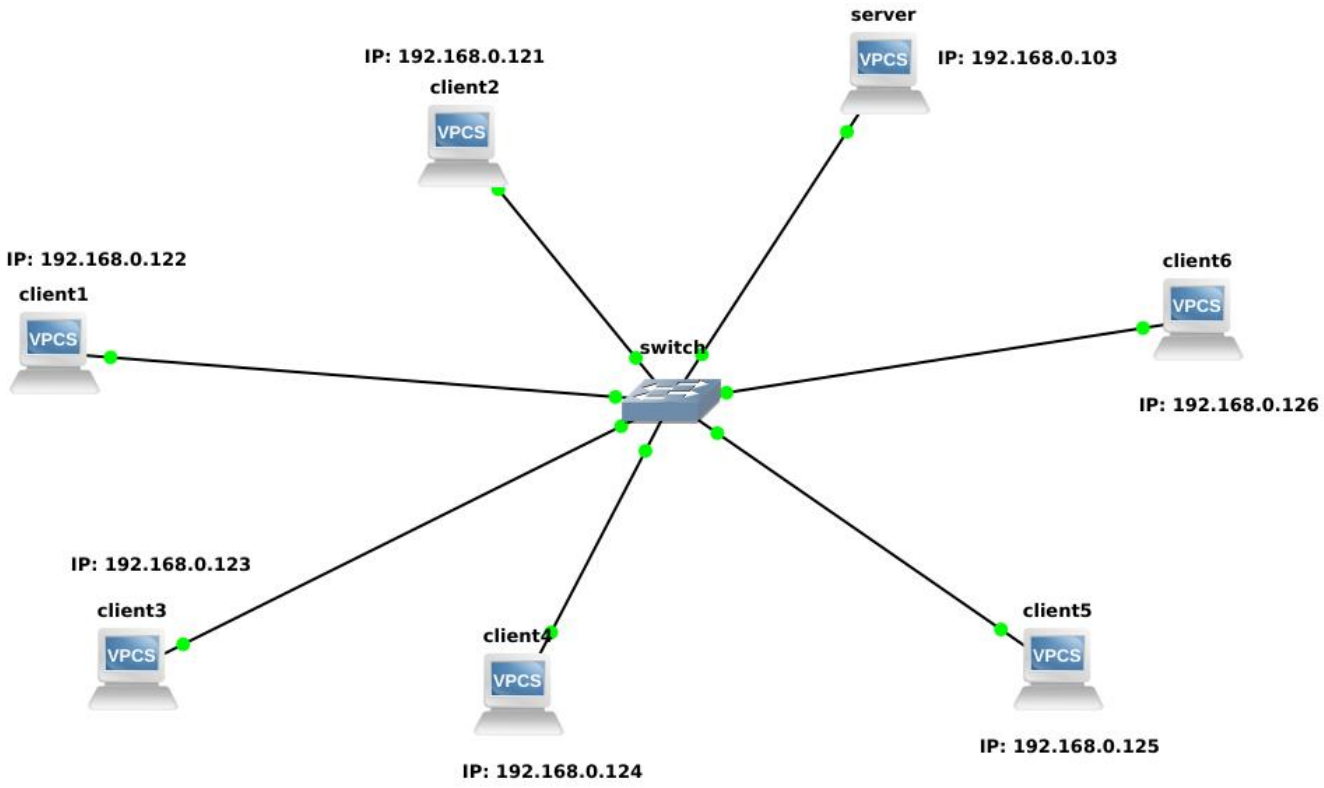
Part 3: Assign class C IP address to all system (192.168.0.xxx)

1. Open ubuntu terminal to set IP:

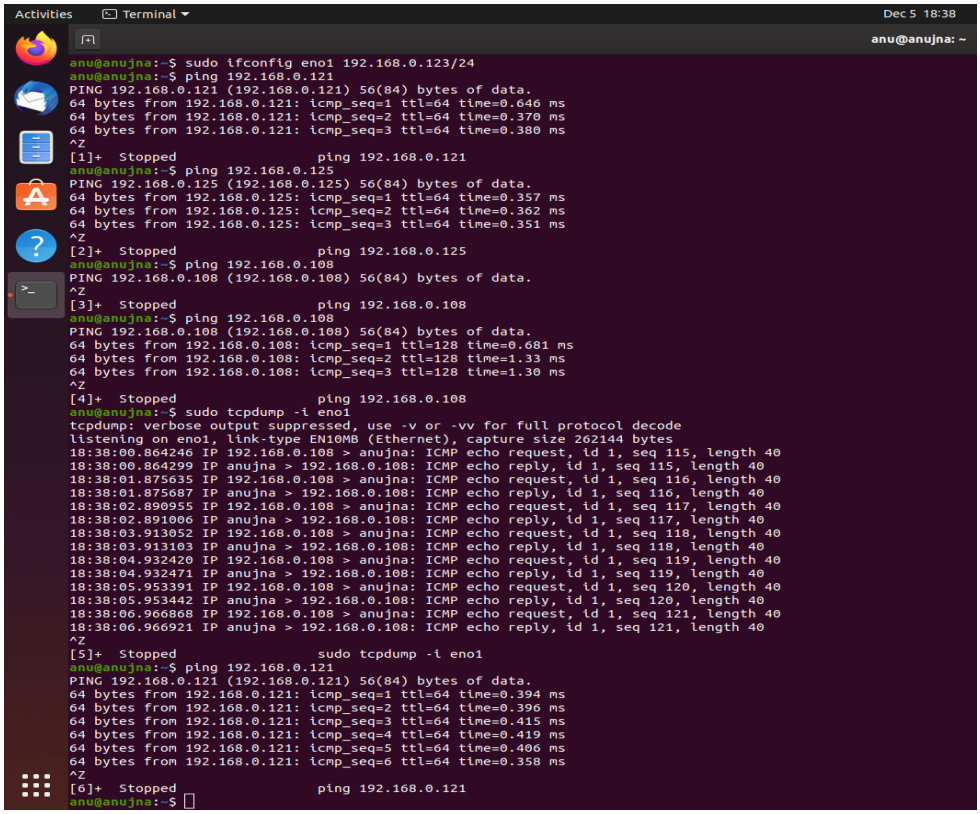
   $ sudo ifconfig enp0s25 192.168.0.12x netmask 255.255.255.0 up



2. IP assigned to all system.



3. Ping and check all system are on a same LAN or not.



Part 4: Add local host IP addresses in /etc/hosts in server's machine.

1. Open /etc/hosts file in server's machine and bind the localhost IP with the created mail server domain (27.0.0.1 localserver.com)

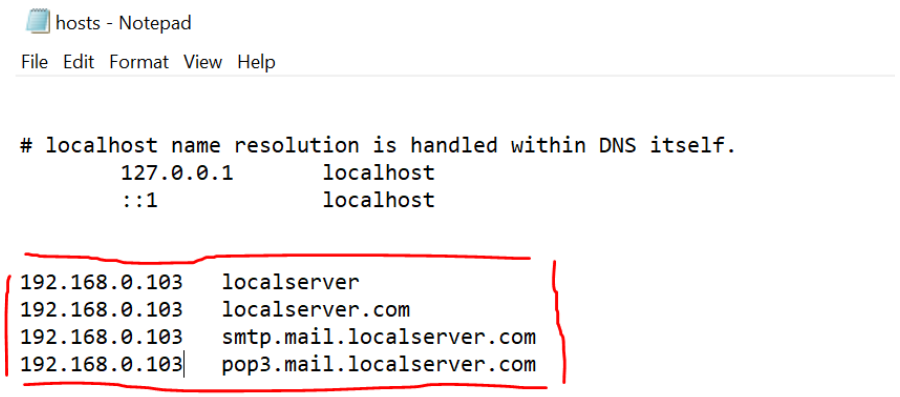
```
#
# Additionally, comments (such as these) may be inserted on individual
# lines or following the machine name denoted by a '#' symbol.
#
# For example:
#
#      102.54.94.97     rhino.acme.com          # source server
#       38.25.63.10     x.acme.com              # x client host

# localhost name resolution is handled within DNS itself.
#       127.0.0.1       localhost
#       ::1             localhost


127.0.0.1       localserver
127.0.0.1       localserver.com
127.0.0.1       smtp.mail.localserver.com
127.0.0.1       pop3.mail.localserver.com
```

2. Open /etc/hosts file in client's machine and bind server's machine IP address with the specified mail server domain

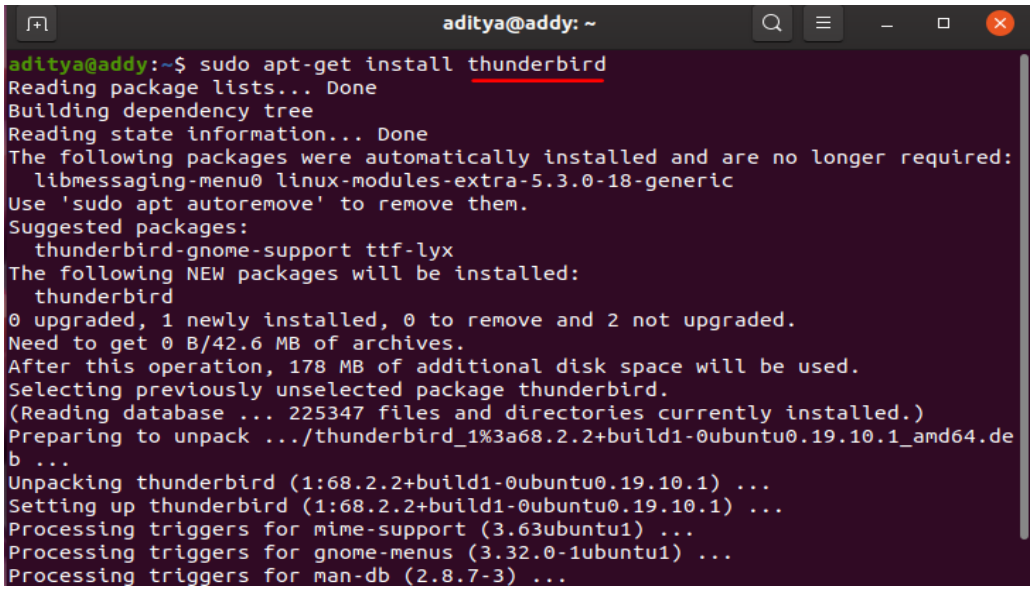
   (192.168.0.103 localserver.com)



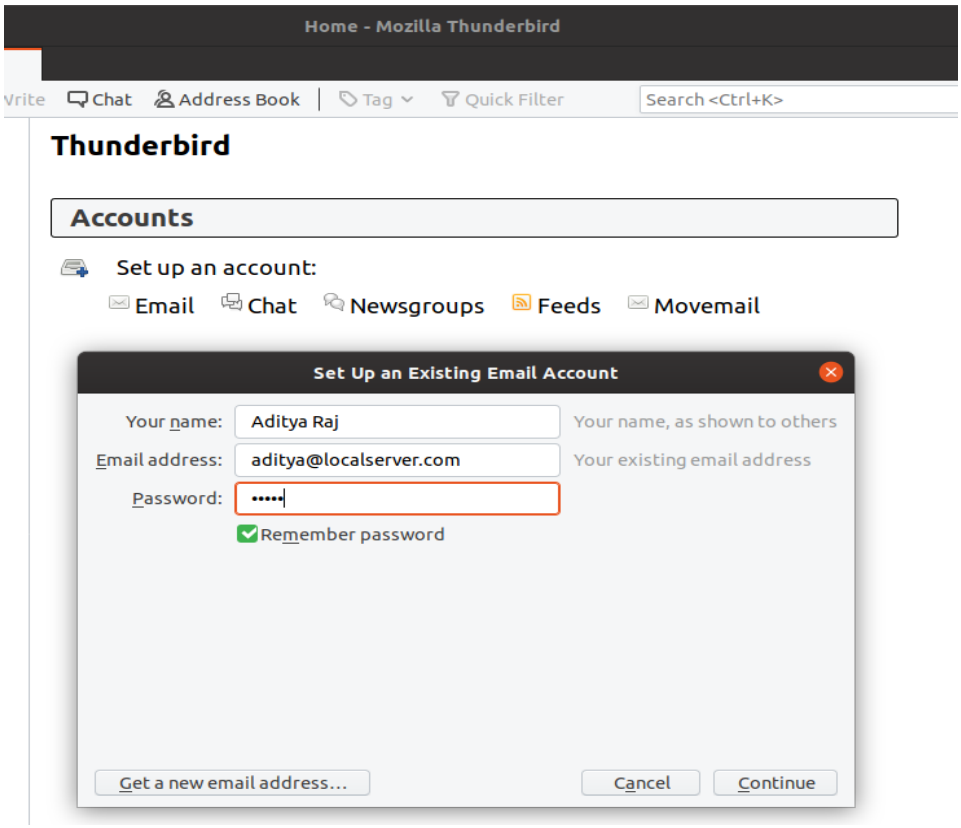
3. Save and exit.

Part 5: Configure Mozilla Thunderbird e-mail client (User Agent)

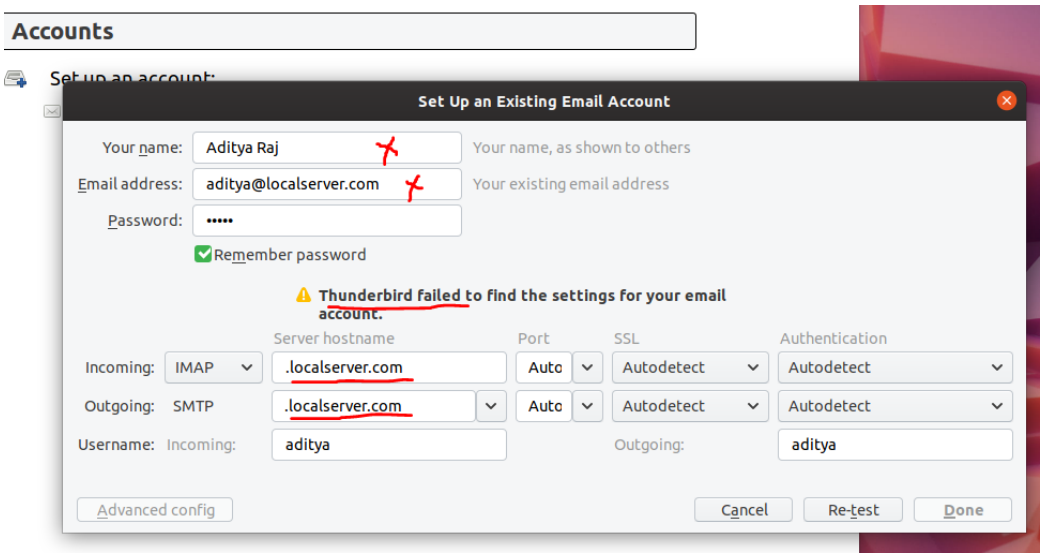
1. Configure User Agent thunderbird for email validation on client machine.
2. Install the Thunderbird e-mail client in ubuntu machine.
3. Run the command in terminal: sudo apt-get install thunderbird



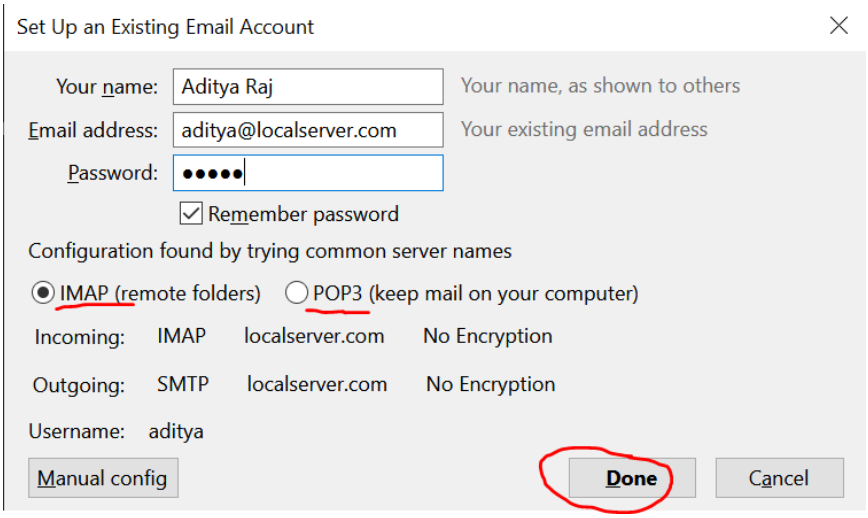
4. Setup account



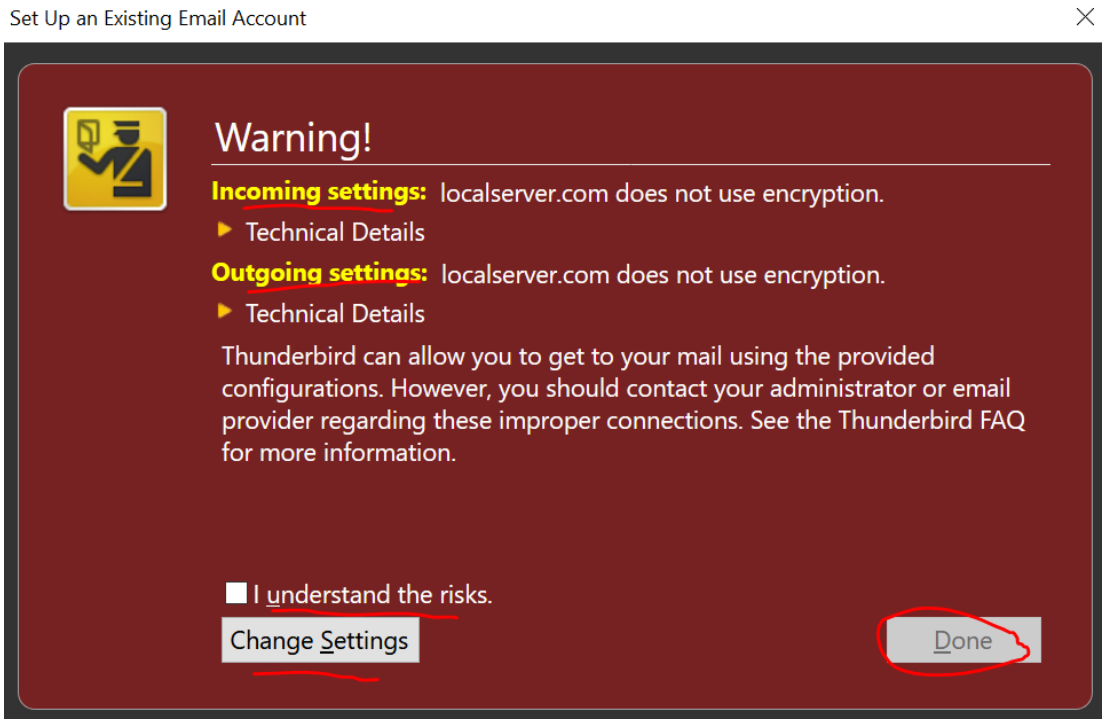
5. If the server's machine IP address in not passed to the client's machine /etc/hosts file then the specified email and password in thunderbird client will through error (thunderbird failed to find the settings for your email)



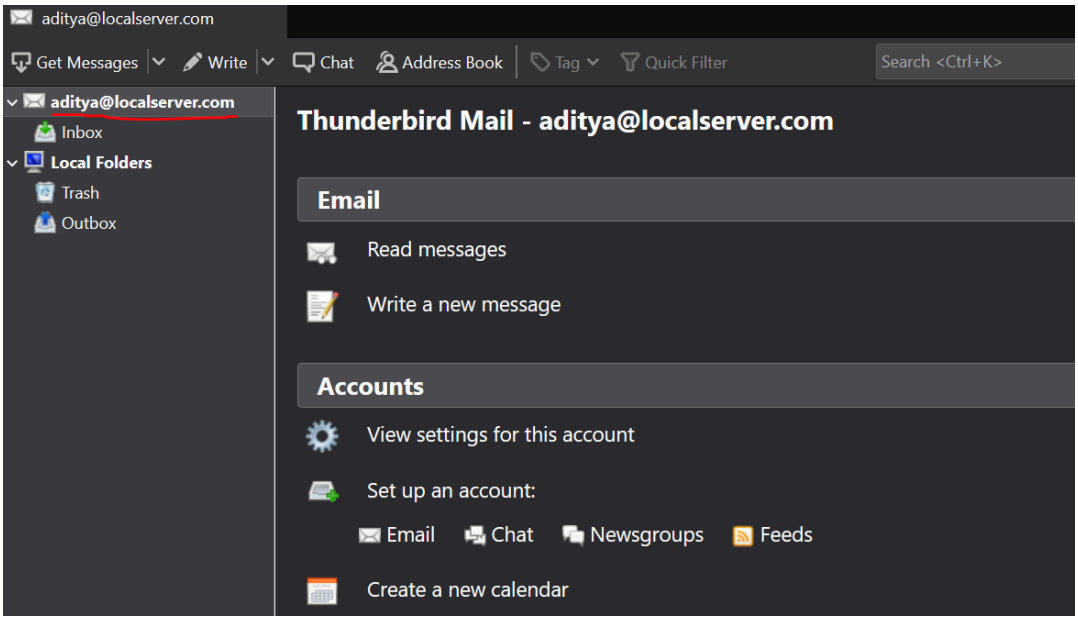
6. If the server's machine IP address in passed to the client's machine /etc/hosts file then the specified email and password in thunderbird client will through accept and give option to select the protocol (IMAP or POP3)



7. Now accept the security certificate



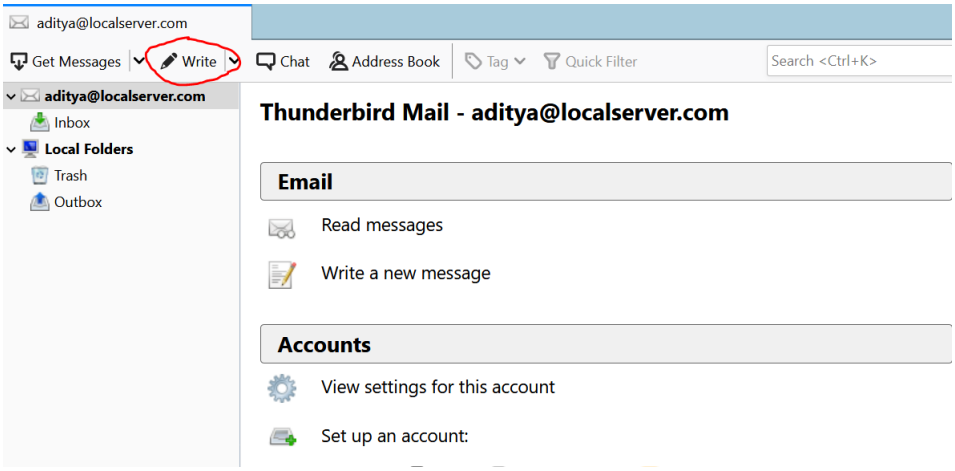
8. Now the user has been logged into the account.



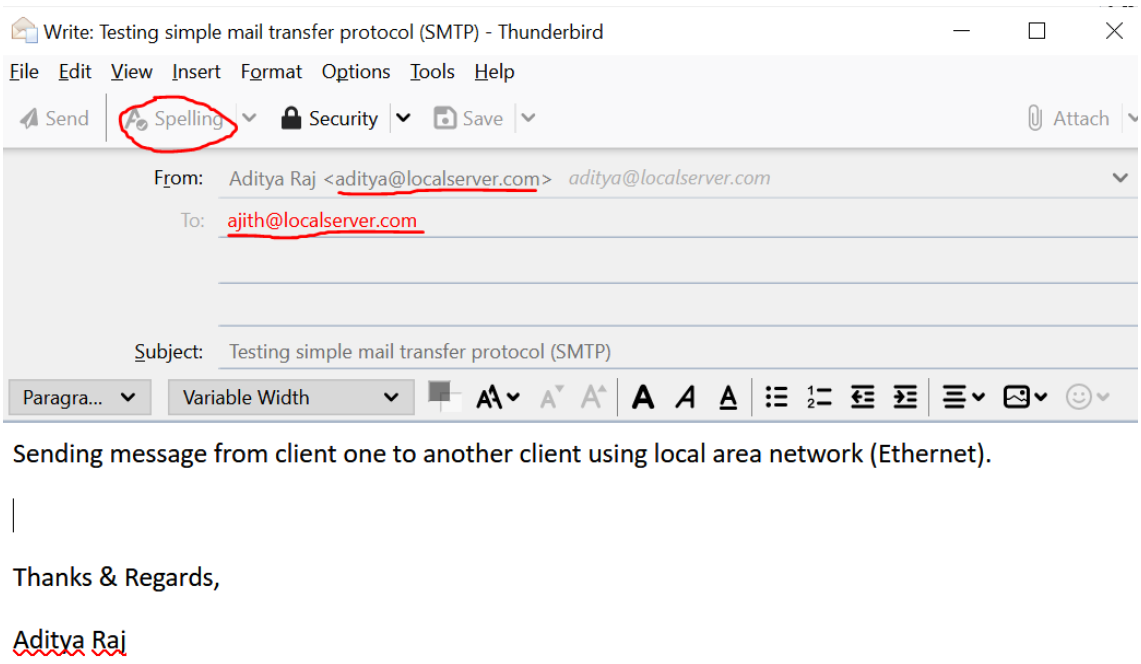
Part 5: Sending mail to another client using Mozilla Thunderbird e-mail client (User Agent)

1. COMPOSING AND SENDING AN EMAIL MESSAGE

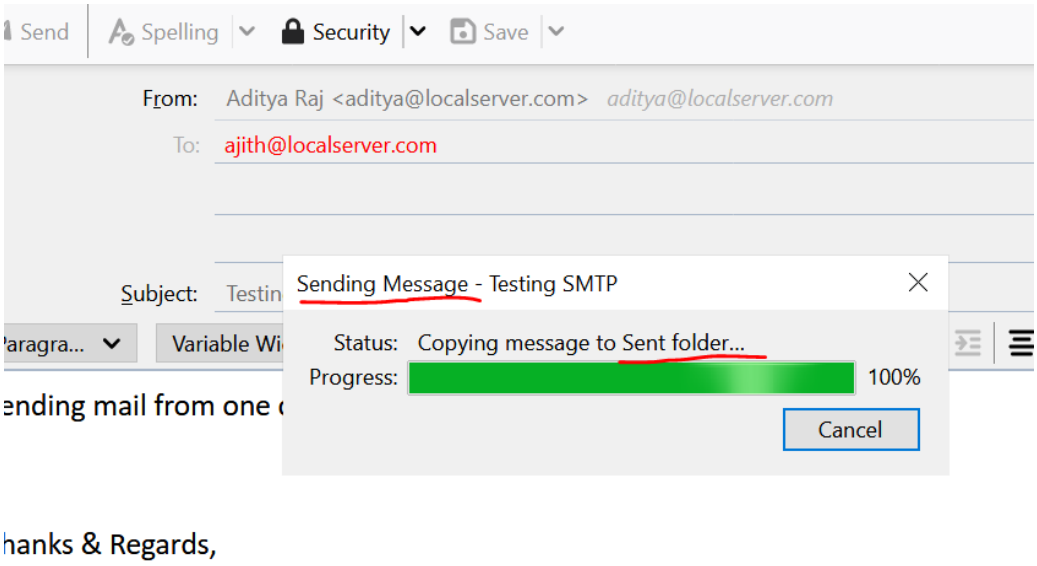
- In Thunderbird, you can write, review, and send emails to your recipients. Here's how:



2. Thunderbird opens a new email composition screen. You will need to do three things to create your new email:
    - Enter the email recipient's address in the To field.
    - Give the email a subject in the Subject field.
    - Type your message in the Message Body pane.



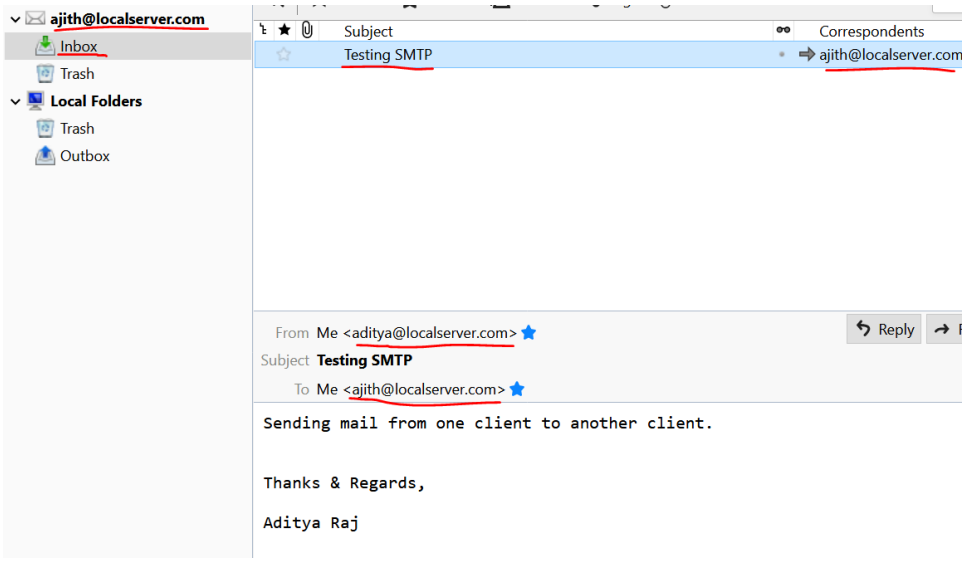
3. Some notes about writing and sending emails
    - In Thunderbird, you cannot recall an email after you've sent it. When it's gone, it's gone.
    - See the instructions in the Format section to see how you can change the look and feel of your email.
4. Check the mail sending status. Here the smtp.localserver.com domain is used to send the mail from one user to another.



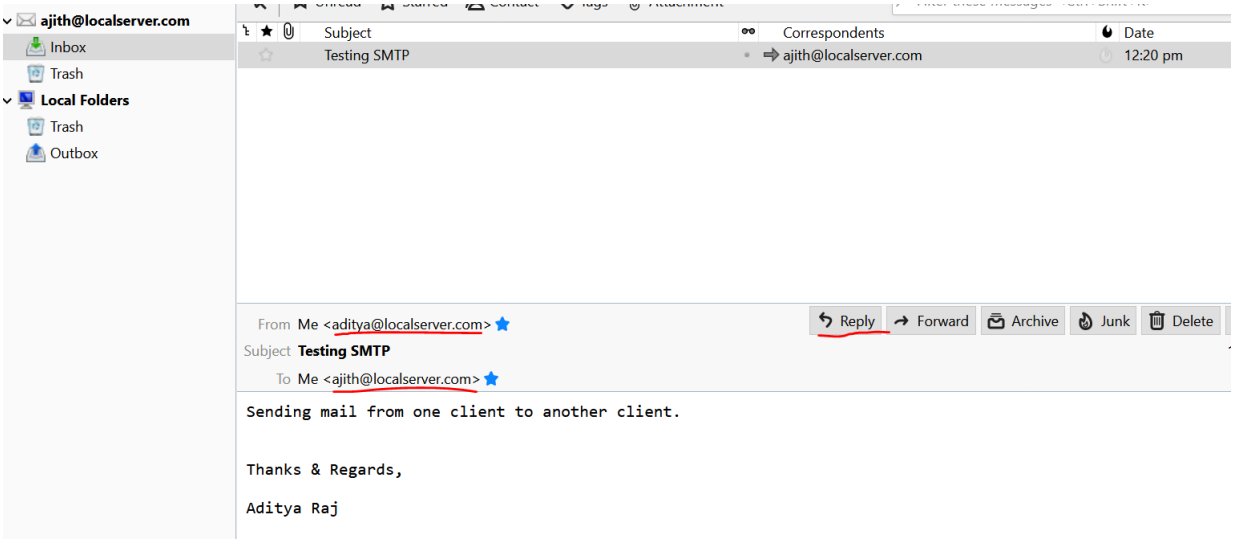
5. Done with sending the mail.

Part 6: Check the mail in receiver client and reply back to the sender using Mozilla Thunderbird e-mail client (User Agent)

1. Go to your Inbox and open the received email.

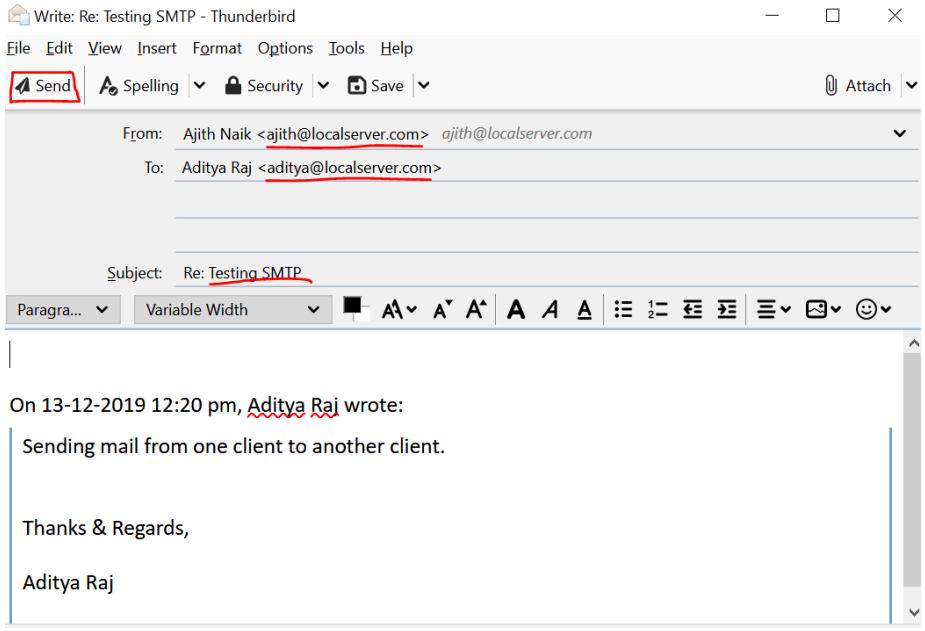


2. click the Reply button to open a composition window for the email reply.

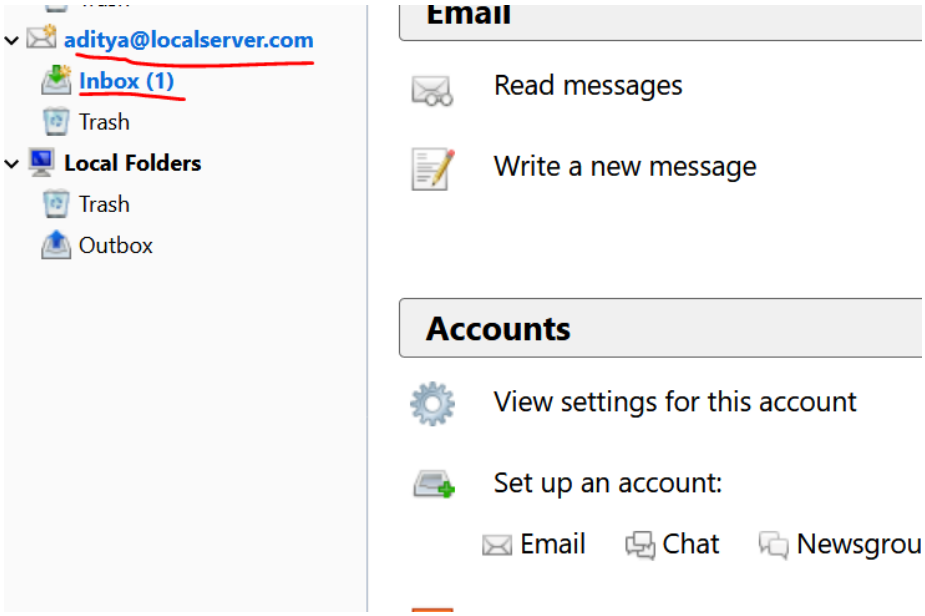


3. Since you are replying to an email, there is no need to enter the recipient's address because Thunderbird has already put it in the to: field. Also, Thunderbird will put Re: at the start of your subject to show the recipient that this is a reply e- mail.

4. You need to do three things to complete your reply.
   - Type your reply in the message pane.
   - Review and check the spelling. Click the Send button to send it

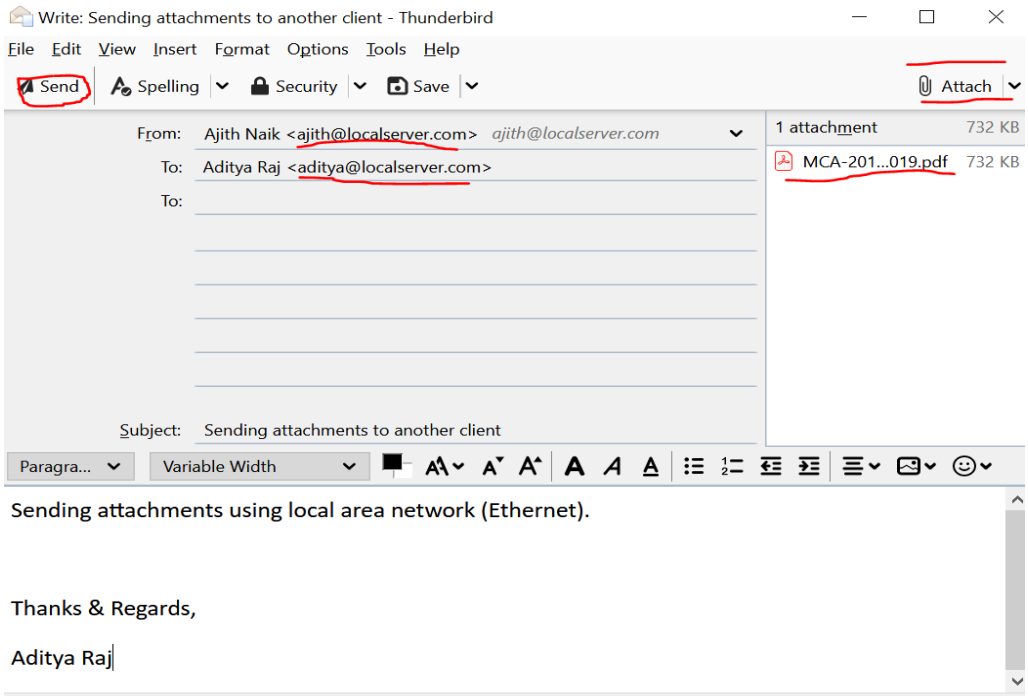


5. Thunderbird sends your message to the recipient and it saves a copy of it to your email account's Sent folder.



Part 7: IMAGES AND ATTACHMENTS using Mozilla Thunderbird e-mail client (User Agent)

1. Adding attachments



2. One of email's convenient features is its ability to carry a document to the recipient. This works the same for both Plain Text and HTML emails. Be careful of the size of your attachments because most email providers limit attachment size. The maximum size is frequently about 10 MB but you should check with your provider to be sure.

2. Simple Mail Transfer Protocol

What is mail-server?

A mail server is the computerized equivalent of your friendly neighborhood mailman. Every email that is sent passes through a series of mail servers along its way to its intended recipient. Although it may seem like a message is sent instantly - zipping from one PC to another in the blink of an eye - the reality is that a complex series of transfers takes place. Without this series of mail servers, you would only be able to send emails to people whose email address domains matched your own - i.e., you could only send messages from one example.com account to another example.com account.

Types of Mail Servers

Mail servers can be broken down into two main categories: outgoing mail servers and incoming mail servers. Outgoing mail servers are known as SMTP, or Simple Mail Transfer Protocol, servers. Incoming mail servers come in two main varieties. POP3, or Post Office Protocol, version 3, servers are best known for storing sent and received messages on PCs' local hard drives. IMAP, or Internet Message Access Protocol, servers always store copies of messages on servers. Most POP3 servers can store messages on servers, too, which is a lot more convenient.

1. Introduction to SMTP:

- Email is emerging as one of the most valuable services on the internet today. Most of the internet systems use SMTP as a method to transfer mail from one user to another. SMTP is a push protocol and is used to send the mail whereas POP (post office protocol) or IMAP (internet message access protocol) are used to retrieve those mails at the receiver’s side.

2. **SMTP Fundamentals**

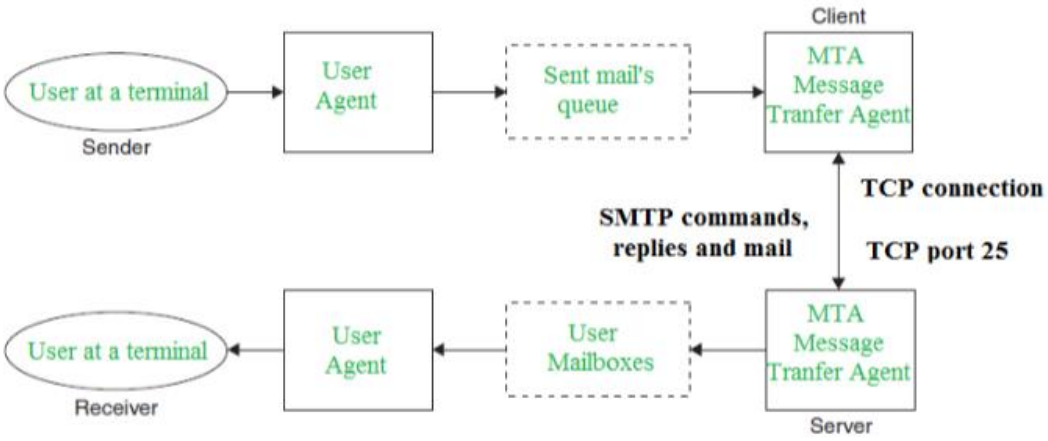
- SMTP is an application layer protocol. The client who wants to send the mail opens a TCP connection to the SMTP server and then sends the mail across the connection. The SMTP server is always on listening mode. As soon as it listens for a TCP connection from any client, the SMTP process initiates a connection on that port (25). After successfully establishing the TCP connection the client process sends the mail instantly.

3. **SMTP Protocol**

- The SMTP model is of two type:
  1. End-to- end method
  2. Store-and- forward method
- The end to end model is used to communicate between different organizations whereas the store and forward method are used within an organization. A SMTP client who wants to send the mail will contact the destination's host SMTP directly in order to send the mail to the destination. The SMTP server will keep the mail to itself until it is successfully copied to the receiver's SMTP.
- The client SMTP is the one which initiates the session let us call it as the client- SMTP and the server SMTP is the one which responds to the session request and let us call it as receiver-SMTP. The client- SMTP will start the session and the receiver-SMTP will respond to the request.

4. **Model of SMTP system**

- In the SMTP model user deals with the user agent (UA) for example Microsoft Outlook, Netscape, Mozilla, etc. In order to exchange the mail using TCP, MTA is used. The users sending the mail do not have to deal with the MTA it is the responsibility of the system admin to set up the local MTA. The MTA maintains a small queue of mails so that it can schedule repeat delivery of mail in case the receiver is not available. The MTA delivers the mail to the mailboxes and the information can later be downloaded by the user agents.



3. The process of handling mail.

Now that you know the basics about incoming and outgoing mail servers, it will be easier to understand the role that they play in the emailing process. The basic steps of this process are outlined below for your convenience.

- After composing a message and hitting send, your email client - whether it's Outlook Express or Thunderbird- connects to your domain's SMTP server. This server can be named many things; a standard example would be smtp.localserver.com.

- Your email client communicates with the SMTP server, giving it your email address, the recipient's email address, the message body and any attachments.

- The SMTP server processes the recipient's email address - especially its domain. If the domain name is the same as the sender's, the message is routed directly over to the domain's POP3 or IMAP server - no routing between servers is needed. If the domain is different, though, the SMTP server will have to communicate with the other domain's server.

- In order to find the recipient's server, the sender's SMTP server has to communicate with the DNS, or Domain Name Server. The DNS takes the recipient's email domain name and translates it into an IP address. The sender's SMTP server cannot route an email properly with a domain name alone; an IP address is a unique number that is assigned to every computer that is connected to the Internet. By knowing this information, an outgoing mail server can perform its work more efficiently.

- Now that the SMTP server has the recipient's IP address, it can connect to its SMTP server. This isn't usually done directly, though; instead, the message is routed along a series of unrelated SMTP servers until it arrives at its destination.

- The recipient's SMTP server scans the incoming message. If it recognizes the domain and the user name, it forwards the message along to the domain's POP3 or IMAP server. From there, it is placed in a send mail queue until the recipient's email client allows it to be downloaded. At that point, the message can be read by the recipient.

4. What is a POP3?

- POP3, which is an abbreviation for Post Office Protocol 3, is the third version of a widespread method of receiving email. Much like the physical version of a post office clerk, POP3 receives and holds email for an individual until they pick it up. And, much as the post office does not make copies of the mail it receives, in previous versions of POP3, when an individual downloaded email from the server into their email program, there were no more copies of the email on the server; POP automatically deleted them.
- POP3 makes it easy for anyone to check their email from any computer in the world, provided they have configured their email program properly to work with the protocol.
- Because POP3 is a basic method of storing and retrieving email, it can work with virtually any email program, as long as the email program is configured to host the protocol. Many popular email programs, including Eudora and Microsoft Outlook, are automatically designed to work with POP3. Each POP3 mail server has a different address, which is usually provided to an individual by their web hosting company. This address must be entered into the email program in order for the program to connect effectively with the protocol. Generally, most email applications use the 110 port to connect to POP3. Those individuals who are configuring their email program to receive POP3 email will also need to input their username and password in order to successfully receive email.

5. What is an IMAP?

- IMAP (Internet Message Access Protocol) is a standard email protocol that stores email messages on a mail server, but allows the end user to view and manipulate the messages as though they were stored locally on the end user's computing device(s). This allows users to organize messages into folders, have multiple client applications know which messages have been read, flag messages for urgency or follow-up and save draft messages on the server.
- IMAP allows you to access your email messages wherever you are; much of the time, it is accessed via the Internet. Basically, email messages are stored on servers. Whenever you check your inbox, your email client contacts the server to connect you with your messages. When you read an email message using IMAP, you aren't actually downloading or storing it on your computer; instead, you are reading it off of the server. As a result, it's possible to check your email from several different devices without missing a thing.
- The easiest way to understand how IMAP works is by thinking of it as an intermediary between your email client and your email server. Email servers are always used when sending and receiving email messages. With IMAP, though, they remain on the server unless you explicitly delete them from it. When you sign into an email client like Microsoft Outlook, it contacts the email server using IMAP. The headers of all of your email messages are then displayed. If you choose to read a message, it is quickly downloaded so that you can see it - emails are not downloaded unless you need to open them.