



# Understanding Post Office Protocol (POP3)

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## Introduction

Most Internet users with email accounts would have used some form of “client” software (Outlook, Thunderbird etc.) to access and manage their email at one point or another. To retrieve emails, these email clients may require the configuration of Post Office Protocol (or POP3) before messages can be downloaded from the server. This article will help readers understand what POP3 is and how it works.

## What is Post Office Protocol?

The Post Office Protocol (POP3) is an Internet standard protocol used by local email software clients to retrieve emails from a remote mail server over a TCP/IP connection. Since the first version was created in 1984, the Post Office Protocol (currently at Version 3) has since become one of the most popular protocols and is used by virtually every email client to date. Its popularity lies in the protocol’s simplicity to configure, operate and maintain.

Email servers hosted by Internet service providers also use POP3 to receive and hold emails intended for their subscribers. Periodically, these subscribers will use email client software to check their mailbox on the remote server and download any emails addressed to them.

Once the email client has downloaded the emails, they are usually deleted from the server, although some email clients allow users to specify that mails be copied or saved on the server for a period of time.

Email clients generally use the well-known TCP port 110 to connect to a POP3 server. If encrypted communication is supported on the POP3 server, users can optionally choose to connect either by using the STLS command after the protocol initiation stage or by using POP3S, which can use the Transport Layer Security (TLS) or Secure Sockets Layer (SSL) on TCP port 995 to connect to the server.

## Applications that use Post Office Protocol

Due to its basic method of storing and receiving email, POP3 is compatible with any email program that has been configured to host the protocol. Popular email programs like Outlook Express support POP3 natively.

Besides email programs that uses POP3 to retrieve mails, this protocol is also used by the backup and synchronization program, [SyncBackPro](#) by 2BrightSparks Pte. Ltd.

SyncBackPro can backup and restore data files (as attachments to dummy emails created for the purpose) to and from an email server. The software provides the tools that allow users to store data on an email server like Gmail or Yahoo, as well as to retrieve files from it. POP3 or IMAP4 (another email protocol used for retrieving mails, but not covered in this article) is used for the retrieval or restoration. This feature is useful for example when you want to copy some important documents from office to home but you do not have a USB thumb drive available. You can use SyncBackPro to send the documents to your mail server and retrieve it when you are back home.

Another feature that uses POP3 in SyncBackPro is that it can be used to backup email messages that are stored on the mail server. This feature allows the emails from any POP3 or IMAP4 mail server to be backed up. An email backed up using this method is downloaded and stored in its own self-contained EML file that contains the email body and all the attachments. Note that SyncBackPro cannot *Restore* copies of such backed-up emails to an email server – the backup is a one-way process for local safekeeping only. This feature is useful for webmail users who want a backup copy of their emails stored locally to avoid losing them due to, for example the closure of the mail provider website, removal or corruption of email accounts or other unforeseen disasters.

## **History of Post Office Protocol**

The first version of Post Office Protocol was first published in a Request for Comments in 1984 as RFC 918 by the Internet Engineering Task Force. Back then, the developers recognized the need to design a simple and effective method of retrieving emails from a server. They saw the advantage of reading the emails offline rather than accessing the mailbox online.

In 1985, Post Office Protocol version 2 was published in RFC 937, which was replaced with Version 3 in 1988 with the publication of RFC 1081. POP3 was revised several times in the next 10 years, before it was refined to the current specification published on 1996 as RFC 1939.

Although POP3 has undergone several enhancements and refinements, its developers have maintained the basic principle of a straight forward protocol that has a three stage process during mail retrieval between a client and a server. Its simplicity is what makes POP3 one of the most popular mail retrieval methods used today.

## **How does Post Office Protocol Work?**

When a user checks for new email, the client will connect to the POP3 server. The email client then supplies its username and password to the server for authentication. Once connected, the client issues a series of text-based commands to retrieve all email messages. It then stores these downloaded messages on the user's local system as new emails, deletes the server copies and disconnects from the server.

By default, the server emails are deleted once they are retrieved. As a result, the emails are tied to that particular machine and it would not be possible to access the same emails from an email client on another machine. The user could get around this issue by configuring the email client settings to leave a copy of the emails on the server.

POP frees up mailbox space on the server because emails and attachments are downloaded and deleted at server-end whenever the email client checks for new mails. Offline email messages stored in the

user's computer do not have mailbox size limitations except for the hard drive storage capacity of the PC. One drawback of POP3 mail accounts is that it is difficult for the user to export mails if they decide to switch email programs or computer systems.

#### Advantages of POP3:

- Emails are downloaded to the user's computer. Messages can be read when user is offline.
- Opening attachments is quick and easy as they are already downloaded.
- Less server storage space required; all emails are stored on local machine.
- Storage capacity of emails limited by the size of your hard disk.
- Very popular, easy to configure and use.

#### Disadvantages of POP3:

- Emails cannot be accessed from other machines (unless configured to do so).
- Exporting the local mail folder to another email client or physical machine can be difficult.
- Email folders can become corrupted, potentially losing the entire mailbox at once.
- Email attachments may contain viruses which may expose the user's PC to harm if they are opened locally and their virus scanner is unable to detect them.

#### Summary

Although POP3 has been around since the 1980s, it still remains one of the most viable and popular email protocols. By storing the mail on the client's computer, it allows the user to read the messages offline and there are no size limits on the server storage capacity. However, one has to be careful of viruses in attachments as they can pose a significant security threat to the client's machine.