Introduction

The Post Office Protocol (POP) was first issued on October 1984. The protocol suggests a simple method for workstations to access mail from a mailbox server.

The protocol is dependent upon TCP (Transfer Control Protocol) and assumes that mail is posted by SMTP.

POP in more detail, is a way for a server machine to store and serve mail for various client machines that are not connected to the Internet 24 hours a day. This makes it like an electronic Post Office Box, where your email is held in the POP server until you login and retrieve it.

For example, if somebody sends you e-mail it usually cannot be delivered directly to your computer unless it is permanently connected to the Internet and has its own mail delivery system. The messages have to be stored somewhere. An Internet Service Provider is on-line 24 hours on 7 days of the week and can do that job.

This is where the message will stay until either you retrieve it or the Internet Service Provider administrator (ISP) finds a pile of large storage files from messages. The ISP then deletes them because you have gone past your limit of space available for incoming messages and cannot receive any more.

The advantages of POP is that you can read your-e-mail from anywhere on the Internet that you can run a POP client, without having to dial-up the same ISP. You can use a wide variety of POP client reading software on most platform PC’s or MAC’s, for example Eudora, Outlook or Netscape.

How POP Works

The server waits for a client to open a connection. When the connection is opened the server sends a greeting message and waits for commands to come from the client. The server responds to each command with an appropriate reply.

The client opens a connection and waits for the server to respond with a greeting. When accepted, it sends a user name and a password in order to establish authorisation to access the mailbox. Once authorised the client asks to begin the reading transaction. The server opens the mailbox, locks it and returns the number of characters in the mailbox along with the acknowledgment. The client can then asks for data to be sent, using various methods like list

the messages, retrieve a specific message. After the server sent the data, the client responds with an acknowledgment. The server can now unlock the mailbox and close it. The client can then terminate the session.

Commands in the POP consist of a key word possibly followed by an argument.

Responses in the POP consist of a success indicator (positive or negative) and a key word possibly followed by additional information.

POP Versions

There have been two versions of POP made. The first one was called POP2, which requires Simple Mail Transfer Protocol (SMTP) to send messages and was designed for an environment of clients and servers on low-delay, high-throughput on local networks. The newer version Post Office Protocol version 3 (POP3) can be used with or without SMTP and operates in more than one environments called authorisation, Transaction and Update. This makes it more efficient for networks.

Another improvement to POP3 is that it intends to permit a workstation to dynamically access a mail drop on a server host in a useful fashion. This means that the POP3 protocol is used to allow a workstation to retrieve mail that the server is holding for it. This is the most common way today for retrieving electronic mail. POP3 is the most recent version of a standard protocol for receiving e-mail and has replaced POP2.

How POP3 Works

The server host starts the POP3 service by listening on TCP port 110. A client establishes a TCP connection with the server host. When the connection is established the server sends a greeting. Then the client and the server exchange commands and responses until the connection is closed or aborted. The server can respond with a positive status sending (+OK) to the client or with a negative status sending (-ERR) to the client like I said before.

1. The Authorisation Stage (This how POP3 handles Authentication)

Once the client has opened the TCP connection and the server has issued a greeting message starting with a positive response (+OK). Then the client has two possibilities. Either sending a user name and a password by USER and PASS

commands or sending an encrypted password by the APOP command, as PASS does not hide the password on the screen.

After verifying the identity of the client, the server acquires an exclusive access lock on the mail drop. If the lock isn't acquired the server responds with a negative status and may close the connection or stay in the authorisation stage in order to allow issuing new authentication commands. After the lock is acquired the server assigns each message, a message number starting with 1.

2. The Transaction Stage

After the client has successfully identified itself to the server, the server enters the transaction stage. Tthe client may issue commands and get responses from the server to each command. When the client issues a QUIT command the server enters the Update stage.

Some Commands in the Transaction Stage

- STAT – How many messages in the mailbox.
- LIST [msg] – List a particular message.
- RETR [msg] – Retrieves a message if it exist.
- DELE [msg] – Delete a message if it exist.
- NOOP - This command causes nothing but a positive response from the server.
- RSET – Unmark messages marked for deletion.
- QUIT – Enter Update Stage.

3. The Update Stage

When the client issues the QUIT command from the Transaction stage, the server enters the Update stage. The only command allowed in this stage is QUIT. After getting the QUIT command the server deletes all the messages marked as deleted, releases the access lock and closes the TCP connection.

Issues with POP3

- No automatic message deletion is provided by the POP protocol, so the server operators may include automatic message deletion after a desired period of time.

- The server can not know if a client was disconnected unless the client issued the QUIT command. The server operators may include an inactivity auto-logout timer. The timer must be of at least 10 minutes duration. When the timer expires and the session doesn't enter the Update stage. The server then should close the connection. A POP client program may issue a NOOP command every now and then to avoid timeout disconnection, but usually the client program simply reconnects when needed.

Alternate Methods to POP

One alternative protocol to POP is IMAP (Internet Message Access Protocol). With IMAP, you view e-mail at the server as though it was on your client computer. An e-mail message deleted locally is still on the server. E-mail can be kept on and searched at the server. In POP, your mail is saved for you in your mailbox on the server. When you read your mail, all of it is immediately downloaded to your computer and no longer maintained on the server.

POP can be thought of as a store-and-forward service. IMAP can be thought of as a remote file server. As POP and IMAP deal with the receiving of e-mail and are not to be confused with the Simple Mail Transfer Protocol (SMTP), another alternative to POP3, which is a protocol for transferring e-mail across the Internet.

SMTP is a TCP/IP protocol used in sending and receiving e-mail. Where you send e-mail with SMTP and a mail handler receives it on your recipient’s behalf. Then the mail is read using POP or IMAP, that lets the user save messages in a server mail-box and download them periodically from the server, this is because SMTP is limited in its ability to queue messages at the receiving end. Users typically use a program that uses SMTP for sending e-mail and either POP3 or IMAP for receiving messages that have been received for them at their local server.

Since there are multiple ways of reading e-mail, there is a possibility that the two methods might clash with each other. SMTP is viewed as the primary method for e-mail delivery, and POP as a subordinate method for certain circumstances, and so the SMTP delivery method is not blocked while you are using POP.