Undergraduate Computer Networks
Request for Comments: 20XX
Category: Experimental

D. Coen
George Washington University

October 2017

SEAS the Mail

Status of this Memo

This document is published as part of an assignment and not for implementation of any sort. It is to be used solely for educational purposes.

Abstract

This document describes the design of a multiple recipient email agent to be used by the George Washington University School of Engineering and
Applied Science (SEAS). This document has suggestions for implementation, and will describe how they will take advantage of the protocol. This Application-Layer protocol relies on the Transmission Control Protocol (TCP) and the Internet Protocol (IP).

Copyright Notice

Table of Contents

Introduction

SEAS the Mail provides an effective and simple way for a SEAS employee to send an email to multiple recipients. SEAS the Mail is designed to be easy to use and implement, with straightforward interfacing. Due to the scope of SEAS the Mail being purely for educational purposes regarding basic networking and writing an RFC, this document will not contain specific information regarding security as well as additional future development plans and ideas.

Functionality Description

SEAS the mail is designed for faculty and SEAS computing members to send emails to multiple recipients in SEAS. It is not designed with carbon copies or email threading. As result, you can think of SEAS the Mail as a way to send blind carbon copies to all of the students in a class or some other grouping of users within SEAS. One client application will be run by both SEAS faculty and students.

Document Information

This document contains some useful vocabulary to describe the functionality of SEAS the Mail and its protocol. The following are some key terms frequently used in this document:

Mail body

The actual message to be sent to recipients. For simplicity this will only contain plaintext.

Sender

A user and member of SEAS computing or faculty who wishes to send an email to multiple recipients.

Recipient

A user and member of SEAS who will receive emails sent by the sender. For simplicity imagine the recipients as students who get emailed by their Professor regarding class updates.

Client
This is the actual workstation or computer which is being used to send and receive messages by communicating with the server and the SEAS the Mail application.

Server
This is the central computer(s) which provides functionality for clients by connecting them with each other by sending their messages.

Client-Server Design
In the event of sending an email, the sending client will request to connect to the server to establish a connection. There will be a dedicated TCP port that the server will listen to handle this handshaking process, say 11111. The client will listen to port 22222 to receive packets from the server. Once a connection is established using TCP, the sending client will transmit data containing the specifics of the email such as the recipients and message body. The server will then parse the recipients of the email and send the message to the said recipient clients. In this case, the recipient clients are listening on port 11111. When the client wishes to receive email either periodically or manually by the user, it will request a connection with the server. If successful, the server will send packets containing the email to the client. TCP's built-in handshake and acknowledgement system will ensure that it is using a tried and true way of establishing connections and delivering data properly.

Protocol Specification
The following is a list of commands part of the protocol and a brief description of their functionality and how they would be applied in the application.

MFROM
This command establishes who sent the mail message. It is the return address of the sending client.

RCPTS
This command establishes the recipients of the mail message. The addresses of the recipients are separated by a comma. This command can also be called for one recipient, simply by being called with one address followed by a comma.

BODY
This command signals the beginning of the message body of the email. Then end of the message body will always be terminated by a newline and a period (in ascii <CR><LF>.<CR><LF>). The first line of the body is used a header. If left blank, there will be no header for the email.

INFO
This command is used to retrieve information from the mail server. This may contain usage statistics, the server's current status, and other information.

ERR
This command is sent if there is an invalid response in the protocol.

QUIT
This command ends the active session.

Other RFCs
Please see the RFC for IP (RFC 791) and TCP (RFC 793) for more information on how these protocols are used in conjunction with SEAS the Mail.

References

Bradner, S. "The Internet Standards Process -- Revision 3." *IETF.org*, October 1996, https://www.ietf.org/rfc/rfc2026.txt.

Information Sciences Institute at University of Southern California. "Transmission Control Protocol." *IETF Tools*, September 1981, https://tools.ietf.org/html/rfc793.

Information Sciences Institute at University of Southern California. "Internet Protocol." *IETF Tools*, September 1981, tools.ietf.org/html/rfc791.

Author Information

Daniel Coen
George Washington University, Computer Science
Washington, DC, 20021
Email: dancoen@gwu.edu