The Simple MIME eXchange Protocol (SMXP)

Mon May 29 13:37:06 1995

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Status of this Memo

1. Abstract

This memo defines a protocol for the interactive exchange of MIME entities, as an alternative to the use of electronic mail as a transport mechanism.

2. Introduction

SMXP is used for the interactive exchange of MIME entities [1]. It is general-purpose in that it may be used whenever there is a need for the interactive exchange of MIME entities, regardless of a particular application-domain.

To specify the use of SMXP for a particular application-domain, three definitions are required: the TCP port that the server listens on; a list of MIME entities that are exchanged using the EXCH command; and, a name to be used when referring to the resulting protocol.

For example, when SMXP is used to support the Green Commerce model [2], Appendix B of [3]:

- specifies that the server listens on TCP port 440;
- contains a list of the "application/green-commerce" contents which are exchanged; and,
- refers to the resulting protocol as the "Simple Green Commerce Protocol" (SGCP).

3. Operation

Initially, the server host starts the SMXP service by listening on a TCP port which has been pre-assigned for the server's application-domain. When a client wishes to make use of the service, it establishes a TCP connection with the server host. When the connection is established, the server sends a greeting. The client and server then exchange commands and responses (respectively) until the connection is closed or aborted.

3.1. Syntax

The SMXP is a textual protocol, which uses the NVT ASCII repertoire (pages 4, 10-11 of [4]).

Commands in the SMXP consist of a keyword, consisting of exactly four printable ASCII characters, followed by a CRLF pair, followed by a parameter.

Responses in the SMXP consist of an indicator either positive ("+OK") or negative ("-ERR"), possibly followed by diagnostic information, followed by a CRLF pair, followed by a parameter.

Parameters for commands and responses are multi-line. After sending the first line of the command/response, the parameter is sent. Each line of the parameter is terminated by a CRLF pair. When all lines of the parameter have been sent, an additional line is sent, consisting of a termination octet (decimal code 046, ".") and a CRLF pair. If any line of the parameter begins with the termination octet, the line is "byte-stuffed" by pre-pending the termination octet to that line of the response. Hence a parameter is always terminated with the five octets "CRLF.CRLF".

When receiving a parameter, a check is made to see if the line begins with the termination octet. If so, and if octets other than CRLF follow, the the first octet of the line (the termination octet) is stripped away. Otherwise, if the line consists of the termination octet followed immediately by CRLF, then the parameter is complete, and the line containing ".CRLF" is not considered part of the parameter.

3.2. Initialization

Once the TCP connection has been opened by the client, the server issues a greeting, in the form of a response. If the server issues a positive response, then the client may begin issuing commands; otherwise, if the server issues a negative response, the client closes the TCP connection.

The parameter associated with the greeting is ignored by the client.

A usage example might be:

```
     S:    <listen on TCP port 440>
     C:    <establish connection to TCP port 440>
     S:    +OK SGCP server ready
     S:    .
```

3.3. Exchange

The client issues the EXCH command to exchange a MIME entity with the server. The definition of the application-domain specifies which MIME entities are:

- used as parameters to the EXCH command;
- associated with a positive response; and,
- associated with a negative response.

A usage example might be:

```
C:    EXCH
C:    Content-Type: application/green-commerce;
C:        transaction=inquiry-request
C:
C:    Account-ID: Joe Internaut
C:    .
S:    +OK
S:    Content-Type: application/green-commerce;
S:        transaction=inquiry-result
S:
S:    Account-ID: Joe Internaut
S:    Account-Status: Active
S:    Preferred-Currency: usd us dollars
S:    .
```

3.4. Help

The client issues the HELP command to determine which commands are supported by the server. The server always issues a positive response.

The parameter associated with the HELP command is always empty. Each line of the parameter associated with the response consists of the name of a command supported by the server. The response must identify all commands supported by the server.

A usage example might be:

```
C:    HELP
C:    .
S:    +OK
S:    EXCH
S:    HELP
S:    QUIT
S:    .
```

3.5. Termination

The client issues the QUIT command to terminate the SMXP. The server always issues a positive response. The client then closes the TCP connection.

The parameter associated with the QUIT command is always empty. The parameter associated with the response is always empty.

A usage example might be:

```
C:    QUIT
C:    .
S:    +OK SGCP server done
S:    .
C:    <close TCP connection>
S:    <close TCP connection>
```

4. Security Considerations

Security issues are not discussed in this memo.

5. References

[1] Borenstein, N.S., and N. Freed, "Multipurpose Internet Mail Extensions", RFC 1521, Bellcore, Innosoft International, Inc., September, 1993.

[2] Stein, L.H., E.A. Stefferud, N.S. Borenstein, and M.T. Rose, "The Green Commerce Model", First Virtual Holdings Incorporated, June, 1995.

[3] Borenstein, N.S., and M.T. Rose, "The application/green-commerce MIME Content-type", First Virtual Holdings Incorporated, June, 1995.

[4] Postel, J.B., and J.K. Reynolds, "Telnet Protocol Specification", RFC 854, Information Sciences Institute, May, 1983.

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