                    SMTP Service Extension for
                    Returning Enhanced Error Codes

Status of this Memo

1. Abstract

   This memo defines an extension to the SMTP service [RFC-821, RFC-
   1869] whereby an SMTP server augments its responses with the enhanced
   mail system status codes defined in RFC 1893. These codes can then
   be used to provide more informative explanations of error conditions,
   especially in the context of the delivery status notifications format
   defined in RFC 1894.

2. Introduction

   Although SMTP is widely and robustly deployed, various extensions
   have been requested by parts of the Internet community. In
   particular, in the modern, international, and multilingual Internet a
   need exists to assign codes to specific error conditions that can be
   translated into different languages. RFC 1893 defines such a set of
   status codes and RFC 1894 defines a mechanism to send such coded
   material to users. However, in many cases the agent creating the RFC
   1894 delivery status notification is doing so in response to errors
   it received from a remote SMTP server.

   As such, remote servers need a mechanism for embedding enhanced
   status codes in their responses as well as a way to indicate to a
   client when they are in fact doing this. This memo uses the SMTP
   extension mechanism described in RFC 1869 to define such a mechanism.

3. Framework for the Enhanced Error Statuses Extension

   The enhanced error statuses transport extension is laid out as
   follows:

   (1)   the name of the SMTP service extension defined here is
          Enhanced-Status-Codes;

   (2)   the EHLO keyword value associated with the extension is
          ENHANCEDSTATUSCODES;

   (3)   no parameter is used with the ENHANCEDSTATUSCODES EHLO
          keyword;

   (4)   the text part of all 2xx, 4xx, and 5xx SMTP responses
          other than the initial greeting and any response to
          HELO or EHLO are prefaced with a status code as defined
          in RFC 1893. This status code is always followed by one
          or more spaces.

   (5)   no additional SMTP verbs are defined by this extension;
          and,

   (6)   the next section specifies how support for the
          extension affects the behavior of a server and client
          SMTP.

4. The Enhanced-Status-Codes service extension

   Servers supporting the Enhanced-Status-Codes extension must preface
   the text part of almost all response lines with a status code. As in
   RFC 1893, the syntax of these status codes is given by the ABNF:

        status-code ::= class "." subject "." detail
        class   ::= "2" / "4" / "5"
        subject   ::= 1*3digit
        detail   ::= 1*3digit

   These codes must appear in all 2xx, 4xx, and 5xx response lines other
   than initial greeting and any response to HELO or EHLO. Note that 3xx
   responses are NOT included in this list.

   All status codes returned by the server must agree with the primary
   response code, that is, a 2xx response must incorporate a 2.X.X code,
   a 4xx response must incorporate a 4.X.X code, and a 5xx response must
   incorporate a 5.X.X code.

When responses are continued across multiple lines the same status
code must appear at the beginning of the text in each line of the
response.

Servers supporting this extension must attach enhanced status codes
to their responses regardless of whether or not EHLO is employed by
the client.

5. Status Codes and Negotiation

This specification does not provide a means for clients to request
that status codes be returned or that they not be returned; a
compliant server includes these codes in the responses it sends
regardless of whether or not the client expects them. This is
somewhat different from most other SMTP extensions, where generally
speaking a client must specifically make a request before the
extended server behaves any differently than an unextended server.
The omission of client negotiation in this case is entirely
intentional: Given the generally poor state of SMTP server error code
implementation it is felt that any step taken towards more
comprehensible error codes is something that all clients, extended or
not, should benefit from.

IMPORTANT NOTE: The use of this approach in this extension should be
seen as a very special case. It MUST NOT be taken as a license for
future SMTP extensions to dramatically change the nature of SMTP
client-server interaction without proper announcement from the server
and a corresponding enabling command from the client.

6. Usage Example

The following dialogue illustrates the use of enhanced status codes
by a server:

```
S: <wait for connection on TCP port 25>
C: <open connection to server>
S: 220 dbc.mtview.ca.us SMTP service ready
C: EHLO ymir.claremont.edu
S: 250-dbc.mtview.ca.us says hello
S: 250 ENHANCEDSTATUSCODES
C: MAIL FROM:<ned@ymir.claremont.edu>
S: 250 2.1.0 Originator <ned@ymir.claremont.edu> ok
C: RCPT TO:<mrose@dbc.mtview.ca.us>
S: 250 2.1.5 Recipient <mrose@dbc.mtview.ca.us> ok
C: RCPT TO:<nosuchuser@dbc.mtview.ca.us>
S: 550 5.1.1 Mailbox "nosuchuser" does not exist
C: RCPT TO:<remoteuser@isi.edu>
S: 551-5.7.1 Forwarding to remote hosts disabled
```

```
   S: 551 5.7.1 Select another host to act as your forwarder
   C: DATA
   S: 354 Send message, ending in CRLF.CRLF.
    ...
   C: .
   S: 250 2.6.0 Message accepted
   C: QUIT
   S: 221 2.0.0 Goodbye
```

   The client that receives these responses might then send a
   nondelivery notification of the general form:

```
   Date: Mon, 11 Mar 1996 09:21:47 -0400
   From: Mail Delivery Subsystem <mailer-daemon@ymir.claremont.edu>
   Subject: Returned mail
   To: <ned@ymir.claremont.edu>
   MIME-Version: 1.0
   Content-Type: multipart/report; report-type=delivery-status;
           boundary="JAA13167.773673707/YMIR.CLAREMONT.EDU"

   --JAA13167.773673707/YMIR.CLAREMONT.EDU
   content-type: text/plain; charset=us-ascii

      ----- Mail was successfully relayed to
            the following addresses -----

   <mrose@dbc.mtview.ca.us>

      ----- The following addresses had delivery problems -----
   <nosuchuser@dbc.mtview.ca.us>
     (Mailbox "nosuchuser" does not exist)
   <remoteuser@isi.edu>
     (Forwarding to remote hosts disabled)

   --JAA13167.773673707/YMIR.CLAREMONT.EDU
   content-type: message/delivery-status

   Reporting-MTA: dns; ymir.claremont.edu

   Original-Recipient: rfc822;mrose@dbc.mtview.ca.us
   Final-Recipient: rfc822;mrose@dbc.mtview.ca.us
   Action: relayed
   Status: 2.1.5 (Destination address valid)
   Diagnostic-Code: smtp;
    250 Recipient <mrose@dbc.mtview.ca.us> ok
   Remote-MTA: dns; dbc.mtview.ca.us
```

```
     Original-Recipient: rfc822;nosuchuser@dbc.mtview.ca.us
     Final-Recipient: rfc822;nosuchuser@dbc.mtview.ca.us
     Action: failed
     Status: 5.1.1 (Bad destination mailbox address)
     Diagnostic-Code: smtp;
      550 Mailbox "nosuchuser" does not exist
     Remote-MTA: dns; dbc.mtview.ca.us

     Original-Recipient: rfc822;remoteuser@isi.edu
     Final-Recipient: rfc822;remoteuser@isi.edu
     Action: failed
     Status: 5.7.1 (Delivery not authorized, message refused)
     Diagnostic-Code: smtp;
       551 Forwarding to remote hosts disabled
       Select another host to act as your forwarder
     Remote-MTA: dns; dbc.mtview.ca.us

     --JAA13167.773673707/YMIR.CLAREMONT.EDU
     content-type: message/rfc822

     [original message goes here]
     --JAA13167.773673707/YMIR.CLAREMONT.EDU--
```

   Note that in order to reduce clutter the reporting MTA has omitted
   enhanced status code information from the diagnostic-code fields it
   has generated.

7. Security Considerations

   Additional detail in server responses axiomatically provides
   additional information about the server. It is conceivable that
   additional information of this sort may be of assistance in
   circumventing server security. The advantages of provides additional
   information must always be weighed against the security implications
   of doing so.

8. References

   [RFC-821]
       Postel, J., "Simple Mail Transfer Protocol", RFC 821,
       August, 1982. (August, 1982).

   [RFC-1869]
       Rose, M., Stefferud, E., Crocker, C., Klensin, J., Freed,
       N., "SMTP Service Extensions", RFC 1869, November, 1995.

   [RFC-1893]
       Vaudreuil, G., "Enhanced Mail System Status Codes", RFC
       1893, January, 1996.

   [RFC-1894]
       Moore, K., Vaudreuil, G., "An Extensible Message Format
       for Delivery Status Notifications", RFC 1894, January,
       1996.

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