           A Registry for SMTP Enhanced Mail System Status Codes

Status of This Memo

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   improvements. Distribution of this memo is unlimited.

Abstract

   The specification for enhanced mail system status codes, RFC 3463,
   establishes a new code model and lists a collection of status codes.
   While it anticipated that more codes would be added over time, it did
   not provide an explicit mechanism for registering and tracking those
   codes. This document specifies an IANA registry for mail system
   enhanced status codes, and initializes that registry with the codes
   so far established in published standards-track documents, as well as
   other codes that have become established in the industry.

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1. Introduction

   Enhanced Status Codes for SMTP were first defined in [RFC1893], which
   was subsequently replaced by [RFC3463]. While it anticipated that
   more codes would be added over time (see section 2 of [RFC3463]), it
   did not provide an explicit mechanism for registering and tracking
   those codes. Since then, various RFCs have been published and
   internet drafts proposed that define additional status codes.
   However, without an IANA registry, conflicts in definitions have
   begun to appear.

   This RFC defines such an IANA registry and was written to help
   prevent further conflicts from appearing in the future. It
   initializes the registry with the established standards-track
   enhanced status codes from [RFC3463], [RFC3886], [RFC4468], and
   [RFC4954]. In addition, this document adds several codes to the
   registry that were established by various internet drafts and have
   come into common use, despite the expiration of the documents
   themselves.

   As specified in [RFC3463], an enhanced status code consists of a
   three-part code, with each part being numeric and separated by a
   period character. The three portions are known as the class sub-
   code, the subject sub-code, and the detail sub-code. In the tables,
   a wildcard for the class sub-code is represented by an X, a wildcard
   for a subject sub-code is represented by an XXX, and a wildcard for a
   detail sub-code is represented by a YYY. For example, 3.XXX.YYY has
   an unspecified subject sub-code and an unspecified status code, and
   X.5.0 is has an unspecified class sub-code. (This is a change from
   [RFC3463], which uses XXX for both the subject sub-code and detail
   sub-code wildcards.)

2. IANA Considerations

2.1. SMTP Enhanced Status Codes Registry

   IANA has created the registry "SMTP Enhanced Status Codes". The SMTP
   Enhanced Status Codes registry will have three tables:

   o Class Sub-Codes
      Each of the entries in this table represent class sub-codes and
      all have an unspecified subject sub-code and an unspecified detail
      sub-code.

   o Subject Sub-Codes
      Each of the entries in this table represent subject sub-codes and
      all have an unspecified class sub-code and an unspecified detail
      sub-code.

   o Enumerated Status Codes
      Each of the entries in this table represent the combination of a
      subject sub-code and a detail sub-code. All entries will have an
      unspecified class sub-code, a specified subject sub-code, and a
      specified detail sub-code.

   Each entry in the tables will include the following. (The sub-code
   tables will not have the Associated Basic Status Code entries.)

   Code: The status code. For example,
                                3.XXX.YYY is a class sub-code with an
                                unspecified subject sub-code and an
                                unspecified detail sub-code, and X.5.0
                                is an enumerated status code with an
                                unspecified class sub-code.

   Summary: or Sample Text: For class and subject sub-codes, this
                                is the summary of the use for the sub-
                                code shown in section 2 of [RFC3463].
                                For enumerated status codes, this is an
                                example of a message that might be sent
                                along with the code.

   Associated Basic Status Code: For enumerated status codes, the basic
                                status code(s) of [RFC2821] with which
                                it is usually associated. This may
                                also have a value such as "Any" or "Not
                                given". NOTE: This is a non-exclusive
                                list. In particular, the entries that
                                list some basic status codes for an
                                Enhanced Status Code might allow for
                                other basic status codes, while the
                                entries denoted "Not given" can be
                                filled in by updating the IANA registry
                                through updates to this document or at
                                the direction of the IESG.

   Description: A short description of the code.

   Reference: A reference to the document in which
                                the code is defined. This reference
                                should note whether the relevant
                                specification is standards-track, best
                                current practice, or neither, using one
                                of "(Standards track)", "(Best current
                                practice)" or "(Not standards track)".

   Submitter: The identity of the submitter, usually
                                   the document author.

   Change Controller: The identity of the change controller
                                   for the specification. This will be
                                   "IESG" in the case of IETF-produced
                                   documents.

   An example of an entry in the enumerated status code table would be:

   Code: X.0.0
   Sample Text: Other undefined Status
   Associated basic status code: Any
   Description: Other undefined status is the only undefined
                         error code. It should be used for all errors for
                         which only the class of the error is known.
   Reference: RFC 3463 (Standards track)
   Submitter: G. Vaudreuil
   Change controller: IESG.

2.2. Review Process for New Values

   Entries in this registry are expected to follow the "Specification
   Required" model ([RFC5226]) although, in practice, most entries are
   expected to derive from standards-track documents. Non-standards-
   track documents that specify codes to be registered should be readily
   available. The principal purpose of this registry is to avoid
   confusion and conflicts among different definitions or uses for the
   same code.

2.3. Registration Updates

   Standards-track registrations may be updated if the relevant
   standards are updated as a consequence of that action. Non-
   standards-track entries may be updated by the listed change
   controller. Only the entry's short description or references may be
   modified in this way, not the code or associated text. In
   exceptional cases, any aspect of any registered entity may be updated
   at the direction of the IESG (for example, to correct a conflict).

2.4. Initial Values

   The initial values for the class and subject sub-code tables are to
   be populated from section 2 of [RFC3463]. Specifically, these are
   the values for 2.XXX.YYY, 4.XXX.YYY, and 5.XXX.YYY for the Class Sub-
   Code table, and the values X.0.YYY, X.1.YYY, X.2.YYY, X.3.YYY,
   X.4.YYY, X.5.YYY, X.6.YYY, and X.7.YYY for the Subject Sub-Code
   table. The code, sample text, and description for each entry are to
   be taken from [RFC3463]. Each entry is to use [RFC3463] as the
   reference, submitted by G. Vaudreuil, and change controlled by the
   IESG. There are no associated detail sub-code values for the class
   and subject sub-code tables.

   The initial values for the Enumerated Status Code table is to be
   populated from:

   1. sections 3.1 through 3.8 of [RFC3463], (X.0.0, X.1.0 through
       X.1.8, X.2.0 through X.2.4, X.3.0 through X.3.5, X.4.0 through
       X.4.7, X.5.0 through X.5.5, X.6.0 through X.6.5, and X.7.0
       through X.7.7),

   2. section 3.3.4 of [RFC3886] (X.1.9),

   3. X.6.6 found in section 5 of [RFC4468], (but not X.7.8 found in
       the same section),

   4. and X.5.6, X.7.8, X.7.9, X.7.11, and X.7.12, found in section 6
       of [RFC4954] (using the text from X.5.6, 5.7.8, 5.7.9, 5.7.11,
       and 4.7.12).

   Each entry is to be designated as defined in the corresponding RFC,
   submitted by the corresponding RFC author, and change controlled by
   the IESG. Each of the above RFCs is a standards-track document.

   The initial values for the Associated Basic Status Code for each of
   the above initial enhanced status codes is given in the following
   table.

   As noted above, this table is incomplete. In particular, the entries
   that have some basic status codes might allow for other detail sub-
   status codes, while the entries denoted "Not given" can be filled in
   by updating the IANA registry through updates to this document or at
   the direction of the IESG.

Enh. Status Code	Assoc. Basic Status Code	Enh. Status Code	Assoc. Basic Status Code	Enh. Status Code	Assoc. Basic Status Code
X.0.0	Any	X.1.0	Not given	X.1.1	451, 550
X.1.2	Not given	X.1.3	501	X.1.4	Not given
X.1.5	250	X.1.6	Not given	X.1.7	Not given
X.1.8	451, 501	X.1.9	Not given	X.2.0	Not given
X.2.1	Not given	X.2.2	552	X.2.3	552
X.2.4	450, 452	X.3.0	221, 250, 421, 451, 550, 554	X.3.1	452
X.3.2	453	X.3.3	Not given	X.3.4	552, 554
X.3.5	Not given	X.4.0	Not given	X.4.1	451
X.4.2	421	X.4.3	451, 550	X.4.4	Not given
X.4.5	451	X.4.6	Not given	X.4.7	Not given
X.5.0	220, 250, 251, 252, 253, 451, 452, 454, 458, 459, 501, 502, 503, 554	X.5.1	430, 500, 501, 503, 530, 550, 554, 555	X.5.2	500, 501, 502, 550, 555
X.5.3	451	X.5.4	451, 501, 502, 503, 504, 550, 555	X.5.5	Not given
X.5.6	500	X.6.0	Not given	X.6.1	Not given
X.6.2	Not given	X.6.3	554	X.6.4	250
X.6.5	Not given	X.6.6	554	X.7.0	220, 235, 450, 454, 500, 501, 503, 504, 530, 535, 550

X.7.1	451, 454,	X.7.2	550	X.7.3	Not given
	502, 503,				
	533, 550, 551				
X.7.4	504	X.7.5	Not given	X.7.6	Not given
X.7.7	Not given	X.7.8	535, 554	X.7.9	534
X.7.10	523	X.7.11	524, 538	X.7.12	422, 432
X.7.13	525	X.7.14	535, 554		

                               Table 1

   The following additional definitions have been registered in the
   enumerated status code table. These entries have been used in the
   industry without any published specification.

   Code: X.7.10
   Sample Text: Encryption Needed
   Associated basic status code: 523
   Description: This indicates that an external strong privacy
                          layer is needed in order to use the requested
                          authentication mechanism. This is primarily
                          intended for use with clear text authentication
                          mechanisms. A client that receives this may
                          activate a security layer such as TLS prior to
                          authenticating, or attempt to use a stronger
                          mechanism.
   Reference: RFC 5248 (Best current practice)
   Submitter: T. Hansen, J. Klensin
   Change controller: IESG

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   Code:                 X.7.13
   Sample Text:          User Account Disabled
   Associated basic status code:  525
   Description:          Sometimes a system administrator will have to
                         disable a user's account (e.g., due to lack of
                         payment, abuse, evidence of a break-in attempt,
                         etc.).  This error code occurs after a successful
                         authentication to a disabled account.  This
                         informs the client that the failure is permanent
                         until the user contacts their system
                         administrator to get the account re-enabled.  It
                         differs from a generic authentication failure
                         where the client's best option is to present the
                         passphrase entry dialog in case the user simply
                         mistyped their passphrase.
   Reference:            RFC 5248 (Best current practice)
   Submitter:            T. Hansen, J. Klensin
   Change controller:    IESG


   Code:                 X.7.14
   Sample Text:          Trust relationship required
   Associated basic status code:  535, 554
   Description:          The submission server requires a configured trust
                         relationship with a third-party server in order
                         to access the message content.  This value
                         replaces the prior use of X.7.8 for this error
                         condition, thereby updating [RFC4468].
   Reference:            RFC 5248 (Best current practice)
   Submitter:            T. Hansen, J. Klensin
   Change controller:    IESG
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3. Security Considerations

   As stated in [RFC1893], use of enhanced status codes may disclose
   additional information about how an internal mail system is
   implemented beyond that available through the SMTP status codes.

   Many proposed additions to the response code list are security
   related. Having these registered in one place to prevent collisions
   will improve their value. Security error responses can leak
   information to active attackers (e.g., the distinction between "user
   not found" and "bad password" during authentication). Documents
   defining security error codes should make it clear when this is the
   case so SMTP server software subject to such threats can provide
   appropriate controls to restrict exposure.

4. Acknowledgements

   While the need for this registry should have become clear shortly
   after [RFC3463] was approved, the growth of the code table through
   additional documents and work done as part of email
   internationalization and [RFC2821] updating efforts made the
   requirement much more clear. The comments of the participants in
   those efforts are gratefully acknowledged, particularly the members
   of the ietf-smtp@imc.org mailing list. Chris Newman and Randy
   Gellens provided useful comments and some text for early versions of
   the document.

5. References

5.1. Normative References

   [RFC2821] Klensin, J., "Simple Mail Transfer Protocol", RFC 2821,
              April 2001.

   [RFC3463] Vaudreuil, G., "Enhanced Mail System Status Codes",
              RFC 3463, January 2003.

   [RFC3886] Allman, E., "An Extensible Message Format for Message
              Tracking Responses", RFC 3886, September 2004.

   [RFC4468] Newman, C., "Message Submission BURL Extension", RFC 4468,
              May 2006.

   [RFC4954] Siemborski, R. and A. Melnikov, "SMTP Service Extension
              for Authentication", RFC 4954, July 2007.

5.2. Informative References

   [RFC1893] Vaudreuil, G., "Enhanced Mail System Status Codes",
              RFC 1893, January 1996.

   [RFC5226] Narten, T. and H. Alvestrand, "Guidelines for Writing an
              IANA Considerations Section in RFCs", BCP 26, RFC 5226,
              May 2008.

Authors' Addresses

   Tony Hansen
   AT&T Laboratories
   200 Laurel Ave.
   Middletown, NJ 07748
   USA

   EMail: tony+mailesc@maillennium.att.com

   John C Klensin
   1770 Massachusetts Ave, Ste 322
   Cambridge, MA 02140
   USA

   Phone: +1 617 245 1457
   EMail: john+ietf@jck.com

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