

**Internet Standards Documentation (ISDs) - Examples**  
**draft-ietf-newtrk-sample-isd-00.txt**

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Abstract

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## **1. Introduction**

The proposal to define what is actually an IETF standard and to create ways of explaining and qualifying its applicability and relationship to other documents has been described in an Internet-Draft, "Internet Standards Documentation (ISDs)" [[ISD-definition](#)]. This document provides some examples of what such documents might look like. It includes a very complicated example (SMTP) and a fairly simple one (the IMAP/POP authorization specification of [RFC 2195](#) [[RFC2195](#)], which has not progressed beyond Proposed Standard).

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Let the quibbling begin !

## **2. Observations on the Base Document**

As expected, constructing examples such as there was a learning experience. Even for something as complex as SMTP and its extensions, putting together a skeleton ISD took only a couple of hours. It does require some familiarity with the relevant protocols; it would probably not be practical for someone without that familiarity to put something together without a lot of work.

The classifications, groupings, and comments below are probably controversial but, in some respects, that is exactly the point: if we aren't able to agree on grouping of these things, they should either remain separate or we should be explicit about our disagreements. Of course, as new documents and specifications are developed within the ISD context, authors, editors, and WGs should be expected to make recommendations about grouping.

### **3. Example 1: The Simple Mail Transfer Protocol**

#### **3.1 SMTP Comments**

SMTP was chosen because it is one of the more heavily-used protocols on the Internet and because the notion of a "complete implementation" is both controversial and requires reference to a significant number of documents. The effort, with [RFC 2821](#) [[RFC2821](#)], to clean up the multiple-document situation was a success in some respects, but the large number of extensions which that document did not (or could not) address have put us back into a situation as serious as the one we had before the 2821/2822 ("DRUMS") effort started.

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#### **3.2 ISD xxxx: Simple Mail Transfer Protocol, SMTP**

Abstract: The Simple Mail Transfer Protocol, more commonly known as just "SMTP", is the Internet's primary standard protocol for the transport of electronic mail between hosts. The long-time standard version was described in [RFC 821](#), which was updated or clarified in several documents. Revisions and extensions during the 1990s updated the original specification with an extension mechanism and a number of clarifications, creating what is sometimes described as "modern" or "contemporary" SMTP. This ISD specifies the SMTP protocol as it is now understood and provides a collection of references to extensions that are not, themselves, part of the standard.

##### **3.2.1 Documents making up the Standard, STD10**

###### **RFC2821**

Simple Mail Transfer Protocol. J. Klensin, Ed.. April 2001.  
(Status: PROPOSED STANDARD)

This is the current base specification for SMTP. Some earlier implementations still legitimately claim conformance only to [RFC821](#), which represents an earlier state of SMTP implementations. All implementations that are fully-conformant to [RFC 821](#) and the standards-track documents that qualified, clarified, or updated it, should be compatible with [RFC 2821](#) and this standard, even though they do not support the newer features. [RFC 2821](#) makes [RFC0821](#), [RFC0974](#), and [RFC1869](#) obsolete; those documents are



described in the "history" section below ([Section 3.2.7](#)).

Verified errata:

- \* [Section 4.5.5](#) contains a doubled instance of the word "with".
- \* In [Section 3.7](#), the uses of the word "their" in the sentence "Many historical problems with their interpretation have made their use undesirable." refers to source routes, not MX records.

Other putative errata: The RFC Editor has a list of outstanding errata for [RFC2821](#) which, other than those above, are unverified. These can be found by entering the RFC number into the "errata" search page located from <http://www.rfc-editor.org/>.

### **[3.2.2](#) Additional Relevant Documents**

#### **[RFC3463](#)**

Enhanced Mail System Status Codes. G. Vaudreuil. January 2003.  
Status: DRAFT STANDARD

This document specifies a code system for providing more specificity than the codes specified (and required) by [RFC 2821](#) and the older 821. The codes are used in addition to the classical codes, but do not replace them. Their generation in SMTP server (receiver) implementations is strongly encouraged; SMTP clients can take advantage of them to report additional information to users. Some of the extensions listed below require the use of these codes (see [RFC 2034](#) in particular). The document was updated by [RFC3886](#), which specifies some additional codes. Some of the extensions below also specify additional codes.

#### **[RFC3848](#)**

ESMTP and LMTP Transmission Types Registration. C. Newman. July 2004.

Status: PROPOSED STANDARD

This document describes additional transmission type codes for use in the Received: header field inserted by SMTP servers.

[[Note in draft: Probably a separate ISD with a cross-reference.]]

### **[3.2.3](#) Extensions to the SMTP Base Specification**

#### **[RFC1652](#)**

SMTP Service Extension for 8bit-MIMEtransport. J. Klensin, N. Freed, M. Rose, E. Stefferud, D. Crocker. July 1994.

Status: DRAFT STANDARD)

This extension is required if 8-bit characters are to be transported, without additional encoding (e.g., with a MIME content-transfer-encoding) in SMTP. It is widely implemented and supported and has been found, for obvious reasons, to be useful. Its "downgrading" options are less widely supported, but become gradually less important as the mechanism is deployed.





Posted errata: None

#### [RFC1870](#)

SMTP Service Extension for Message Size Declaration. J. Klensin, N. Freed, K. Moore. November 1995.

Status: STANDARD)

This is a full standard and even more widely supported than the 8-Bit-MIME specification discussed above. Support and implementation are strongly recommended.

Posted errata: None

#### [RFC2920](#)

SMTP Service Extension for Command Pipelining. N. Freed. September 2000.

Status: STANDARD)

Posted errata: None

[[Note in draft: This is a full standard, currently STD0060. I think it is really an optional to implement, but commonly deployed and recommended, part of SMTP.]]

#### [RFC2034](#)

SMTP Service Extension for Returning Enhanced Error Codes. N. Freed. October 1996.

Status: PROPOSED STANDARD

Provides a specific model for use of enhanced reply codes (see above).

#### [RFC2554](#)

SMTP Service Extension for Authentication. J. Myers. March 1999.

Status: PROPOSED STANDARD)

This is the base "SMTP AUTH" specification, now supported by most clients and servers and required in several environments.

[[Note in draft: Something needs to be said about the SASL efforts here, see discussion in [Section 4](#)]].

#### [RFC3207](#)

SMTP Service Extension for Secure SMTP over Transport Layer Security. P. Hoffman. February 2002.

Status: PROPOSED STANDARD

#### [RFC3030](#)

SMTP Service Extensions for Transmission of Large and Binary MIME Messages. G. Vaudreuil. December 2000.

Status: PROPOSED STANDARD

Putative errata: The RFC Editor has a list of outstanding errata for [RFC3030](#) that are unverified. These can be found by entering the RFC number into the "errata" search page located from <http://www.rfc-editor.org/>.

### **[3.2.4](#) Related ISDs (temporary)**

The following documents or document sets should be turned into separate ISDs and then referenced from some sort of "additional



references" section here.

#### SMTP Delivery Status Notifications (DSN)

The specification of delivery status notifications for email consist of a number of separate documents, and are covered in a separate definition, ISD zzzz.

[[Note in draft: or this author got too lazy. RFCs 3461, 3798, 3885, 2852, and probably some others, plus a discussion of the DSN message format, which probably also belongs in the same ISD. The message tracking materials of [RFC 3885](#) and the additional notification format material in [RFC 3798](#) probably belong there too, or in yet another ISD.]]

#### SMTP and SPAM (SMTP-SPAM)

There are several different documents covering SMTP-based methods for spam control. These are covered in a separate definition, ISD zyzy.

[[Note in draft: or this author got too lazy. RFCs 2505 and 3865 probably belong in separate ISDs since neither depends in any way on the other for implementation.]]

#### On-demand relay, delivery, and alternatives to TURN

There are several different documents covering methods by which a client machine, or a third party, can start delivery of a message queue from an SMTP server. These are covered in a separate definition, ISD yzyz.

[[Note in draft: or this author got too lazy. RFCs 1985 and 2645 probably belong in separate ISDs since neither depends in any way on the other for implementation.]]

### [3.2.5](#) Experimental Extensions

These extensions are included for reference and information only. The IETF has not concluded that they are ready for standards-track treatment and deficiencies may be known but not documented formally.

#### [RFC1830](#)

SMTP Service Extensions for Transmission of Large and Binary MIME Messages. G. Vaudreuil. August 1995. (Obsoleted by [RFC3030](#))  
Status: EXPERIMENTAL)

#### [RFC1845](#)

SMTP Service Extension for Checkpoint/Restart. D. Crocker, N. Freed, A. Cargille. September 1995.  
Status: EXPERIMENTAL)

### [3.2.6](#) Comments on Related Documents

This section discusses some documents that preceed the first ISD publication of a document describing this standard, so dates are not given.



[RFC0821](#)

Simple Mail Transfer Protocol. J. Postel. Aug-01-1982.  
(Obsoletes [RFC0788](#)) (Obsoleted by [RFC2821](#)) (Also STD0010).  
Superseded in practice by [RFC 2821](#), as described above.

[RFC0974](#)

Mail routing and the domain system. C. Partridge. Jan-01-1986.  
This document was incorporated into SMTP and made mandatory by [RFC 1123](#). Its substance has been incorporated into [RFC 2821](#) and the document itself classified as historic.

[RFC1869](#)

SMTP Service Extensions. J. Klensin, N. Freed, M. Rose, E. Stefferud, D. Crocker. November 1995.  
(Status: STANDARD).  
This document and its predecessors defined the extension mechanism for SMTP and imposed the requirement that fully-conforming SMTP implementations support those mechanisms. All of its functional capabilities were incorporated into [RFC 2821](#).

[RFC1047](#)

Duplicate messages and SMTP. C. Partridge. Feb-01-1988.  
(Status: UNKNOWN)  
The substance of this document is believed to have been incorporated into [RFC 2821](#).

[RFC1090](#)

SMTP on X.25. R. Ullmann. Feb-01-1989.  
(Status: UNKNOWN)  
This protocol is generally considered obsolete. X.25 itself is falling into disuse and most use of SMTP in X.25 environments involves a TCP/IP transport over X.25, then running SMTP normally over TCP.  
[[Note in draft to Cruft Committee (see [[NewtrkHistoric](#)]), if any: this one is low-hanging fruit.]]

[RFC1428](#)

Transition of Internet Mail from Just-Send-8 to 8bit-SMTP/MIME. G. Vaudreuil. February 1993.  
Status: INFORMATIONAL  
This document provided important transitional information but, a decade later, the transitional problem appears to have been largely solved and the consensus among most SMTP implementors and implementations is that "just send 8" implementations are broken.

[RFC1846](#)

SMTP 521 Reply Code. A. Durand, F. Dupont. September 1995.  
Status: EXPERIMENTAL  
The IETF, in the process of constructing [RFC 2821](#), reviewed this model and proposal and decided to not incorporate exactly what it proposed. [RFC 2821](#) is authoritative on the 521 reply code.

### [3.2.7](#) History and Tracking Information

...To be supplied...

[[Note in draft: A discussion of just what belongs here, e.g., dates and the nature of the change, or complete previous information of documents that have been removed/obsoleted as Scott's "standards process" document does, would be helpful.]]

#### **[4.](#) Example 2: POP/IMAP Authentication with CRAM-MD5**

##### **[4.1](#) POP/AUTH CRAM-MD5 Comments**

This one ought to be a simple case, since it is associated with only a single current document (and one that it quickly rendered obsolete), but it raises some interesting issues. One is how to construct a name/acronym, since this is most commonly known by names that don't appear in the title of the RFC. Another is what, if anything to say about the effort to supercede this with a SASL mechanism: when that is done, the ISD document will be an appropriate place to note and describe the relationship but, until then...

##### **[4.2](#) ISD yyyy: POP/IMAP Authentication with CRAM-MD5, CRAM-MD5**

Abstract: While IMAP4 supports a number of strong authentication mechanisms as described in [RFC 1731](#), it lacks any mechanism that neither passes cleartext, reusable passwords across the network nor requires either a significant security infrastructure or that the mail server update a mail-system-wide user authentication file on each mail access. This specification provides a simple challenge-response authentication protocol that is suitable for use with IMAP4. Since it utilizes Keyed-MD5 digests and does not require that the secret be stored in the clear on the server, it may also constitute an improvement on APOP for POP3 use as specified in [RFC 1734](#).

RFC Reference: [RFC 2195](#) IMAP/POP AUTHorize Extension for Simple Challenge/Response. J. Klensin, R. Catoe, P. Krumviede. September 1997.

Status: PROPOSED STANDARD

This protocol is widely supported in both clients and servers and is required by a number of major ISPs.

## **5. Security Considerations and Other Boilerplate**

As discussssed in [[ISD-definition](#)], security considerations and similar material may not be appropriate for ISDs, or may apply to individual components that make up the ISD rather than the standard in total. See that document for further discussion.



## **6. References**

### **6.1 Normative References**

[ISD-definition]

Klensin, J. and J. Loughney, "Internet Standards Documentation (ISDs)",  
[draft-ietf-newtrk-repurposing-isd-00](#) (work in progress),  
September 2004.

[RFC2195] Klensin, J., Catoe, R. and P. Krumviede, "IMAP/POP AUTHorize Extension for Simple Challenge/Response", [RFC 2195](#), September 1997.

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

### **6.2 Informative References**

[NewtrkHistoric]

Alvestrand, H. and E. Lear, "Getting rid of the cruft: A procedure to deprecate old standards",  
[draft-ietf-newtrk-cruft-00](#) (work in progress), October 2004.

#### Author's Address

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

Phone: +1 617 491 5735  
EMail: [john-ietf@jck.com](mailto:john-ietf@jck.com)

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Simple Mail Transfer Protocol. J. Klensin, Ed.. April 2001.  
(Status: PROPOSED STANDARD)

This is the current base specification for SMTP. Some earlier implementations still legitimately claim conformance only to [RFC821](#), which represents an earlier state of SMTP implementations. All implementations that are fully-conformant to [RFC 821](#) and the standards-track documents that qualified, clarified, or updated it, should be compatible with [RFC 2821](#) and this standard, even though they do not support the newer features. [RFC 2821](#) makes [RFC0821](#), [RFC0974](#), and [RFC1869](#) obsolete; those documents are





described in the "history" section below ([Section 3.2.7](#)).

Verified errata:

- \* [Section 4.5.5](#) contains a doubled instance of the word "with".
- \* In [Section 3.7](#), the uses of the word "their" in the sentence "Many historical problems with their interpretation have made their use undesirable." refers to source routes, not MX records.

Other putative errata: The RFC Editor has a list of outstanding errata for [RFC2821](#) which, other than those above, are unverified. These can be found by entering the RFC number into the "errata" search page located from <http://www.rfc-editor.org/>.

### **[3.2.2](#) Additional Relevant Documents**

#### **[RFC3463](#)**

Enhanced Mail System Status Codes. G. Vaudreuil. January 2003.  
Status: DRAFT STANDARD

This document specifies a code system for providing more specificity than the codes specified (and required) by [RFC 2821](#) and the older 821. The codes are used in addition to the classical codes, but do not replace them. Their generation in SMTP server (receiver) implementations is strongly encouraged; SMTP clients can take advantage of them to report additional information to users. Some of the extensions listed below require the use of these codes (see [RFC 2034](#) in particular). The document was updated by [RFC3886](#), which specifies some additional codes. Some of the extensions below also specify additional codes.

#### **[RFC3848](#)**

ESMTP and LMTP Transmission Types Registration. C. Newman. July 2004.

Status: PROPOSED STANDARD

This document describes additional transmission type codes for use in the Received: header field inserted by SMTP servers.

[[Note in draft: Probably a separate ISD with a cross-reference.]]

### **[3.2.3](#) Extensions to the SMTP Base Specification**

#### **[RFC1652](#)**

SMTP Service Extension for 8bit-MIMEtransport. J. Klensin, N. Freed, M. Rose, E. Stefferud, D. Crocker. July 1994.

Status: DRAFT STANDARD)

This extension is required if 8-bit characters are to be transported, without additional encoding (e.g., with a MIME content-transfer-encoding) in SMTP. It is widely implemented and supported and has been found, for obvious reasons, to be useful. Its "downgrading" options are less widely supported, but become gradually less important as the mechanism is deployed.



Posted errata: None

#### [RFC1870](#)

SMTP Service Extension for Message Size Declaration. J. Klensin, N. Freed, K. Moore. November 1995.

Status: STANDARD)

This is a full standard and even more widely supported than the 8-Bit-MIME specification discussed above. Support and implementation are strongly recommended.

Posted errata: None

#### [RFC2920](#)

SMTP Service Extension for Command Pipelining. N. Freed. September 2000.

Status: STANDARD)

Posted errata: None

[[Note in draft: This is a full standard, currently STD0060. I think it is really an optional to implement, but commonly deployed and recommended, part of SMTP.]]

#### [RFC2034](#)

SMTP Service Extension for Returning Enhanced Error Codes. N. Freed. October 1996.

Status: PROPOSED STANDARD

Provides a specific model for use of enhanced reply codes (see above).

#### [RFC2554](#)

SMTP Service Extension for Authentication. J. Myers. March 1999.

Status: PROPOSED STANDARD)

This is the base "SMTP AUTH" specification, now supported by most clients and servers and required in several environments.

[[Note in draft: Something needs to be said about the SASL efforts here, see discussion in [Section 4](#)]].

#### [RFC3207](#)

SMTP Service Extension for Secure SMTP over Transport Layer Security. P. Hoffman. February 2002.

Status: PROPOSED STANDARD

#### [RFC3030](#)

SMTP Service Extensions for Transmission of Large and Binary MIME Messages. G. Vaudreuil. December 2000.

Status: PROPOSED STANDARD

Putative errata: The RFC Editor has a list of outstanding errata for [RFC3030](#) that are unverified. These can be found by entering the RFC number into the "errata" search page located from <http://www.rfc-editor.org/>.

### **[3.2.4](#) Related ISDs (temporary)**

The following documents or document sets should be turned into separate ISDs and then referenced from some sort of "additional



references" section here.

#### SMTP Delivery Status Notifications (DSN)

The specification of delivery status notifications for email consist of a number of separate documents, and are covered in a separate definition, ISD zzzz.

[[Note in draft: or this author got too lazy. RFCs 3461, 3798, 3885, 2852, and probably some others, plus a discussion of the DSN message format, which probably also belongs in the same ISD. The message tracking materials of [RFC 3885](#) and the additional notification format material in [RFC 3798](#) probably belong there too, or in yet another ISD.]]

#### SMTP and SPAM (SMTP-SPAM)

There are several different documents covering SMTP-based methods for spam control. These are covered in a separate definition, ISD zyzy.

[[Note in draft: or this author got too lazy. RFCs 2505 and 3865 probably belong in separate ISDs since neither depends in any way on the other for implementation.]]

#### On-demand relay, delivery, and alternatives to TURN

There are several different documents covering methods by which a client machine, or a third party, can start delivery of a message queue from an SMTP server. These are covered in a separate definition, ISD yzyz.

[[Note in draft: or this author got too lazy. RFCs 1985 and 2645 probably belong in separate ISDs since neither depends in any way on the other for implementation.]]

### [3.2.5](#) Experimental Extensions

These extensions are included for reference and information only. The IETF has not concluded that they are ready for standards-track treatment and deficiencies may be known but not documented formally.

#### [RFC1830](#)

SMTP Service Extensions for Transmission of Large and Binary MIME Messages. G. Vaudreuil. August 1995. (Obsoleted by [RFC3030](#))  
Status: EXPERIMENTAL)

#### [RFC1845](#)

SMTP Service Extension for Checkpoint/Restart. D. Crocker, N. Freed, A. Cargille. September 1995.  
Status: EXPERIMENTAL)

### [3.2.6](#) Comments on Related Documents

This section discusses some documents that preceed the first ISD publication of a document describing this standard, so dates are not given.



[RFC0821](#)

Simple Mail Transfer Protocol. J. Postel. Aug-01-1982.  
(Obsoletes [RFC0788](#)) (Obsoleted by [RFC2821](#)) (Also STD0010).  
Superseded in practice by [RFC 2821](#), as described above.

[RFC0974](#)

Mail routing and the domain system. C. Partridge. Jan-01-1986.  
This document was incorporated into SMTP and made mandatory by [RFC 1123](#). Its substance has been incorporated into [RFC 2821](#) and the document itself classified as historic.

[RFC1869](#)

SMTP Service Extensions. J. Klensin, N. Freed, M. Rose, E. Stefferud, D. Crocker. November 1995.  
(Status: STANDARD).  
This document and its predecessors defined the extension mechanism for SMTP and imposed the requirement that fully-conforming SMTP implementations support those mechanisms. All of its functional capabilities were incorporated into [RFC 2821](#).

[RFC1047](#)

Duplicate messages and SMTP. C. Partridge. Feb-01-1988.  
(Status: UNKNOWN)  
The substance of this document is believed to have been incorporated into [RFC 2821](#).

[RFC1090](#)

SMTP on X.25. R. Ullmann. Feb-01-1989.  
(Status: UNKNOWN)  
This protocol is generally considered obsolete. X.25 itself is falling into disuse and most use of SMTP in X.25 environments involves a TCP/IP transport over X.25, then running SMTP normally over TCP.  
[[Note in draft to Cruft Committee (see [[NewtrkHistoric](#)]), if any: this one is low-hanging fruit.]]

[RFC1428](#)

Transition of Internet Mail from Just-Send-8 to 8bit-SMTP/MIME. G. Vaudreuil. February 1993.  
Status: INFORMATIONAL  
This document provided important transitional information but, a decade later, the transitional problem appears to have been largely solved and the consensus among most SMTP implementors and implementations is that "just send 8" implementations are broken.

[RFC1846](#)

SMTP 521 Reply Code. A. Durand, F. Dupont. September 1995.  
Status: EXPERIMENTAL  
The IETF, in the process of constructing [RFC 2821](#), reviewed this model and proposal and decided to not incorporate exactly what it proposed. [RFC 2821](#) is authoritative on the 521 reply code.

### **3.2.7 History and Tracking Information**

...To be supplied...

[[Note in draft: A discussion of just what belongs here, e.g., dates and the nature of the change, or complete previous information of documents that have been removed/obsoleted as Scott's "standards process" document does, would be helpful.]]



#### **[4.](#) Example 2: POP/IMAP Authentication with CRAM-MD5**

##### **[4.1](#) POP/AUTH CRAM-MD5 Comments**

This one ought to be a simple case, since it is associated with only a single current document (and one that it quickly rendered obsolete), but it raises some interesting issues. One is how to construct a name/acronym, since this is most commonly known by names that don't appear in the title of the RFC. Another is what, if anything to say about the effort to supercede this with a SASL mechanism: when that is done, the ISD document will be an appropriate place to note and describe the relationship but, until then...

##### **[4.2](#) ISD yyyy: POP/IMAP Authentication with CRAM-MD5, CRAM-MD5**

Abstract: While IMAP4 supports a number of strong authentication mechanisms as described in [RFC 1731](#), it lacks any mechanism that neither passes cleartext, reusable passwords across the network nor requires either a significant security infrastructure or that the mail server update a mail-system-wide user authentication file on each mail access. This specification provides a simple challenge-response authentication protocol that is suitable for use with IMAP4. Since it utilizes Keyed-MD5 digests and does not require that the secret be stored in the clear on the server, it may also constitute an improvement on APOP for POP3 use as specified in [RFC 1734](#).

RFC Reference: [RFC 2195](#) IMAP/POP AUTHorize Extension for Simple Challenge/Response. J. Klensin, R. Catoe, P. Krumviede. September 1997.

Status: PROPOSED STANDARD

This protocol is widely supported in both clients and servers and is required by a number of major ISPs.

## **5. Security Considerations and Other Boilerplate**

As discussssed in [[ISD-definition](#)], security considerations and similar material may not be appropriate for ISDs, or may apply to individual components that make up the ISD rather than the standard in total. See that document for further discussion.

## **6. References**

### **6.1 Normative References**

[ISD-definition]

Klensin, J. and J. Loughney, "Internet Standards Documentation (ISDs)",  
[draft-ietf-newtrk-repurposing-isd-00](#) (work in progress),  
September 2004.

[RFC2195] Klensin, J., Catoe, R. and P. Krumviede, "IMAP/POP AUTHorize Extension for Simple Challenge/Response", [RFC 2195](#), September 1997.

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

### **6.2 Informative References**

[NewtrkHistoric]

Alvestrand, H. and E. Lear, "Getting rid of the cruft: A procedure to deprecate old standards",  
[draft-ietf-newtrk-cruft-00](#) (work in progress), October 2004.

#### Author's Address

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

Phone: +1 617 491 5735  
EMail: [john-ietf@jck.com](mailto:john-ietf@jck.com)

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