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**Signalling one-click functionality for list email headers
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Abstract

This document describes a method for signaling a one-click function for the list-unsubscribe email header field. The need for this arises out of the actuality that mail software sometimes fetches URLs in mail header fields, and thereby accidentally triggers unsubscriptions in the case of the list-unsubscribe header field.

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[1.](#) Introduction and Motivation

An [\[RFC2369\]](#) email header field can contain HTTPS [\[RFC7230\]](#) URIs. In a List-Unsubscribe header field the HTTPS URI is intended to unsubscribe the recipient of the email from the list. But anti-spam software often fetches all resources in mail header fields automatically, without any action by the user, and there is no mechanical way for a sender to tell a request made automatically by anti-spam software from one manually requested by a user. To prevent accidental unsubscriptions, senders return landing pages with a confirmation step to finish the unsubscribe request that a live user would recognize and act on, but an automated system would not. This makes the unsubscription process more complex than a single click.

Operators of broadcast marketing lists tend to be primarily concerned about deliverability of their mail: whether the mail is delivered to the recipients and how the messages are presented, e.g., whether in the primary inbox or in a junk folder. Many mail systems allow recipients to report mail as spam or junk, and mail from senders with a lot of junk reports often has poor deliverability. Hence the mailers want to make it as easy as possible for recipients to

unsubscribe, since the recipient's alternative to a difficult unsubscription process is to report mail from the sender as junk until it goes away.

Operators of recipient mail systems are aware that their users do not make a clear distinction between unsubscription and junk. In some cases they allow trustworthy mailers to request notification when their mail is reported as junk, so they can unsubscribe the recipient, but the process of identifying trustworthy mailers and notifying them does not scale well to large numbers of small mailers. This specification provides a way for recipient systems to notify the mailer automatically, using only information within the mail message, and without prearrangement. Some recipient systems might wish to send an unsubscription notice to mailers whenever a user reports a message as junk, or they might give the user the option to report and unsubscribe.

If a mail recipient is unsubscribing manually and the unsubscription process requires confirmation, the resulting web page is presented to the recipient who can then click the appropriate button. But when the unsubscribe action is combined with a MUA junk report, there is no direct user interaction with the mailer's web site. Similarly, if a mail system automatically unsubscribes recipient mailboxes that have been closed or abandoned, there can be no interaction with a user who is not present. In those cases, the unsubscription process has to work without manual intervention, and in particular without requiring that software attempt to interpret the contents of a confirmation page.

This document addresses this part of the problem, with an HTTPS POST action for mail receivers. Mail senders can distinguish this action from other unsubscribe requests and handle it as a one-click unsubscription without manual intervention by the mail recipient.

This document has several goals.

- o Allow email senders to signal that a [[RFC2369](#)] List-Unsubscribe header field has One-Click functionality.
- o Allow MUA users to unsubscribe from mailing lists in a familiar environment and without leaving the MUA context. A receiving system can process an unsubscription request in the background without further interaction, and know that it can be fully processed by the mail sender's system.

2. Definitions

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [[RFC2119](#)] when written in all capital letters.

3. Implementation

3.1. Mail senders

An mail sender that wishes to enable one-click unsubscribes places one List-Unsubscribe header field and one List-Unsubscribe-Post header field in the message. The List-Unsubscribe header field MUST contain one HTTPS URI. It MAY contain other non-HTTP/S URIs such as MAILTO:. The List-Unsubscribe-Post header contains key/value pairs needed by the mail sender, separated by ampersands. The list of key/value pairs MUST contain the pair "List-Unsubscribe=One-Click". There is no provision for continuing a List-Unsubscribe-Post header field, so the size of the of key/value pairs is limited by the maximum length of a line.

The combination of the URI in the List-Unsubscribe header and the POST arguments in the List-Unsubscribe-Post header MUST contain enough information to identify the mail recipient and the list from which the recipient is to be removed, so that the unsubscription process can complete automatically. In particular, One-click has no way to ask the user what address or from what list the user wishes to unsubscribe.

The URI and POST arguments SHOULD include an opaque identifier or other hard to forge component in addition to or instead of the plain-text names of the list and the subscriber. The server handling the unsubscription SHOULD verify that the hard to forge component is valid. This will deter attacks in which a malicious party sends spam with List-Unsubscribe links for a victim list, with the intention of causing list unsubscriptions from a victim list as a side effect of users reporting the spam.

The mail sender needs to provide the infrastructure to handle POST requests to the specified URI in the List-Unsubscribe header, and to handle the unsubscribe requests that its mail will provoke.

The One-Click action triggered by this URI SHOULD complete promptly and not burden the requester in an inappropriate way. The mail sender MUST NOT return an HTTPS redirect, since redirected POST actions have historically not worked reliably.

3.2. Mail receivers

A mail receiver that wants do a one-click unsubscription performs an HTTPS POST to the HTTPS URI in the List-Unsubscribe header and sends the content of the List-Unsubscribe-Post header as the request body.

The POST content SHOULD be sent as "multipart/form-data" [[RFC7578](#)] and MAY be sent as "application/x-www-form-urlencoded". These encodings are the ones used by web browsers when sending forms. The target of the POST action is the same as or similar to the one in the GET action for a manual unsubscription, so this is intended to allow the same server code to handle both.

The mail receiver MUST NOT perform a POST on the the HTTPS URI without user consent. When and how the user consent is obtained is not part of this specification.

4. Additional Requirements

The email needs at least one valid authentication identifier. In this version of the specification the only supported identifier type is DKIM [[RFC6376](#)]. Hence senders MUST apply at least one valid DKIM signature to the message.

The List-Unsubscribe and List-Unsubscribe-Post headers MUST be covered by the signature and included in the "h=" tag of a valid DKIM-Signature header field.

5. Header Syntax

The following ABNF imports fields, WSP, and CRLF from [[RFC5322](#)]. It imports ALPHA and DIGIT from [[RFC5234](#)].

```
fields /= list-unsubscribe-post
```

```
ldh = ALPHA 0*(ALPHA | DIGIT | "-")
```

```
list-unsubscribe-post = "List-Unsubscribe-Post:" 0*1WSP postarg  
                        0*( "&" postarg) CRLF
```

```
postarg = ALPHA 0*ldh "=" freetext
```

```
freetext = 1*(%x20-%xfe)  
          ; space, ampersand, percent, equal sign, and non-ASCII characters  
          ; are percent encoded
```

The percent encoding for freetext is as described in [section 2 of \[RFC7578\]](#).

6. IANA Considerations

IANA is requested to add a new entry to the Permanent Message Header Field Names registry.

Header field name: List-Unsubscribe-Post

Applicable protocol: mail

Status: standard

Author/Change controller: IETF

Specification document: this document

7. Examples

7.1. Simple

Header in Email

List-Unsubscribe: <<https://example.com/unsubscribe/opaquepart>>

List-Unsubscribe-Post: List-Unsubscribe=One-Click&recip=user@example.com

Resulting POST request

POST /unsubscribe/opaquepart HTTP/1.1

Host: example.com

Content-Type: application/x-www-form-urlencoded

Content-Length: 49

List-Unsubscribe=One-Click&recip=user@example.com

7.2. Complex

Header in Email

List-Unsubscribe: <<mailto:listrequest@example.com?subject=unsubscribe>>,
<<https://example.com/unsubscribe.html?opaque=123456789>>

List-Unsubscribe-Post: List-Unsubscribe=One-Click&recip=user@example.com

Resulting POST request

```
POST /unsubscribe.html?opaque=123456789 HTTP/1.1
Host: example.com
Content-Type: application/x-www-form-urlencoded
Content-Length: 49
```

```
List-Unsubscribe=One-Click&recip=user@example.com
```

7.3. Complex with multipart/form-data

Header in Email

```
List-Unsubscribe: <mailto:listrequest@example.com?subject=unsubscribe>,
  <https://example.com/unsubscribe.html?opaque=123456789>
List-Unsubscribe-Post: List-Unsubscribe=One-Click&recip=user@example.com
```

Resulting POST request

```
POST /unsubscribe.html?opaque=123456789 HTTP/1.1
Host: example.com
Content-Type: multipart/form-data; boundary=-----FormBoundaryjWmhtjORrn
Content-Length: 218
```

```
-----FormBoundaryjWmhtjORrn
Content-Disposition: form-data; name="List-Unsubscribe"
```

```
One-Click
-----FormBoundaryjWmhtjORrn
Content-Disposition: form-data; name="recip"
```

```
user@example.com
-----FormBoundaryjWmhtjORrn--
```

8. Security Considerations

The List-Unsubscribe-Post and/or List-Unsubscribe header can contain a plaintext or encoded version of the recipient address, but that address is usually also in the To: header. This specification allows anyone with access to a message to unsubscribe the recipient of the message, but that's typically the case with existing List-Unsubscribe, just with more steps.

A creative mailer could send spam with content intended to provoke large numbers of unsubscriptions, with suitably crafted headers to send POST requests with arbitrary contents to servers that perhaps don't want them. But it's been possible to provoke GET requests in a similar way for a long time (and much easier, due to spam filter

auto-fetches) so the chances of significantly increased annoyance seem low.

Since the mailer's server that receives the POST request cannot in general tell where the request coming from, the URI or POST arguments SHOULD contain an opaque identifier or other hard to forge component to identify the list and recipient address. That can ensure that the request originated from List-Unsubscribe and List-Unsubscribe-Post headers in a message the mailer sent.

9. Normative References

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- [RFC7578] Masinter, L., "Returning Values from Forms: multipart/form-data", [RFC 7578](#), DOI 10.17487/RFC7578, July 2015, <<http://www.rfc-editor.org/info/rfc7578>>.

Appendix A. Change Log

Remove this section before publication, please.

A.1. Changes from -06 to -07

added example with multipart/form-data encoding

A.2. Changes from -05 to -06

Add opaque parts to the security discussion. Editing changes, entities are now senders and receivers, MUSTage clarified.

A.3. Changes from -04 to -05

Reorganize first sections and add more background. Add ABNF. Add more security advice.

A.4. Changes from -03 to -04

Require HTTPS. More motivation.

A.5. Changes from -02 to -03

Describe motivation in intro. Clarify required DKIM. More paranoid scenarios.

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