   Displaying Downgraded Messages for Email Address Internationalization
              draft-fujiwara-eai-downgraded-display-00.txt

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Abstract

   This document describes how to display downgraded messages which
   originally contain internationalized E-mail addresses or
   internationalized header fields.

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1. **Introduction**

   The Email Address Internationalization (UTF8SMTP) extension document
   set [RFC4952] [I-D.ietf-eai-smtpext] [I-D.ietf-eai-utf8headers]
   [I-D.ietf-eai-dsn] expands Email address structure, syntax and Email
   header format. To avoid bouncing internationalized Email messages,
   the downgrading mechanism [I-D.ietf-eai-downgrade] converts an
   internationalized message to a traditional Email message when a
   server in the delivery path does not support the UTF8SMTP extension.
   The downgraded message is a traditional Email message, except the
   message has "Downgraded-" header fields.

   A perfect reverse-function of the downgrading does not exist because
   the encoding defined in [RFC2047] is not exactly reversible and
   Received header field downgrading may remove FOR clause information.
   The restoration of the downgrading should be done once at the final
   destination of the downgraded message such as MUAs or IMAP servers.
   This document describes the restoration methods as displaying
   techniques in MUAs.

   This is an informational document and it does not supersede the
   referenced documents.

2. **Terminology**

   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 RFC 2119 [RFC2119].

   Specialized terms used in this specification are defined in the EAI
   overview [RFC4952] or in [RFC2821][RFC2822], MIME documents [RFC2045]
   [RFC2047] [RFC2183] [RFC2231].

   This document depends on [I-D.ietf-eai-utf8headers] and
   [I-D.ietf-eai-downgrade]. Key words used in these document are used
   in this document, too.

   The term "non-ASCII" is an UTF-8 string which contains at least one
   non-ASCII character.

   The term "address header field" is used for a header field which
   contains <mailbox> elements which is defined in [RFC2822]. "Address
   header fields" contain "From", "Sender", "Reply-To", "To", "Cc",
   "Bcc", "Resent-From", "Resent-Sender", "Resent-To", "Resent-Cc",
   "Return-Path" header fields.

   An "UTF8SMTP message" is an Email messages expanded by

[I-D.ietf-eai-utf8headers].

3. Displaying downgraded message

Displaying downgraded message is mostly performed by MIME decoding
according to [RFC2047] and [RFC2231]. Result of MIME decoding, the
header of the message still contains Downgraded-*: header fields, but
the header field bodies are MIME decoded. These decoded
"Downgraded-" header fields contain the original header field name
and the original header field values. The recipient can read them.
But the recipient's MUA cannot use the original header fields
automatically.

Additionally, MUAs can process "Downgraded-" header fields. It is
described in Section 3.1 and Section 3.2.

3.1. Displaying technique 1

MUAs may remove "Downgraded-" from decoded "Downgraded-" header
fields' name.

First, decode MIME encoded header fields and MIME body part header
fields according to [RFC2047] and [RFC2231].

Then, for each "Downgraded-" header field, generate new header field
which field name is the original header field name and the field
value is the decoded header field value, and replace the
"Downgraded-" header field by the generated header field.

Don't change "Downgraded-Mail-From" and "Downgraded-Rcpt-To" header
fields because they do not have their original header fields.

With this technique, the "address header fields" may be displayed
twice, one is from downgraded header field and the other is from
decoded "Downgraded-" header.

3.2. Displaying technique 2

MUAs may decode and re-generate the original header of the message.
This technique may reconstruct the original message from the
downgraded message. But it is not guaranteed.

This technique is implemented by the following steps.

   Step 1:   Select "Downgraded-" header fields whose original header
      field is an "address header field". Target header fields are
      "Downgraded-From", "Downgraded-Sender", "Downgraded-Reply-To",
      "Downgraded-To", "Downgraded-Cc", "Downgraded-Bcc", "Downgraded-
      Resent-From", "Downgraded-Resent-Sender", "Downgraded-Resent-To",
      "Downgraded-Resent-Cc", and "Downgraded-Return-Path" header
      fields.

   Step 2:   Generate new header field which field name is the original
      header field name and the field value is the decoded header field
      value from the output of Step 1.

   Step 3:   Apply Email header fields downgrading defined in section 5
      of [I-D.ietf-eai-downgrade] to the output of Step 2 without re-
      generating "Downgraded-" header fields.

   Step 4:   Compare the output of Step 3 and the original header
      fields. If the same header fields exist for both the output and
      the original header fields, remove the same header fields from the
      original header fields. This step outputs the original header
      fields which is modified by this step. Before this comparison, a
      canonicalization described below is useful.

      1.   Unfold all header field continuation lines as described in
           [RFC2822].
      2.   Insert a space character before and after <mailbox-list>
           separator "," if there is no space character.
      3.   Insert a space character before and after <comment> if there
           is no space character.
      4.   Decode <encoded-word> whose charset is 'UTF-8'.
      5.   Convert all sequences of one or more WSP characters to a
           single space character. WSP characters here include those
           before and after a line folding boundary.
      6.   Delete all WSP characters at the end of each unfolded header
           field value.
      7.   Delete any WSP characters remaining before and after the colon
           separating the header field name from the header field value.
           The colon separator MUST be retained.

   Step 5:   Finally, do 'Displaying technique 1' described in
      Section 3.1 to the output of Step 4.

4. Security considerations

   Displaying downgraded message may break the header of the message.
   MUAs should have a function to read the original received message.

See "Security considerations" section in [RFC4952] for more
discussion.

5. IANA Considerations

6. Acknowledgements

7. Change History

This section is used for tracking the update of this document. Will
be removed after finalize.

7.1. draft-fujiwara-eai-downgraded-display: Version 00

o Initial version
o It is separated from Appendix A of draft-ietf-eai-downgrade-05.txt

8. Normative References

[I-D.ietf-eai-downgrade]
          Yoneya, Y. and K. Fujiwara, "Downgrading mechanism for
          Email Address Internationalization",
          draft-ietf-eai-downgrade-06 (work in progress),
          February 2008.

[I-D.ietf-eai-dsn]
          Newman, C. and A. Melnikov, "Internationalized Delivery
          Status and Disposition Notifications",
          draft-ietf-eai-dsn-06 (work in progress), January 2008.

[I-D.ietf-eai-smtpext]
          Yao, J. and W. MAO, "SMTP extension for internationalized
          email address", draft-ietf-eai-smtpext-11 (work in
          progress), January 2008.

[I-D.ietf-eai-utf8headers]
          Yeh, J., "Internationalized Email Headers",
          draft-ietf-eai-utf8headers-09 (work in progress),
          February 2008.

[RFC2045] Freed, N. and N. Borenstein, "Multipurpose Internet Mail
          Extensions (MIME) Part One: Format of Internet Message
          Bodies", RFC 2045, November 1996.

   [RFC2047] Moore, K., "MIME (Multipurpose Internet Mail Extensions)
              Part Three: Message Header Extensions for Non-ASCII Text",
              RFC 2047, November 1996.

   [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate
              Requirement Levels", BCP 14, RFC 2119, March 1997.

   [RFC2183] Troost, R., Dorner, S., and K. Moore, "Communicating
              Presentation Information in Internet Messages: The
              Content-Disposition Header Field", RFC 2183, August 1997.

   [RFC2231] Freed, N. and K. Moore, "MIME Parameter Value and Encoded
              Word Extensions:
              Character Sets, Languages, and Continuations", RFC 2231,
              November 1997.

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

   [RFC2822] Resnick, P., "Internet Message Format", RFC 2822,
              April 2001.

   [RFC4952] Klensin, J. and Y. Ko, "Overview and Framework for
              Internationalized Email", RFC 4952, July 2007.

Appendix A. Examples

   This section shows a example of displaying downgraded message.
   First, an example of the original UTF8SMTP message and its downgraded
   message are shown. They are the same as "Example 1" of
   [I-D.ietf-eai-downgrade]. The example UTF8SMTP message is shown in
   Figure 1.

```
   Message-Id: MESSAGE_ID
   Mime-Version: 1.0
   Content-Type: text/plain; charset="UTF-8"
   Content-Transfer-Encoding: 8bit
   Subject: NON-ASCII-SUBJECT
   From: DISPLAY-local <NON-ASCII-local@example.com
    <ASCII-local@example.com>>
   To: DISPLAY-remote1 <NON-ASCII-remote1@example.net
    <ASCII-remote1@example.net>>
   Cc: DISPLAY-remote2 <NON-ASCII-remote2@example.org>
   Date: DATE

   MAIL_BODY
```

                        Figure 1: Original message

   Delivered downgraded message is shown in Figure 2. Return-Path
   header will be added by the final destination MTA.


```
Return-Path: <ASCII-local@example.com>
Downgraded-Mail-From: =?UTF-8?Q?<NON-ASCII-local@example.com>_?=
 =?UTF-8?Q?<ASCII-local@example.com>?=
Downgraded-Rcpt-To: =?UTF-8?Q?<NON-ASCII-remote1@example.net>_?=
 =?UTF-8?Q?<ASCII-remote1@example.net>?=
Message-Id: MESSAGE_ID
Mime-Version: 1.0
Content-Type: text/plain; charset="UTF-8"
Content-Transfer-Encoding: 8bit
Subject: =?UTF-8?Q?NON-ASCII-SUBJECT?=
From: =?UTF-8?Q?DISPLAY-local?= <ASCII-local@example.com>
Downgraded-From: =?UTF-8?Q?DISPLAY-local_<NON-ASCII-local@example.com_?=
 =?UTF-8?Q?<ASCII-local@example.com>>?=
To: =?UTF-8?Q?DISPLAY-remote1?= <ASCII-remote1@example.net>
Downgraded-To: =?UTF-8?Q?DISPLAY-remote1_?=
 =?UTF-8?Q?<NON-ASCII-remote1@example.net_<ASCII-remote1@example.net>>?=
Cc: =?UTF-8?Q?DISPLAY-remote2?= Internationalized address
 =?UTF-8?Q?NON-ASCII-remote2@example.org?= removed:;
Downgraded-Cc: =?UTF-8?Q?DISPLAY-remote2_?=
 =?UTF-8?Q?<NON-ASCII-remote2@example.org>?=
Date: DATE

MAIL_BODY
```

                       Figure 2: Downgraded message

Figure 3 shows MIME decoded message of Figure 2. The recipient can
read the original From, To, Cc header fields as Downgraded-From,
Downgraded-To, Downgraded-Cc header fields.


```
Return-Path: <ASCII-local@example.com>
Downgraded-Mail-From: <NON-ASCII-local@example.com>
 <ASCII-local@example.com>
Downgraded-Rcpt-To: <NON-ASCII-remote1@example.net>
 <ASCII-remote1@example.net>
Message-Id: MESSAGE_ID
Mime-Version: 1.0
Content-Type: text/plain; charset="UTF-8"
Content-Transfer-Encoding: 8bit
Subject: NON-ASCII-SUBJECT
From: DISPLAY-local <ASCII-local@example.com>
Downgraded-From: DISPLAY-local <NON-ASCII-local@example.com
 <ASCII-local@example.com>>
To: DISPLAY-remote1 <ASCII-remote1@example.net>
Downgraded-To: DISPLAY-remote1 <NON-ASCII-remote1@example.net
 <ASCII-remote1@example.net>>
Cc: DISPLAY-remote2 Internationalized address
 NON-ASCII-remote2@example.org removed:;
Downgraded-Cc: DISPLAY-remote2 <NON-ASCII-remote2@example.org>
Date: DATE

MAIL_BODY
```

Figure 3: MIME decoded message

A.1. **Displaying technique 1 example**

   After removing "Downgraded-" from decoded "Downgraded-" header fields
   from Figure 3, 'Displaying technique 1' example is shown in Figure 4.


```
   Return-Path: <ASCII-local@example.com>
   Mail-From: <NON-ASCII-local@example.com>
    <ASCII-local@example.com>
   Rcpt-To: <NON-ASCII-remote1@example.net>
    <ASCII-remote1@example.net>
   Message-Id: MESSAGE_ID
   Mime-Version: 1.0
   Content-Type: text/plain; charset="UTF-8"
   Content-Transfer-Encoding: 8bit
   Subject: NON-ASCII-SUBJECT
   From: DISPLAY-local <ASCII-local@example.com>
   From: DISPLAY-local <NON-ASCII-local@example.com
    <ASCII-local@example.com>>
   To: DISPLAY-remote1 <ASCII-remote1@example.net>
   To: DISPLAY-remote1 <NON-ASCII-remote1@example.net
    <ASCII-remote1@example.net>>
   Cc: DISPLAY-remote2 Internationalized address
    NON-ASCII-remote2@example.org removed:;
   Cc: DISPLAY-remote2 <NON-ASCII-remote2@example.org>
   Date: DATE

   MAIL_BODY
```

                     Figure 4: Displaying technique 1

A.2. **Displaying technique 2 example**

   This example shows displaying process of 'Displaying technique 2' for
   Figure 2.

   First, perform Step 1.


```
Downgraded-From: =?UTF-8?Q?DISPLAY-local_<NON-ASCII-local@example.com_?=
 =?UTF-8?Q?<ASCII-local@example.com>>?=
Downgraded-To: =?UTF-8?Q?DISPLAY-remote1_?=
 =?UTF-8?Q?<NON-ASCII-remote1@example.net_<ASCII-remote1@example.net>>?=
Downgraded-Cc: =?UTF-8?Q?DISPLAY-remote2_?=
 =?UTF-8?Q?<NON-ASCII-remote2@example.org>?=
```

Figure 5: Displaying technique 2: Output of Step 1

Then, perform Step 2.

```
From: DISPLAY-local <NON-ASCII-local@example.com
 <ASCII-local@example.com>>
To: DISPLAY-remote1 <NON-ASCII-remote1@example.net
 <ASCII-remote1@example.net>>
Cc: DISPLAY-remote2 <NON-ASCII-remote2@example.org>
```

Figure 6: Displaying technique 2: Output of Step 2

Perform Step 3.

```
From: =?UTF-8?Q?DISPLAY-local?= <ASCII-local@example.com>
To: =?UTF-8?Q?DISPLAY-remote1?= <ASCII-remote1@example.net>
Cc: =?UTF-8?Q?DISPLAY-remote2?= Internationalized address
 =?UTF-8?Q?NON-ASCII-remote2@example.org?= removed:;
```

Figure 7: Displaying technique 2: Output of Step 3

Perform Step 4. "From", "To", "Cc" header fields are removed in
Figure 8.

Return-Path: <ASCII-local@example.com>
Downgraded-Mail-From: =?UTF-8?Q?<NON-ASCII-local@example.com>?=
 =?UTF-8?Q?<ASCII-local@example.com>?=
Downgraded-Rcpt-To: =?UTF-8?Q?<NON-ASCII-remote1@example.net>_?=
 =?UTF-8?Q?<ASCII-remote1@example.net>?=
Message-Id: MESSAGE_ID
Mime-Version: 1.0
Content-Type: text/plain; charset="UTF-8"
Content-Transfer-Encoding: 8bit
Subject: =?UTF-8?Q?NON-ASCII-SUBJECT?=
Downgraded-From: =?UTF-8?Q?DISPLAY-local_<NON-ASCII-local@example.com_?=
 =?UTF-8?Q?<ASCII-local@example.com>>?=
Downgraded-To: =?UTF-8?Q?DISPLAY-remote1?_?=
 =?UTF-8?Q?<NON-ASCII-remote1@example.net_<ASCII-remote1@example.net>>?=
Downgraded-Cc: =?UTF-8?Q?DISPLAY-remote2_?=
 =?UTF-8?Q?<NON-ASCII-remote2@example.org>?=
Date: DATE

MAIL_BODY

          Figure 8: Displaying technique 2: Output of Step 4

   Perform Step 5. (Apply 'Displaying technique 1'.)

   Return-Path: <ASCII-local@example.com>
   Downgraded-Mail-From: <NON-ASCII-local@example.com>
    <ASCII-local@example.com>
   Downgraded-Rcpt-To: <NON-ASCII-remote1@example.net>
    <ASCII-remote1@example.net>
   Message-Id: MESSAGE_ID
   Mime-Version: 1.0
   Content-Type: text/plain; charset="UTF-8"
   Content-Transfer-Encoding: 8bit
   Subject: NON-ASCII-SUBJECT
   From: DISPLAY-local <NON-ASCII-local@example.com
    <ASCII-local@example.com>>
   To: DISPLAY-remote1 <NON-ASCII-remote1@example.net
    <ASCII-remote1@example.net>>
   Cc: DISPLAY-remote2 <NON-ASCII-remote2@example.org>
   Date: DATE

   MAIL_BODY

            Figure 9: Display technique 2: Decoded message

   As a result, in this simple example, all original header fields are
   displayed in the original form. Differences between Figure 1 and
   Figure 9 are Return-Path, Downgraded-Mail-From, Downgraded-Rcpt-To
   header fields only.

Author's Address

   Kazunori Fujiwara
   JPRS
   Chiyoda First Bldg. East 13F, 3-8-1 Nishi-Kanda
   Chiyoda-ku, Tokyo 101-0065
   Japan

   Phone: +81 3 5215 8451
   Email: fujiwara@jprs.co.jp