

Email Address Internationalization  
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**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-smtptext](#)] [[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]

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[draft-ietf-eai-downgrade-06](#) (work in progress),  
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[RFC2045] Freed, N. and N. Borenstein, "Multipurpose Internet Mail Extensions (MIME) Part One: Format of Internet Message Bodies", [RFC 2045](#), November 1996.



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- [RFC2821] Klensin, J., "Simple Mail Transfer Protocol", [RFC 2821](#), April 2001.
- [RFC2822] Resnick, P., "Internet Message Format", [RFC 2822](#), April 2001.
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## [Appendix A](#). Examples

This section shows an example of displaying a 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.

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