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Extensions to Delivery Status Notifications for Fax

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[1.](#) Abstract

This document describes new per-recipient Delivery Status Notification fields [[DSN](#)] useful for billing fax PSTN calls, and describes how to use existing Enhanced Mail System Status Codes [[ENH-CODES](#)] for fax, and describes new Enhanced Mail System Status Codes specifically for fax.

[2.](#) Introduction

The fax specification [[FAX-SPEC](#)] describes the behavior of SMTP servers, fax onramps, and fax offramps.

Internet Draft

DSN Extensions for Fax

November 1997

[FAX-REQ] and [FAX-SCEN] should be consulted for detailed background information (XXX - text from [FAX-REQ, FAX-SCEN] should be included here).

2.1. Extensions to Delivery Status Notifications

SMTP does not provide a mechanism to indicate the 'cost' associated with a message. Although a large message can cost more (network bandwidth, transmission time, disk storage, processing time to encode/ decode), there typically isn't a direct cost attributable to an email message.

Fax messages are simply encoded as a MIME type [TIFF] and sent as normal email messages. However, a fax offramp functions as a gateway between SMTP and the PSTN. Costs are always associated with PSTN calls. These costs range from (at the lowest cost) a business telephone line itself with free local calls to (at the highest cost) a business telephone line making international telephone calls. These costs must be billed.

It is desirable for users to audit the charges that are made to their bills, and a Delivery Status Notification that is sent to them (and possibly used by the billing system itself) provides a convenient method of verifying the accuracy of a bill.

2.2. Enhanced Mail System Status Codes

While Enhanced Mail System Status Codes [ENH-CODES] is quite complete in its description of events specific to email, it does not provide error codes which map directly to all the error codes necessary for other services that are proposed to run over SMTP, such as VPIM [VPIM] or FPIM [FAX-SPEC].

This document describes how existing codes from [ENH-CODES] can be used with a fax offramp, and documents new codes that are necessary to support fax offramps.

2.3. Definitions

This document uses several terms which aren't in common use.

onramp: A device which receives an incoming fax call, translates the fax image to [TIFF], and can send the message to an SMTP server. An onramp can be diskless and have limited memory capacity.

offramp: A device which receives an SMTP message in [TIFF] format and calls a fax machine, translates the [TIFF] message to a fax image, and transmits the fax image to the remote fax machine. An offramp can be diskless and have limited memory capacity.

PSTN: Public Switched Telephone Network.

[2.4.](#) Discussion of this Draft

This draft is being discussed on the "ietf-fax" mailing list. To subscribe, send a message to:
ietf-fax-request@imc.org
with the line:
subscribe
in the body of the message. Archives are available from
<http://www.imc.org/ietf-fax>.

[3.](#) New Per-recipient DSN Extension Codes

Two new per-recipient extension fields, as described in [DSN], are defined using the format described in [ABNF]:

extension-field = call-length / call-type

call-length = "Call-Length" ":" call-seconds
call-seconds = 1*DIGIT

call-type = "Call-Type" ":" billing-rate
billing-rate = "LD" / "local" / "international" / billing-ext
billing-ext = "X-" vendorname "-" *ALPHA / *DIGIT
vendorname = *ALPHA

XXX - needs significantly more work

[4.](#) Enhanced Mail System Status Codes

[ENH-CODES] allows new codes to be defined. The following table maps fax-specific codes to [\[ENH-CODES\]](#) codes where possible, and defines new fax-specific codes if [\[ENH-CODES\]](#) doesn't already have a suitable mapping.

[4.1.](#) Use of Existing Enhanced Mail System Status Codes by Fax

Many of the codes described in [\[ENH-CODES\]](#) map perfectly to fax offramp failure and success codes.

Wing

Expires May 1998

[Page 3]

Internet Draft

DSN Extensions for Fax

November 1997

XXX - do we want to overload these at all??

no such telephone number = 5.1.1 (Bad destination mailbox address)

The mailbox specified in the address does not exist. For Internet mail names, this means the address portion to the left of the "@" sign is invalid. This code is only useful for permanent failures.

unable to parse telephone number = 5.1.3 (Bad destination mailbox address syntax)

The destination address was syntactically invalid. This can apply to any field in the address. This code is only useful for permanent failures.

busy = X.4.1 (No answer from host)

The outbound connection attempt was not answered, either because the remote system was busy, or otherwise unable to take a call. This is useful only as a persistent transient error.

no answer = X.3.2 (System not accepting network messages)

The host on which the mailbox is resident is not accepting messages. Examples of such conditions include an imminent shutdown, excessive load, or system maintenance. This is useful for both permanent and permanent transient errors.

[4.2.](#) New Enhanced Mail System Status Codes for Fax

[ENH-CODES] describes that status codes have the following format:

```
status-code = class "." subject "." detail
class = "2"/"4"/"5"
subject = 1*3digit
detail = 1*3digit
```

Fax-specific codes will have a subject of 8.

XXX -- it would probably be better to more carefully specify these to correspond with the "subject"s that already exist (and define new detail codes) instead of a new "subject".

X.8.X Fax Offramp Status

The fax offramp status codes refer to events that are specific to a device dialing a remote phone number.

The new fax-specific codes are:

Wing

Expires May 1998

[Page 4]

Internet Draft

DSN Extensions for Fax

November 1997

```
no carrier = X.X.X
  XXX - description
```

```
unable to train = X.X.X
  XXX - description
```

```
no confirmation received from remote machine = X.X.X
  XXX - description
```

[5.](#) Security Considerations

Security considerations are not (yet) described in this memo.

[6.](#) Acknowledgments

XXX

[7.](#) References

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- [DSN] K. Moore, "SMTP Service Extension for Delivery Status Notifications", [RFC 1891](#), January 1996.
- [ENH-CODES] G. Vaudreuil, "Enhanced Mail System Status Codes", [RFC 1893](#), January 1996.
- [FAX-REQ] L. Masinter, "Requirements for Internet FAX", Internet Draft, Work in Progress, [draft-ietf-fax-requirements-XX.txt](#).
- [FAX-SCEN] D. Wing, "Scenarios for Delivery of FAX messages over SMTP", Internet Draft, Work in Progress, [draft-ietf-fax-scenarios-XX.txt](#).
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Wing

Expires May 1998

[Page 5]

Internet Draft

DSN Extensions for Fax

November 1997

- [VPIM] G. Vaudreuil, G. Parsons, "Voice Profile for Internet Mail - version 2", Internet Draft, Work in Progress, [draft-ema-vpim-XX.txt](#).

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