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"X-" Considered Harmful
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Abstract

Many application protocols use named parameters to represent data (for example, header fields in Internet mail messages and HTTP requests). Historically, protocol designers and implementers have often differentiated between "standard" and "experimental" parameters by prefixing experimental parameters with the string "X-". This document argues that, on balance, the "X-" convention has more costs than benefits.

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1. Introduction

Many application protocols use named parameters to represent data (for example, header fields in Internet mail messages and HTTP requests). Historically, protocol designers and implementers have often differentiated between "standard" and "experimental" parameters by prefixing experimental parameters with the string "X-", where the "X" stands for "eXperimental". This document argues that on balance the "X-" convention has more costs than benefits.

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2. Argument

The "X-" convention has been in use for email header fields since the publication of [RFC822] (Crocker, D., "Standard for the format of ARPA Internet text messages," August 1982.) in 1982, which distinguished between Extension-fields and user-defined-fields as follows:

> The prefatory string "X-" will never be used in the names of Extension-fields. This provides user-defined fields with a protected set of names.

That rule was restated by [RFC1154] (Robinson, D. and R. Ullmann, "Encoding header field for internet messages," April 1990.) as follows:

> Keywords beginning with "X-" are permanently reserved to implementation-specific use. No standard registered encoding keyword will ever begin with "X-".

This convention continued with various specifications for MIME [RFC2045] (Freed, N. and N. Borenstein, "Multipurpose Internet Mail Extensions (MIME) Part One: Format of Internet Message Bodies," November 1996.) [RFC2046] (Freed, N. and N. Borenstein, "Multipurpose Internet Mail Extensions (MIME) Part Two: Media Types," November 1996.)

[RFC2047] (Moore, K., "MIME (Multipurpose Internet Mail Extensions) Part Three: Message Header Extensions for Non-ASCII Text," November 1996.), email [RFC2821] (Klensin, J., "Simple Mail Transfer Protocol," April 2001.) [RFC5321] (Klensin, J., "Simple Mail Transfer Protocol," October 2008.), HTTP [RFC2068] (Fielding, R., Gettys, J., Mogul, J., Nielsen, H., and T. Berners-Lee, "Hypertext Transfer Protocol -- HTTP/1.1," January 1997.) [RFC2616] (Fielding, R., Gettys, J., Mogul, J., Frystyk, H., Masinter, L., Leach, P., and T. Berners-Lee, "Hypertext Transfer Protocol -- HTTP/1.1," June 1999.), and other technologies.

The primary problem with the "X-" convention is that experimental or implementation-specific parameters have a tendency to become standardized (whether de jure or de facto), thus introducing the need for migration from the "X-" name to the standardized name. Migration, in turn, introduces interoperability issues because older implementations will support only the "X-" name and newer implementations might support only the standardized name. To preserve interoperability, newer implementations simply support the "X-" name forever, which means that the experimental name becomes a de facto standard (thus obviating the need for segregation of the name spaces in the first place). We can see this phenomenon at work in [RFC2068] (Fielding, R., Gettys, J., Mogul, J., Nielsen, H., and T. Berners-Lee, "Hypertext Transfer Protocol -- HTTP/1.1," January 1997.):

> For compatibility with previous implementations of HTTP, applications should consider "x-gzip" and "x-compress" to be equivalent to "gzip" and "compress" respectively.

One of the original reasons for segregation of name spaces into standard and experimental areas was the perceived difficulty of registering names. However, the solution to that problem has been simpler registration rules, such as those provided by [RFC3864] (Klyne, G., Nottingham, M., and J. Mogul, "Registration Procedures for Message Header Fields," September 2004.) and [RFC4288] (Freed, N. and J. Klensin, "Media Type Specifications and Registration Procedures," December 2005.), as well as separate registries for permanent and provisional names. Indeed, [RFC4288] (Freed, N. and J. Klensin, "Media Type Specifications and Registration Procedures," December 2005.) explicitly calls out the implications for experimental names:

> [W]ith the simplified registration procedures described above for vendor and personal trees, it should rarely, if ever, be necessary to use unregistered experimental types. Therefore, use of both "x-" and "x." forms is discouraged.

In some limited situations, segregating a name space can be justified; for example, when the names need to be very small (as in [RFC5646] (Phillips, A. and M. Davis, "Tags for Identifying Languages," September 2009.)) or when the names have significant meaning. However,

in general, segregating experimental or implementation-specific
parameters into an "X-" ghetto has few if any benefits, and has at
least one significant interoperability cost. The practice is at best
useless and at worst harmful.
The primary objections to discarding the "X-" convention are:

> *Implementers are easily confused. However, implementers already
> are quite flexible about using both prefixed and non-prefixed
> names based on what works in the field, so the distinction
> between de facto names (e.g., "X-foo") and de jure names (e.g.,
> "foo") is meaningless to them.

> *Collisions are undesirable. However, names are usually cheap, so
> an experimental or implementation-specific name of "foo" does not
> prevent a standards development organization from issuing a
> similarly creative name such as "bar".

Therefore, this document recommends against the creation of new names
with the special "X-" prefix in IETF protocols.

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3. Security Considerations

Interoperability and migration issues with security-critical paramaters
can result in unnecessary vulnerabilities.

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4. IANA Considerations

This document has no actions for the IANA.

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5. Acknowledgements

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6. Informative References

| [RFC822] | Crocker, D., "Standard for the format of ARPA Internet text messages," STD 11, RFC 822, August 1982 (TXT). |

[RFC1154]	Robinson, D. and R. Ullmann, "Encoding header field for internet messages," RFC 1154, April 1990 (TXT).
[RFC2045]	Freed, N. and N. Borenstein, "Multipurpose Internet Mail Extensions (MIME) Part One: Format of Internet Message Bodies," RFC 2045, November 1996 (TXT).
[RFC2046]	Freed, N. and N. Borenstein, "Multipurpose Internet Mail Extensions (MIME) Part Two: Media Types," RFC 2046, November 1996 (TXT).
[RFC2047]	Moore, K., "MIME (Multipurpose Internet Mail Extensions) Part Three: Message Header Extensions for Non-ASCII Text," RFC 2047, November 1996 (TXT, HTML, XML).
[RFC2068]	Fielding, R., Gettys, J., Mogul, J., Nielsen, H., and T. Berners-Lee, "Hypertext Transfer Protocol -- HTTP/1.1," RFC 2068, January 1997 (TXT).
[RFC2616]	Fielding, R., Gettys, J., Mogul, J., Frystyk, H., Masinter, L., Leach, P., and T. Berners-Lee, "Hypertext Transfer Protocol -- HTTP/1.1," RFC 2616, June 1999 (TXT, PS, PDF, HTML, XML).
[RFC2821]	Klensin, J., "Simple Mail Transfer Protocol," RFC 2821, April 2001 (TXT).
[RFC3864]	Klyne, G., Nottingham, M., and J. Mogul, "Registration Procedures for Message Header Fields," BCP 90, RFC 3864, September 2004 (TXT).
[RFC4288]	Freed, N. and J. Klensin, "Media Type Specifications and Registration Procedures," BCP 13, RFC 4288, December 2005 (TXT).
[RFC5321]	Klensin, J., "Simple Mail Transfer Protocol," RFC 5321, October 2008 (TXT).
[RFC5646]	Phillips, A. and M. Davis, "Tags for Identifying Languages," BCP 47, RFC 5646, September 2009 (TXT).

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