The 'news' and 'nntp' URI Schemes
draft-ellermann-news-nntp-uri-11

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Abstract

This memo specifies the 'news' and 'nntp' Uniform Resource Identifier (URI) schemes that were originally defined in RFC 1738. The purpose of this document is to allow RFC 1738 to be made obsolete while keeping the information about these schemes on standards track.

Editorial note

In the collected ABNF (Appendix A) the NEWS in RFC NEWS should be replaced by the RFC number for [I-D.ietf-usefor-usefor]. In Section 8 RFCXXXX is a placeholder for this memo. This note and the document history (Appendix C) should be removed before publication.
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1. Introduction

The first definition for many URI schemes appeared in [RFC1738]. This memo extracts the 'news' and 'nntp' URI schemes from it to allow that material to remain on standards track if [RFC1738] is moved to "historic" status. It belongs to a series of similar documents like [RFC4156], [RFC4157], [RFC4248], and [RFC4266] discussed on the <mailto:uri@w3.org> list.

The definitions for the 'news' and 'nntp' URI schemes given here are updates from [RFC1738] based on modern usage of these schemes. This memo intentionally limits its description of the 'news' URI scheme to essential features supposed to work with "any browser" and NNTP server.

[RFC3986] specifies how to define schemes for URIs, it also explains the term "Uniform Resource Locator" (URL). The Network News Transfer Protocol (NNTP) is specified in [RFC3977]. The Netnews Article Format is defined in [I-D.ietf-usefor-usefor].

The key word "MUST" in this memo is to be interpreted as described in [RFC2119]. UTF-8 is specified in [RFC3629]. The syntax uses the ABNF defined in [RFC5234].

2. Background

The 'news' and 'nntp' URI schemes identify resources on an NNTP server, individual articles, individual newsgroups, or sets of newsgroups.

User agents like Web browsers supporting these schemes use the NNTP protocol to access the corresponding resources. The details of how they do this, e.g., employing a separate or integrated newsreader, depend on the implementation. The default <port> associated with NNTP in [RFC3977] is 119.

2.1. 'nntp' URIs

The 'nntp' URI scheme identifies articles in a newsgroup on a specific NNTP server. In [RFC3986] terminology this means that 'nntp' URIs have a non-empty <authority> component, there is no default <host> as for the 'file' or 'news' URI schemes.

Netnews is typically distributed among several news servers, using the same newsgroup names, but local article numbers. An article available as number 10 in group "example" on server "news.example.com" has most likely a different number on any other
server where the same article is still available. Users allowed to read and post articles on "their" server may not be allowed to access articles on an "arbitrary" server specified in an ‘nntp’ URI.

For these reasons the use of the ‘nntp’ URI scheme is limited, and it is less widely supported by user agents than the similar ‘news’ URI scheme.

2.2. ‘news’ URIs

The ‘news’ URI scheme identifies articles by their worldwide unique "Message-ID", independent of the server and the newsgroup. Newsreaders support access to articles by their "Message-ID", without the overhead of an URI scheme. In simple cases they do this directly as NNTP client of a default or currently used server as configured by the user. More general user agents use the ‘news’ URI scheme to distinguish "Message-IDs" from similar constructs such as other URI schemes in contexts such as a plain text message body.

The ‘news’ URI scheme also allows the identification of newsgroups or sets of newsgroups independent of a specific server. For Netnews a group "example" has the same name on any server carrying this group, exotic cases involving gateways not withstanding. To distinguish "Message-IDs" and newsgroup names the ‘news’ URI scheme relies on the "@" between local part (left hand side) and domain part (right hand side) of "Message-IDs".

[RFC1738] offered only one wildcard for sets of newsgroups in ‘news’ URIs, a "*" used to refer to "all available newsgroups". In common practice this was extended to varying degrees by different user agents, an NNTP extension known as <wildmat> specified in [RFC2980] and now part of the base NNTP specification allows pattern matching in the style of the [POSIX] "find" command. For the purpose of this memo this means that some additional special characters have to be allowed in ‘news’ URIs, some of them percent-encoded as required by the overall [RFC3986] URI syntax. User agents and NNTP servers not yet compliant with [RFC3977] do not implement all parts of this new feature.

Another commonly supported addition to the [RFC1738] syntax is the optional specification of a server at the beginning of ‘news’ URIs. This optional <authority> component follows the overall [RFC3986] syntax preceded by a double slash "//" and terminated by the next slash "/", question mark "?", number sign "#", or the end of the URI.
2.3. Query parts, fragments, and normalization

Fragments introduced by a number sign "#" are specified in [RFC3986], the semantics is independent of the URI scheme, the resolution depends on the media type.

This memo doesn’t specify a query part introduced by a question mark "?" for the ‘news’ and ‘nntp’ URI schemes, but some implementations are known to use query parts instead of fragments internally to address parts of a composite media type [RFC2046] in Multipurpose Internet Mail Extensions (MIME).

There are no special "." or ".." path segments in ‘news’ and ‘nntp’ URLs. Please note that "." and ".." are not valid <newsgroup-name>s.

URI producers have to percent-encode some characters as specified below (Section 4), otherwise they MUST treat a "Message-ID" without angle brackets for ‘news’ URLs as is, i.e. case-sensitive, preserving quoted pairs and quoted strings.

3. Syntax of ‘nntp’ URIs

An ‘nntp’ URI identifies an article by its number in a given newsgroup on a specified server, or it identifies the newsgroup without article number.

```
nntpURL = "nntp:" server "/" group [ "/" article-number ]
server = "//" authority ; see RFC 3986
group = 1*( group-char / pct-encoded )
article-number = 1*16DIGIT ; see RFC 3977
group-char = ALPHA / DIGIT / "/" / "+" / "/" / ".."
```

In the form with an <article-number> the URL corresponds roughly to the content of an <xref> header field as specified in [I-D.ietf-usefor-usefor], replacing its more general <article-locator> by the <article-number> used with NNTP.

A <newsgroup-name> as specified in [I-D.ietf-usefor-usefor] consists of dot-separated components. Each component contains one or more letters, digits, "-" (hyphen-minus), "+", or "_" (underscore). These characters can be directly used in a segment of a path in a [RFC3986] URI, no percent-encoding is necessary. Example:

```
nntp://news.server.example/example.group.this/12345
```

A <wildmat-exact> newsgroup name as specified in [RFC3977] allows (in theory) any <UTF8-non-ascii>, see Section 6, and most printable...
US-ASCII characters excluding "!", "*", ",", "?", "[", ",", and "]". However, [I-D.ietf-usefor-usefor] does not (yet) permit characters outside of <group-char> and so, to keep the syntax simple, the additional characters are here covered by <pct-encoded> as defined in [RFC3986], since most of them have to be percent-encoded anyway (with a few exceptions such as ":", ",", and "-"). For example:

    nntp://wild.server.example/example.group.n%2Fa/12345

In the form without <article-number> the URL identifies a single group on the specified server. This is also possible with an equivalent 'news' URL, and the latter is better supported by user agents, example:

    nntp://news.server.example/example.group.this
    news://news.server.example/example.group.this

4. Syntax of 'news' URIs

A 'news' URI identifies an article by its unique "Message-ID", or it identifies a set of newsgroups. Additionally it can specify a server, without it a configured default server for Netnews access is used.

The syntax shown below explains how to transform a syntactically valid <newsgroup-name> or <msg-id-core> as specified in [I-D.ietf-usefor-usefor] into the corresponding <newsgroups> or <article> part of a 'news' URI. The transformation from a formally valid 'news' URI back to a <newsgroup-name> or <msg-id-core> is not guaranteed to be syntactically valid.
The form identifying an <article> corresponds to the <msg-id-core> construct in [I-D.ietf-usefor-usefor], it is a "Message-ID" without angle brackets. Characters not directly allowed in this part of an [RFC3986] URI have to be percent-encoded, minimally anything that is not <unreserved>, no ":" (colon), and doesn’t belong to the <sub-delims>.

Several details of a canonical <msg-id-core> are omitted here, e.g., leading, adjacent, or trailing dots are not allowed in <dot-atom-text>. The syntax mainly shows which characters MUST be percent-encoded in a <mid-left> (local part) or <mid-right> (domain part).

Please note that "%20" (space) and "%3E" (">") are not allowed. A "%5C" (backslash "\") can only occur in four combinations as shown above. Examples:

news://server.example/ab.cd@example.com
news:%22do..ts%22@example.com
news:ab.cd@%5B2001:DB8::CD30%5D
The form identifying <newsgroups> corresponds to the [RFC3977] <wildmat-pattern>, a newsgroup name with wildcards "*" and "?". Any "?" has to be percent-encoded as "%3F" in this part of an URI. Examples, the first two are equivalent:

news://news.server.example/*
news://news.server.example/
news://wild.server.example/example.group.th%3Fse
news:example.group.*
news:example.group.this

Without wildcards this form of the URL identifies a single group if it is not empty, and user agents would typically try to present an overview of the articles available in this group, likely somehow limiting this overview to the newest unread articles up to a configured maximum.

With wildcards user agents could try to list matching group names on the specified or default server. Some user agents support only a specific <group> without wildcards, or an optional single "*".

As noted above (Section 2.2) the presence of an "@" in a 'news' URI disambiguates <article> and <newsgroups> for URI consumers. The new <message-id> construct specified in [RFC3977] does not require an "@". Since [RFC0822] the "Message-ID" syntax was closely related to the syntax of mail addresses with an "@" separating left hand side (local part of addresses, unique part of message identifiers) and right hand side (domain part), and this memo sticks to the known [RFC1738] practice.

5. Acknowledgments

Henry Spencer was the driving force to adopt MIME in Netnews, he registered the MIME ‘message/external-body’ access type ‘news-message-ID’ discussed below (Section 8.2) in 1993 for [son-of-1036].

The Internet Drafts [I-D.gilman-news-url] by Alfred S. Gilman published 1998 introduced additions to the original [RFC1738] 'news' URI scheme. Some of these ideas are now widely supported and reflected by the revised ‘news’ URI scheme specified here.

Bill Fenner’s _xml2rfc validator_ and _ABNF checker_ were a great help in the creation of (not only) this memo. The same goes for various great _IETF tools_ written by Henrik Levkowetz.

6. Internationalization Considerations

The URI schemes were updated to support percent-encoded UTF-8 characters in NNTP newsgroup names as specified in [RFC3977] and [RFC3987].

The Netnews Article Format in [I-D.ietf-usefor-usefor] does not yet allow UTF-8 in <newsgroup-name>s, therefore well-known Unicode and UTF-8 security considerations are not listed below. For an overview see [UTR36] and [RFC3629].

The work on E-mail Address Internationalization (EAI) started in [RFC4952] is not expected to change the syntax of a "Message-ID". The work on a successor of [RFC2822] hopefully ends up with a simplified syntax for both sides of a "Message-ID".

7. Security Considerations

There are many security considerations for URI schemes discussed in [RFC3986]. The NNTP protocol may use passwords in the clear for authentication, or offer no privacy, both of which are considered extremely unsafe in current practice. Alternatives and further security considerations with respect to NNTP are discussed in [RFC4642] and [RFC4643].

The syntax for the ‘news’ and ‘nntp’ URI schemes contains the general <authority> construct with an optional <userinfo> defined in [RFC3986]. As noted in [RFC3986] the "user:password" form of a <userinfo> is deprecated.

Articles on NNTP servers typically expire after some time. After that time corresponding ‘news’ and ‘nntp’ URLs won’t work anymore depending on the server. While a "Message-ID" is supposed to be worldwide unique forever the NNTP protocol does not guarantee this. Under various conditions depending on the servers the same "Message-ID" could be used for different articles, and attackers could try to distribute malicious content for known ‘news’ or ‘nntp’ URLs.

If an URI does not match the generic syntax in [RFC3986] it is invalid, and broken URIs can cause havoc. Compare [RFC5064] for similar security considerations.
8. IANA Considerations

The IANA registry of URI schemes should be updated to point to this memo instead of [RFC1738] for the ‘news’ and ’nntp’ URI schemes.

8.1. ‘snews’ URIs

This section contains the [RFC4395] template for the registration of the historical ‘snews’ scheme specified in [I-D.gilman-news-url].

URI scheme name:   snews
Status:            historical
URI scheme syntax: Same as for ‘news’ (Section 4)
URI scheme semantics:
  Syntactically equivalent to ‘news’, but using NNTP over SSL/TLS (SSL/TLS with security layer is negotiated immediately after establishing the TCP connection) with a default port of 563, registered as 'nntps'
Encoding considerations:
  Same as for ‘news’ (Section 6)
Applications/protocols that use this URI scheme name:  
  For some user agents ‘snews’ URLs trigger the use of "nntps" instead of NNTP for their access on Netnews
Interoperability considerations:
  This URI scheme was not widely deployed, its further use is deprecated in favour of ordinary ‘news’ URLs in conjunction with NNTP servers supporting [RFC4642]
Security considerations:
  See [RFC4642], the use of a dedicated port for secure variants of a protocol was discouraged in [RFC2595]
Contact:           <mailto:uri@w3.org> (URI mailing list)
Change controller: IETF
8.2.  'news-message-ID' access type

The MIME 'news-message-ID' access type was erroneously listed as subtype. IANA should remove 'news-message-ID' from the application subtype registry, and add it to the access type registry defined in [RFC4289]: `<http://www.iana.org/assignments/access-types>`.

[RFC4289] requires an RFC for the access types registry. Because [son-of-1036] was never published as RFC the following paragraph quotes the relevant definition:

NOTE: In the specific case where it is desired to essentially make another article PART of the current one, e.g. for annotation of the other article, MIME’s "message/external-body" convention can be used to do so without actual inclusion. "news-message-ID" was registered as a standard external-body access method, with a mandatory NAME parameter giving the message ID and an optional SITE parameter suggesting an NNTP site that might have the article available (if it is not available locally), by IANA 22 June 1993.

Please note that 'news' URLs offer a very similar and (today) more common way to access articles by their Message-ID, compare [RFC2017].

9.  References

9.1.  Normative References


9.2. Informative References


Appendix A. Collected ABNF

In addition to the syntax given above this appendix also lists the sources of terms used in comments and the prose:

```
nntpURL     = "nntp:" server "/" group [ "/" article-number ]
server      = "/" authority ; see RFC 3986
group       = 1*( group-char / pct-encoded )
article-number = 1*16DIGIT ; see RFC 3977
group-char  = ALPHA / DIGIT / "+" / "-" / "_" / "."

newsURL     = "news:" [ server "/" ] ( article / newsgroups )
article     = mid-left "@" mid-right
newsgroups  = *( group-char / pct-encoded / "*" )
```
Appendix B. Detailed example

Here is an example of a mail to the <mailto:tools.discuss@ietf.org> list with "Message-ID" <p0624081dc30b8699bf9b@[10.20.30.108]>.

<http://dir.gmane.org/gmane.ietf.tools> is one of the various list archives, it converts mails into Netnews articles. The header of this article contains the following fields (among others):

```
Message-ID: <p0624081dc30b8699bf9b@[10.20.30.108]>
Xref: news.gmane.org gmane.ietf.tools:742
Archived-At: <http://permalink.gmane.org/gmane.ietf.tools/742>
```

The "Xref" roughly indicates the 742nd article in newsgroup <news://news.gmane.org/gmane.ietf.tools> on this server. An 'nntp' URL might be <nntp://news.gmane.org/gmane.ietf.tools/742>. For details about the "Archived-At" URL see [RFC5064].

The list software and list subscribers reading the list elsewhere can’t predict a server specific article number 742 in this archive. If they know this server they can however guess the corresponding <news://news.gmane.org/p0624081dc30b8699bf9b%[10.20.30.108]%D> URL.

In theory the list software could use the guessed 'news' URL in an "Archived-At" header field, but if a list tries this it would likely use <http://mid.gmane.org/p0624081dc30b8699bf9b%[10.20.30.108]%D>.

Using domain literals in a "Message-ID" could cause collisions. A collision might force the mail2news gateway in this example to invent a new "Message-ID", and an attempt to guess the future URL on this server would then fail.

Appendix C. Document History

Changes in version 11:

- Clarified that the semantics of fragments is never defined by an URI scheme, but depends on the media type. Minor tweaks to make the point that using query parts for this purpose is not state of the art.
o Replaced the remains of the four letter word introduced in version 08 by a proper [POSIX] reference.

o Added a forward pointer to Section 6 as explanation why <group-char> does not exactly mirror the <newsgroup-name> syntax.

o Added a disclaimer to Section 4 that the shown ‘news’ URI syntax is actually a superset of the corresponding <newsgroup-name> and <msg-id-core> syntax, and in no way intended to redefine the normative source.

o After some discussions about adding news.uri.arpa to the nntp.uri.arpa registration for the Dynamic Delegation Discovery System (DDDS) folks preferred to have no DDDS registration for NNTP at all at this time. DDDS registrations for existing URI schemes are possible when applications need them, proactive DDDS registrations are unnecessary.

o Thanks to Lars for tolerating Appendix B as real example.

Changes in version 10:

o Fixed three editorial nits found in the Last Call, especially changed "does not more require" via "does no more require" to "does not require" based on Last Call feedback. Appendix D of [RFC3977] does not mention this point.

Changes in version 09:

o Several modifications based on feedback from Tom Petch and Stephane Bortzmeyer. Updated the references to [RFC5064] and STD 68 [RFC5234].

o Obfuscated a four letter word introduced in version 08 after a discussion on the IETF IPR WG list.

o The note (Section 6) about the successor of [RFC2822] now states that hopefully both sides of the "Message-ID" syntax will be simplified. Some details also affecting SMTP (Simple Mail Transfer Protocol) are still under discussion.

o Clive Feather reported that [RFC3977] does not require an "@" in its new <message-id> construct. As this is a major deviation from among others STD 11 [RFC0822], [RFC1738], [son-of-1036], [I-D.gilman-news-url], [RFC2822], [I-D.ietf-usefor-usefor], and what existing URI consumers based on these documents expect it cannot be simply adopted in a memo describing common practice. An additional note (Section 4) corresponding to an older note
(Section 2.2) explains this deviation.

- Various I-D nits are apparently false positives, but using two different spell-checkers helped.

Changes in version 08:

- Many editorial and stylistic improvements proposed by Charles Lindsey adopted wholesale.

- Added another URI security consideration. Added another note why this memo does not try to cover more NNTP features. Refrained from adding expectations what future NNTP servers will do. The author hopes that Netnews will survive, and that this memo helps. Adding features known to not work everywhere could be counterproductive.

- Rejected a proposal to "undocument" 'snews'. In 2006 folks on the URI list preferred "document and deprecate". At this time 'snews' was supported by at least two servers and two user agents.

- Sticked to the DDDS registration of 'nntp' in the style of the existing ‘ftp’, ‘http’, and ‘mailto’ DDDS records as a clerical task.

- Rejected a proposal to deviate from the <msg-id-core> syntax in the normative reference [I-D.ietf-usefor-usefor] reflecting a consensus of the IETF USEFOR WG formed after lengthy discussions.

Changes in version 07:

- Fixed two bugs introduced in version 06, Kjetil T. Homme spotted the worst error, thanks. Rearranged the credits adding Henrik’s IETF tools.

- I-D nit about a missing reference for [I-D.hoffman-news-nntp-uri-04] ignored, this string will go away together with the document history (Appendix C).

- The I-D submission tool added an editorial note following the abstract to the meta data of version 06, manual override attempt for version 07.

- Review request sent to register@uri.arpa, this mail didn’t make it yet to <http://www.iana.org/list-archives/register-uri/>.

Changes in version 06:
Reference to [RFC5064] added. Added a security consideration proposed by Chris Newman for the "Archived-At" header field also here.

Added an appendix with a detailed ‘news’, ‘nntp’, "Xref", and "Archived-At" example.

Use a more reliable e-mail address (and thanks for the feedback from somebody who figured the new address out following obscure contact or rev="made" links ;-)

The USEFOR WG did not adopt this draft as work item, they are busy to complete a document blocking the publication of [I-D.ietf-usefor-usefor].

IANA revived the <mailto:register@uri.arpa> list mentioned in the DDDS BCP.

Added a note about EAI [RFC4952] and its most likely unmodified "Message-ID" concept.

Changes in version 05:

Added an attempt to cleanup the erroneous MIME application subtype 'news-message-ID' registration. This was meant to be a MIME 'message/external-body' access type as published in <http://www.iana.org/assignments/access-types>.

The ‘news-message-ID’ review request was posted 2007-02-19.

Changes in version 04:

Minor editorial fixes. Just in case waiting for the IESG approval of [I-D.ietf-usefor-usefor]. The ‘snews’ URI review request was posted 2006-11-10.

Two reviewers of the ‘snews’ registration template are now apparently satisfied with the ‘snews’ URI scheme semantics.

Changes in version 03:

The ‘snews’ semantics was improved after discussions with Chris Newman and Ken Murchinson.

Various editorial fixes proposed by Alfred Hoenes.

Changes in version 02:
The referenced NNTP specifications got their RFC numbers, NNTP TLS [RFC4642] added for info to the security considerations.

The ABNF for an <article> was further simplified by extracting the <mid-special> characters used on both sides of the "@", i.e. within a quoted string <mid-quote> for the unique part (left hand side) or within a literal in square brackets for the domain part (right hand side). Now it is obvious that the differences between both sides are limited to ‘”’, ‘[‘, and ‘]’ as expected.

Removed the dubious _1_ at the begin of the <newsgroups> rule based on an observation by Nicolas Krebs.

Created a proper informative reference for the historical [I-D.gilman-news-url]. The IETF archive offers only -01, a copy of -02 covering ‘snews’ is now available below <http://esw.w3.org/topic/UriSchemes/news>.

Other minor changes include the addition of a reference to [UTR36], and the collected ABNF (Appendix A).

The IANA registration template for the historical ’snews’ URI scheme was added.

The IANA registration template for an "nntp.uri.arpa" NAPTR record was added. If that record is correct the existing "ftp.uri.arpa" and "http.uri.arpa" records could be updated, apparently they don’t remove the optional <userinfo> at the moment.

Changes in version 01:

References of RFC 977 and RFC 2980 replaced by the now approved NNTP base document [RFC3977].

Security considerations updated with a reference to the now approved NNTP Auth document [RFC4643].

References of RFC 1036 and [RFC2822] replaced by the last called [I-D.ietf-usefor-usefor].

References of RFC 2396 removed, the jumps from [RFC1738] to [RFC3986] and from RFC 1036 to [I-D.ietf-usefor-usefor] are interesting enough without talking about intermediate steps.

[RFC1738] has no <range> for the ‘nntp’ URI scheme, and this memo isn’t the place to invent new tricks for a rarely used scheme.

Changes in version 00:
o Derived from [I-D.hoffman-news-nntp-uri-04] after discussions on the URI list. At this time what is now known as the Netnews Article Format [I-D.ietf-usefor-usefor] was still far from ready, and RFC977bis [RFC3977] not yet finished.

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