

Network Working Group
Internet-Draft
Expires: August 23, 2005

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February 19, 2005

A Format for IPv6 Scope Zone Identifiers in Literal URIs
draft-fenner-literal-zone-01

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Abstract

This document specifies the format to be used when specifying a zone identifier with a literal IPv6 address in URIs and IRIs. While this combination is expected to be needed rarely, it is important to specify the exact syntax.

1. Introduction

[RFC 3986](#) [[RFC3986](#)] defines the IPv6address production for the rare case that a literal IPv6 address is required in a URI. IRIs [[RFC3987](#)] copy this syntax. The IPv6 Scoping Architecture [[ipv6-scoping-arch](#)] describes the syntax for specifying a zone ID to disambiguate an ambiguous scoped address. Unfortunately, the IPv6address production does not permit the format including the zone ID, so this document defines a method to specify a zone ID with a literal IPv6 address.

2. Format

The IPvFuture production in URIs and IRIs was created to allow for flexibility in defining new IP address formats. We use this flexibility in this format, to add a previously unanticipated address format for IPv6. Therefore, strings matching this grammar also match the IPvFuture production in URIs and IRIs. While the form specified in the IPv6 Scoping Architecture [[ipv6-scoping-arch](#)] uses a percent ("%") to separate the zone ID from the address, this form separates the zone ID from the address using an underscore ("_"), to avoid the special meaning of the percent ("%") in URIs.

```
; An address matching IPv6scoped-literal also matches
; the URI/IRI spec's IP-literal with IPvFuture
IPv6scoped-literal = "[v6." IPv6scoped-address "]"
IPv6scoped-address = IPv6address "_" IPv6zone-id
IPv6zone-id = 1*( unreserved / sub-delims / ":" )
```

2.1 Tradeoffs

- o Use _ or Z or some other character as separator.
 - Pro:
 - + Fits current ABNF.
 - + Doesn't require confusing percent-encoding.
 - Con:
 - + Have to remember different separator.
 - + Can't copy and paste from other forms. (But that is the case also for percent-encoding, which usually doesn't happen automatically.)
 - Issues:
 - + Zone ID is currently loosely specified in scoping-arch; in order to fit this grammar it needs to be tighter.
 - + Should "_" (or whatever delimiter) be allowed in the zone ID? ("No" complicates the ABNF)

- + Can a scoping-arch revision change the character in use? It could suggest that "_" can be used as an alternative to "%".
- o Use %25 as an encoded %, the scoping-arch separator.
 - Pro:
 - + "%" is the same character.
 - Con:
 - + "%25" is confusing.
 - + Can't copy and paste from other forms where the % is not encoded. (But that is the case also when using a different character for the separator.)
 - + IPvFuture ABNF doesn't permit percent-encoded characters.
 - Issues:
 - + Would need to change the IPvFuture grammar in URI [[RFC3986](#)] and IRI [[RFC3987](#)] specs to permit percent-encoded characters.
- o Use '%' in the URI
 - Pro:
 - + "%" is the same character.
 - + Can copy and paste between forms.
 - Con:
 - + '%' is fundamentally special in URIs; parsers can be expected to be hard-wired to know that they start a percent-encoded octet.
 - + IPvFuture ABNF doesn't permit bare percent.
 - Issues:
 - + Impossible to ensure that this exception to a fundamental URI rule would be handled properly by parsers.

3. Limitations

The usefulness of a URI or IRI using a literal scoped address is obviously limited to systems within the same scope. The addition of the zone identifier further limits the usefulness to the system on which the URI or IRI was generated, since zone IDs are completely local to a given host. Therefore, care must be taken to not pass these URIs blindly between systems. When both systems are aware of the relevant Zone IDs, e.g., an SNMP manager that is aware of the zone ID configuration of an agent, it is acceptable to pass these URIs between systems.

4. IANA Considerations

This document makes no request of IANA.

Note to RFC Editor: this section may be removed on publication as an RFC.

5. Security Considerations

[RFC 3986](#) [[RFC3986](#)] describes security considerations for URIs; this specification does not add any new security considerations.

6. Acknowledgements

Margaret Wasserman first noticed that the original literal IPv6 form didn't support zone IDs. This document was first created based on discussions between Steve Bellovin, Brian Carpenter, Roy Fielding, Ted Hardie, Larry Masinter, and Thomas Narten.

7. Normative References

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[RFC3987] Duerst, M. and M. Suignard, "Internationalized Resource Identifiers (IRIs)", [RFC 3987](#), January 2005.

[ipv6-scoping-arch]
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Internet-Draft [draft-ietf-ipv6-scoping-arch-02](#), August 2004.

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[Appendix A](#). Change History

[A.1](#) Changes since -00

- o Add "use '%' in the URI" text with pros and cons
- o Add "Limitations" section

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Acknowledgment

Funding for the RFC Editor function is currently provided by the Internet Society.

