

dprive
Internet-Draft
Intended status: Informational
Expires: September 19, 2020

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March 18, 2020

Domain Name System Uniform Resource Identifiers for DNS over HTTPS and
DNS over TLS
draft-mglt-dprive-dns-uri-00

Abstract

Today DNS resources may also be accessed using multiple transport which includes DNS over UDP/TCP port 53 [[RFC1034](#)],[[RFC1035](#)]. DNS over TLS [[RFC7858](#)] or DNS over HTTPS [[RFC8484](#)]. This document describes URIs that describes the DNS resource as well as indicate the transport to access the resource.

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[1.](#) Requirements Notation

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [BCP 14](#) [[RFC2119](#)] [[RFC8174](#)] when, and only when, they appear in all capitals, as shown here.

[2.](#) Introduction

[[RFC4501](#)] defines an URI [[RFC7553](#)] for DNS resources accessed but does not specify the transport used to access the DNS resource.

Today DNS resources may also be accessed using multiple transport layers which includes DNS over UDP/TCP port 53 [[RFC1034](#)], [[RFC1035](#)]. DNS over TLS [[RFC7858](#)] or DNS over HTTPS [[RFC8484](#)]. This document describes URIs that describes the DNS resource as well as indicate the transport to access the resource.

[3.](#) DNS over UDP/TCP 53

This section describes the URI template for the registration of the URI as described in [[RFC7595](#)] to describe DNS resources being accessed using DNS over TLS.

URL scheme name: "dns53".

URL scheme syntax: A DNS URI designates a DNS resource record set, referenced by domain name, class, type, and, optionally, the authority. The DNS URI follows the generic syntax from [RFC3986](#) and is described using ABNF [RFC5234](#). Strings are not case sensitive, and free insertion of linear-white-space is not permitted.

dnsurl = "dns53:" ["//" dnsauthority "/"]
 dnsname ["?" dnsquery]

dnsauthority = host [":" port]
 ; See [RFC 3986](#) for the
 ; definition of "host" and "port".

dnsname = *pchar
 ; See [RFC 3986](#) for the
 ; definition of "pchar".

 ; The "dnsname" field may be a
 ; "relative" or "absolute" name,
 ; as per [RFC 1034, section 3.1](#).

 ; Note further that an empty
 ; "dnsname" value is to be
 ; interpreted as the root itself.
 ; See below on relative dnsnames.

dnsquery = dnsqueryelement [";" dnsquery]

dnsqueryelement = ("CLASS=" dnsclassval) / ("TYPE=" dnstypeval)
 ; Each clause MUST NOT be used more
 ; than once.

dnsclassval = 1*digit / "IN" / "CH" /
 <Any IANA registered DNS class mnemonic>

dnstypeval = 1*digit / "A" / "NS" / "MD" /
<Any IANA registered DNS type mnemonic>

The DNS resource follows [\[RFC4501\]](#) but indicates the DNS resource MUST be accessed using UDP or TCP as described in [\[RFC1034\]](#) or [\[RFC1035\]](#).

[4.](#) DNS over TLS URI Registration

This section describes the URI template for the registration of the URI as described in [\[RFC7595\]](#) to describe DNS resources being accessed using DNS over TLS.

URL scheme name: "dot".

URL scheme syntax: A DNS URI designates a DNS resource record set, referenced by domain name, class, type, and, optionally, the authority. The DNS URI follows the generic syntax from [\[RFC3986\]](#) and is described using ABNF [\[RFC5234\]](#). Strings are not case sensitive, and free insertion of linear-white-space is not permitted.

dnsurl = "dot:" ["//" dnsauthority "/"]
 dnsname ["?" dnsquery]

dnsauthority = host [":" port]
 ; See [RFC 3986](#) for the
 ; definition of "host" and "port".

dnsname = *pchar
 ; See [RFC 3986](#) for the
 ; definition of "pchar".

 ; The "dnsname" field may be a
 ; "relative" or "absolute" name,
 ; as per [RFC 1034, section 3.1](#).

; Note further that an empty
; "dnsname" value is to be
; interpreted as the root itself.
; See below on relative dnsnames.

dnsquery = dnsqueryelement [";" dnsquery]

dnsqueryelement = ("CLASS=" dnsclassval) / ("TYPE=" dnstypeval)
; Each clause MUST NOT be used more
; than once.

dnsclassval = 1*digit / "IN" / "CH" /
<Any IANA registered DNS class mnemonic>

dnstypeval = 1*digit / "A" / "NS" / "MD" /
<Any IANA registered DNS type mnemonic>

The DNS resource follows [\[RFC4501\]](#) but indicates the DNS resource
MUST be accessed using TCP over TLS as described in [\[RFC7858\]](#).

[5.](#) DNS over HTTPS URI registration

This section describes the URI template for the registration of the
URI as described in [\[RFC8484\]](#) to describe DNS resources being
accessed using DNS over HTTPS.

URL scheme name: "doh".

URL scheme syntax: A DNS URI designates a DNS resource record set,
referenced by domain name, class, type, and, optionally, the
authority. The DNS URI follows the generic syntax from [\[RFC3986\]](#)
and is described using ABNF [\[RFC5234\]](#). Strings are not case
sensitive, and free insertion of linear-white-space is not permitted.

dnsurl = "doh:" ["//" dnsauthority "/"]
dnsname ["?" dnsquery]

dnsauthority = host [":" port] ["/" abs_path]
; See [RFC 3986](#) for the
; definition of "host" and "port"
; "abs_path"

dnsname = *pchar

; See [RFC 3986](#) for the
; definition of "pchar".

; The "dnsname" field may be a
; "relative" or "absolute" name,
; as per [RFC 1034, section 3.1](#).

; Note further that an empty
; "dnsname" value is to be
; interpreted as the root itself.
; See below on relative dnsnames.

dnsquery = dnsqueryelement [";" dnsquery]

dnsqueryelement = ("CLASS=" dnsclassval) / ("TYPE=" dnstypeval)
; Each clause MUST NOT be used more
; than once.

dnsclassval = 1*digit / "IN" / "CH" /
<Any IANA registered DNS class mnemonic>

dnstypeval = 1*digit / "A" / "NS" / "MD" /
<Any IANA registered DNS type mnemonic>

The DNS resource follows [[RFC4501](#)] but indicates the DNS resource
MUST be accessed using HTTPS as described in [[RFC8484](#)].

[6.](#) Acknowledgment

The URI template are largely inspired from [[RFC4501](#)].

[7.](#) Normative References

[RFC1034] Mockapetris, P., "Domain names - concepts and facilities",
STD 13, [RFC 1034](#), DOI 10.17487/RFC1034, November 1987,
<<https://www.rfc-editor.org/info/rfc1034>>.

[RFC1035] Mockapetris, P., "Domain names - implementation and
specification", STD 13, [RFC 1035](#), DOI 10.17487/RFC1035,

November 1987, <<https://www.rfc-editor.org/info/rfc1035>>.

- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), DOI 10.17487/RFC2119, March 1997, <<https://www.rfc-editor.org/info/rfc2119>>.
- [RFC3986] Berners-Lee, T., Fielding, R., and L. Masinter, "Uniform Resource Identifier (URI): Generic Syntax", STD 66, [RFC 3986](#), DOI 10.17487/RFC3986, January 2005, <<https://www.rfc-editor.org/info/rfc3986>>.
- [RFC4501] Josefsson, S., "Domain Name System Uniform Resource Identifiers", [RFC 4501](#), DOI 10.17487/RFC4501, May 2006, <<https://www.rfc-editor.org/info/rfc4501>>.
- [RFC5234] Crocker, D., Ed. and P. Overell, "Augmented BNF for Syntax Specifications: ABNF", STD 68, [RFC 5234](#), DOI 10.17487/RFC5234, January 2008, <<https://www.rfc-editor.org/info/rfc5234>>.
- [RFC7553] Faltstrom, P. and O. Kolkman, "The Uniform Resource Identifier (URI) DNS Resource Record", [RFC 7553](#), DOI 10.17487/RFC7553, June 2015, <<https://www.rfc-editor.org/info/rfc7553>>.
- [RFC7595] Thaler, D., Ed., Hansen, T., and T. Hardie, "Guidelines and Registration Procedures for URI Schemes", [BCP 35](#), [RFC 7595](#), DOI 10.17487/RFC7595, June 2015, <<https://www.rfc-editor.org/info/rfc7595>>.

- [RFC7858] Hu, Z., Zhu, L., Heidemann, J., Mankin, A., Wessels, D., and P. Hoffman, "Specification for DNS over Transport Layer Security (TLS)", [RFC 7858](#), DOI 10.17487/RFC7858, May 2016, <<https://www.rfc-editor.org/info/rfc7858>>.
- [RFC8174] Leiba, B., "Ambiguity of Uppercase vs Lowercase in [RFC 2119](#) Key Words", [BCP 14](#), [RFC 8174](#), DOI 10.17487/RFC8174, May 2017, <<https://www.rfc-editor.org/info/rfc8174>>.

[RFC8484] Hoffman, P. and P. McManus, "DNS Queries over HTTPS (DoH)", [RFC 8484](https://www.rfc-editor.org/info/rfc8484), DOI 10.17487/RFC8484, October 2018, <<https://www.rfc-editor.org/info/rfc8484>>.

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