

Constrained RESTful Environments  
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M. S. Lenders  
TU Dresden  
C. Ams<sup>th</sup>ss

T. C. Schmidt  
HAW Hamburg  
M. W<sup>th</sup>hlisch  
TU Dresden & Barkhausen Institut  
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ALPN ID Specification for CoAP over DTLS  
draft-ietf-core-coap-dtls-alpn-05

## Abstract

This document specifies an Application-Layer Protocol Negotiation (ALPN) ID for transport-layer-secured Constrained Application Protocol (CoAP) services.

## About This Document

This note is to be removed before publishing as an RFC.

The latest revision of this draft can be found at <https://core-wg.github.io/coap-dtls-alpn/draft-ietf-core-coap-dtls-alpn.html>. Status information for this document may be found at <https://datatracker.ietf.org/doc/draft-ietf-core-coap-dtls-alpn/>.

Discussion of this document takes place on the Constrained RESTful Environments Working Group mailing list (<mailto:core@ietf.org>), which is archived at <https://mailarchive.ietf.org/arch/browse/core/>. Subscribe at <https://www.ietf.org/mailman/listinfo/core/>.

Source for this draft and an issue tracker can be found at <https://github.com/core-wg/coap-dtls-alpn>.

## Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of BCP 78 and BCP 79.

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This Internet-Draft will expire on 12 February 2026.

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## 1. Introduction

Application-Layer Protocol Negotiation (ALPN) enables communicating parties to agree on an application-layer protocol during a Transport Layer Security (TLS) handshake using an ALPN ID [RFC7301]. This ALPN ID can be discovered for services as part of Service Bindings (SVCB) via the DNS, using SVCB resource records with the "alpn" Service Parameter Keys [RFC9460]. As an example, applications that use the

Constrained Application Protocol (CoAP) [RFC7252] can obtain this information as part of the discovery of DNS over CoAP (DoC) servers (see Section 3.2 of [I-D.ietf-core-dns-over-coap]) that deploy TLS 1.3 [RFC8446] as well as Datagram Transport Layer Security (DTLS) 1.2 or 1.3 [RFC6347] [RFC9147] to secure their messages. This document specifies an ALPN ID for CoAP services that are secured by transport layer security using DTLS. An ALPN ID for CoAP services secured by TLS has already been specified in [RFC8323].

## 2. Application-Layer Protocol Negotiation (ALPN) IDs

For CoAP over TLS, an ALPN ID was defined as "coap" in [RFC8323]. As it is not advisable to re-use the same ALPN ID for a different transport layer, an ALPN for CoAP over DTLS is registered in Section 4.1.

ALPN ID values have variable length. For CoAP over DTLS, a short value ("co") is allocated, as this can avoid fragmentation of Client Hello and Server Hello messages in constrained networks with link-layer fragmentation, such as 6LoWPAN [RFC4944].

To discover CoAP services that secure their messages with TLS or DTLS, the ALPN IDs "coap" and "co" can be used, respectively, in the same manner as for any other service secured with transport layer security, as described in [RFC9460]. The discovery of CoAP services that rely on other security mechanisms is out of the scope of this document.

## 3. Security Considerations

Any security considerations on ALPN (see [RFC7301]) and SVCB resource records (see [RFC9460]) also apply to this document.

## 4. IANA Considerations

// RFC Ed.: throughout this section, please replace RFC-XXXX with the  
// RFC number of this specification and remove this note.

This document has the following actions for IANA.

### 4.1. TLS ALPN for CoAP

The following entry has been added to the "TLS Application-Layer Protocol Negotiation (ALPN) Protocol IDs" registry, which is part of the "Transport Layer Security (TLS) Extensions" registry group.

\* Protocol: CoAP (over DTLS)

\* Identification sequence: 0x63 0x6f ("co")

\* Reference: [RFC7252] and [RFC-XXXX]

Note that [RFC7252] does not define the use of the ALPN TLS extension during the DTLS connection handshake. This document does not change this behavior, and thus does not establish any rules like those in Section 8.2 of [RFC8323].

## 5. References

### 5.1. Normative References

- [RFC6347] Rescorla, E. and N. Modadugu, "Datagram Transport Layer Security Version 1.2", RFC 6347, DOI 10.17487/RFC6347, January 2012, <<https://www.rfc-editor.org/rfc/rfc6347>>.
- [RFC7252] Shelby, Z., Hartke, K., and C. Bormann, "The Constrained Application Protocol (CoAP)", RFC 7252, DOI 10.17487/RFC7252, June 2014, <<https://www.rfc-editor.org/rfc/rfc7252>>.
- [RFC7301] Friedl, S., Popov, A., Langley, A., and E. Stephan, "Transport Layer Security (TLS) Application-Layer Protocol Negotiation Extension", RFC 7301, DOI 10.17487/RFC7301, July 2014, <<https://www.rfc-editor.org/rfc/rfc7301>>.
- [RFC9147] Rescorla, E., Tschofenig, H., and N. Modadugu, "The Datagram Transport Layer Security (DTLS) Protocol Version 1.3", RFC 9147, DOI 10.17487/RFC9147, April 2022, <<https://www.rfc-editor.org/rfc/rfc9147>>.
- [RFC9460] Schwartz, B., Bishop, M., and E. Nygren, "Service Binding and Parameter Specification via the DNS (SVCB and HTTPS Resource Records)", RFC 9460, DOI 10.17487/RFC9460, November 2023, <<https://www.rfc-editor.org/rfc/rfc9460>>.

### 5.2. Informative References

- [I-D.ietf-core-dns-over-coap] Lenders, M. S., Amsend, C., Gendron, C., Schmidt, T. C., and M. Wahlisch, "DNS over CoAP (DoC)", Work in Progress, Internet-Draft, draft-ietf-core-dns-over-coap-17, 24 July 2025, <<https://datatracker.ietf.org/doc/html/draft-ietf-core-dns-over-coap-17>>.

- [RFC4944] Montenegro, G., Kushalnagar, N., Hui, J., and D. Culler, "Transmission of IPv6 Packets over IEEE 802.15.4 Networks", RFC 4944, DOI 10.17487/RFC4944, September 2007, <<https://www.rfc-editor.org/rfc/rfc4944>>.
- [RFC8323] Bormann, C., Lemay, S., Tschofenig, H., Hartke, K., Silverajan, B., and B. Raymor, Ed., "CoAP (Constrained Application Protocol) over TCP, TLS, and WebSockets", RFC 8323, DOI 10.17487/RFC8323, February 2018, <<https://www.rfc-editor.org/rfc/rfc8323>>.
- [RFC8446] Rescorla, E., "The Transport Layer Security (TLS) Protocol Version 1.3", RFC 8446, DOI 10.17487/RFC8446, August 2018, <<https://www.rfc-editor.org/rfc/rfc8446>>.

## Appendix A. Change Log

- A.1. Since draft-ietf-core-coap-dtls-alpn-04  
(<https://datatracker.ietf.org/doc/draft-ietf-core-coap-dtls-alpn/04/>)
- \* Address Deb Cooley's IESG ballot COMMENT
- A.2. Since draft-ietf-core-coap-dtls-alpn-03  
(<https://datatracker.ietf.org/doc/draft-ietf-core-coap-dtls-alpn/03/>)
- \* Make DTLS references normative
- A.3. Since draft-ietf-core-coap-dtls-alpn-02  
(<https://datatracker.ietf.org/doc/draft-ietf-core-coap-dtls-alpn/02/>)
- \* Address shepherd review
- A.4. Since draft-ietf-core-coap-dtls-alpn-01  
(<https://datatracker.ietf.org/doc/draft-ietf-core-coap-dtls-alpn/01/>)
- \* Address review by Esko Dijk
  - \* Address review by Marco Tiloca

A.5. Since draft-ietf-core-coap-dtls-alpn-00  
(<https://datatracker.ietf.org/doc/draft-ietf-core-coap-dtls-alpn/00/>)

- \* Fix ALPN ID for CoAP over TLS
- \* Change intended status to Informational

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#### Authors' Addresses

Martine Sophie Lenders  
TUD Dresden University of Technology  
Helmholtzstr. 10  
D-01069 Dresden  
Germany  
Email: [martine.lenders@tu-dresden.de](mailto:martine.lenders@tu-dresden.de)

Christian Ams<sup>テシ</sup>ss  
Email: [christian@amsuess.com](mailto:christian@amsuess.com)

Thomas C. Schmidt  
HAW Hamburg  
Berliner Tor 7  
D-20099 Hamburg  
Germany  
Email: [t.schmidt@haw-hamburg.de](mailto:t.schmidt@haw-hamburg.de)

Matthias W<sup>テ</sup>hlisch  
TUD Dresden University of Technology & Barkhausen Institut  
Helmholtzstr. 10  
D-01069 Dresden  
Germany  
Email: [m.waehlisch@tu-dresden.de](mailto:m.waehlisch@tu-dresden.de)