The application/pkcs10 Media Type

Abstract

This document specifies a media type used to carry PKCS #10 certification requests as defined in RFC 2986. It carries over the original specification from RFC 2311, which recently has been moved to Historic status, and properly links it to RFC 2986.

Status of This Memo

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1. Introduction

[RFC2311] first defined the application/pkcs10 media type. When [RFC2633] was published, the application/pkcs10 section was dropped, but for some reason the text was not incorporated into the PKCS #10 document [RFC2986]. [RFC2311] was moved to Historic status by [RFC5751]. To ensure the IANA media type registration points to a non-Historic document, this document updates [RFC2986] with the definition of the application/pkcs10 media type and an IANA registration based on [RFC4288].

The text for Section 2 is adapted from Section 3.7 of [RFC2311].

1.1. Requirements Terminology

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC2119].

2. Creating a Certification Request

A typical application that allows a user to generate cryptographic information has to submit that information to a Certification Authority (CA), who transforms it into a certificate. PKCS #10 [RFC2986] describes a syntax for certification requests.

The details of certification requests and the process of obtaining a certificate are beyond the scope of this memo. Instead, only the format of data used in application/pkcs10 is defined.

2.1. Format of the application/pkcs10 Body

PKCS #10 defines the ASN.1 type CertificationRequest for use in submitting a certification request. For transfer to a CA, this abstract syntax needs to be encoded and identified in a unique
manner. When the media type application/pkcs10 is used, the body
MUST be a CertificationRequest.

A robust application SHOULD output Distinguished Encoding Rules
(DER), but allow Basic Encoding Rules (BER) or DER on input.

Data produced by BER or DER is 8-bit, but some transports are limited
to 7-bit data. In such cases, a suitable 7-bit transfer encoding
MUST be applied; in MIME-compatible transports, the base64 encoding
[RFC4648] SHOULD be used with application/pkcs10, although any 7-bit
transfer encoding may work.

2.2. Sending and Receiving an application/pkcs10 Body Part

For sending a certificate-signing request, the application/pkcs10
message format MUST be used to convey a PKCS #10 certificate-signing
request. Note that for sending certificates and Certificate
Revocation Lists (CRLs) without any signed content, the
application/pkcs7-mime message format MUST be used to convey a
degenerate PKCS #7 signedData "certs-only" message [RFC5751].

To send an application/pkcs10 body, the application generates the
cryptographic information for the user. The details of the
cryptographic information are beyond the scope of this memo.

Step 1. The cryptographic information is placed within a PKCS #10
CertificationRequest.

Step 2. The CertificationRequest is encoded according to BER or DER
(preferred, DER).

Step 3. As a typical step, the encoded CertificationRequest is also
base64 encoded so that it is 7-bit data suitable for transfer
in ESMTP. This then becomes the body of an
application/pkcs10 body part.

The result might look like this:

Content-Type: application/pkcs10; name=smime.p10
Content-Transfer-Encoding: base64
Content-Disposition: attachment; filename=smime.p10

rfvbnj756tbBghyHhHUujhJhjH77n8HHGT9HG4VQpfyF467GhIGfhfYT6
7n8HHGghyHhHUujhJh4VQpfyF467GhIGfhfYT6rfvbnjT6jH7756tbB9H
f8HHGTrfvhJhjH776tbB9HG4VQbnj7567GhIGfhfYT6ghyHhHUujpfyF4
0GhIGfHFQbnj756YT64V
A typical application only needs to send a certification request. It is a Certification Authority that has to receive and process the request. The steps for recovering the CertificationRequest from the message are straightforward but are not presented here. The procedures for processing the certification request are beyond the scope of this document.

3. IANA Considerations

IANA has updated the registration for the application/pkcs10 media subtype in the Application Media Types registry using the filled-in template from BCP 13 [RFC4288] given below.

3.1. Registration of Media Subtype application/pkcs10

The media subtype for a PKCS #10 certification request is application/pkcs10.

Type name: application
Subtype name: pkcs10
Required parameters: None
Optional parameters: None
Encoding considerations: binary; see Section 2.

Security considerations:

Clients use a certification request to request that a Certification Authority certify a public key. The certification request is digitally signed. Also, see Section 6.

Interoperability considerations: See Section 2.

Published specification: This specification.

Applications which use this media type:

Applications that support PKCS #10 certification requests [RFC2986].

Additional information:

Magic number(s): None
File extension(s): .p10
4. Security Considerations

The security considerations of [RFC2986] and [RFC5751] apply; no new security considerations are introduced by this document.

5. Acknowledgements

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6. References

6.1. Normative References


6.2. Informative References


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