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JWK Thumbprint URI  
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## Abstract

This specification registers a kind of URI that represents a JSON Web Key (JWK) Thumbprint value. JWK Thumbprints are defined in [RFC 7638](#). This enables JWK Thumbprints to be used, for instance, as key identifiers in contexts requiring URIs.

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JWK Thumbprint URI

January 2022

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[1.](#) Introduction

A JSON Web Key (JWK) Thumbprint [[RFC7638](#)] is a URL-safe representation of a hash value over a JSON Web Key (JWK) [[RFC7517](#)]. This specification defines a URI prefix indicating that the portion of the URI following the prefix is a JWK Thumbprint. This enables JWK Thumbprints to be communicated in contexts requiring URIs, including in specific JSON Web Token (JWT) [[RFC7519](#)] claims.

JWK Thumbprints URIs are being used in the [[SIOPv2](#)] specification as one kind of subject identifier in a context requiring that the identifier be a URI. In this case, the subject identifier is derived from a public key represented as a JWK. Expressing the identifier as JWK Thumbprint URI enables this kind of identifier to be differentiated from other kinds of identifiers that are also URIs, such as Decentralized Identifiers (DIDs) [[DID-Core](#)].

[2.](#) Requirements Notation and Conventions

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.

[3.](#) JWK Thumbprint URI

The following URI prefix is defined to indicate that the portion of the URI following the prefix is a JWK Thumbprint:

- o "urn:ietf:params:oauth:jwk-thumbprint"

The prefix is followed by a colon and a JWK Thumbprint value to form a URI representing a JWK Thumbprint.

### [3.1.](#) Example JWK Thumbprint URI

[Section 3.1 of \[RFC7638\]](#) contains the following example JWK Thumbprint value:

```
NzbLsXh8uDCcd-6MNwXF4W_7noWXFZAfHkxZsRGC9Xs
```

A complete JWK Thumbprint URI using the above JWK Thumbprint is:

```
urn:ietf:params:oauth:jwk-thumbprint:NzbLsXh8uDCcd-6MNwXF4W_7noWXFZAfHkxZsRGC
```

## [4.](#) Security Considerations

The security considerations of [\[RFC7638\]](#) also apply when using this specification.

## [5.](#) IANA Considerations

### [5.1.](#) OAuth URI Registration

This specification registers the following value in the IANA "OAuth URI" registry [\[IANA.OAuth.Parameters\]](#) established by [\[RFC6755\]](#).

#### [5.1.1.](#) Registry Contents

- o URN: urn:ietf:params:oauth:jwk-thumbprint
- o Common Name: JWK Thumbprint URI
- o Change controller: IESG
- o Specification Document: [[ this specification ]]

## [6.](#) References

### [6.1.](#) Normative References

[IANA.OAuth.Parameters]  
IANA, "OAuth Parameters",  
<<http://www.iana.org/assignments/oauth-parameters>>.

[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>>.

[RFC7638] Jones, M. and N. Sakimura, "JSON Web Key (JWK) Thumbprint", [RFC 7638](#), DOI 10.17487/RFC7638, September 2015, <<https://www.rfc-editor.org/info/rfc7638>>.

[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>>.

## [6.2](#). Informative References

[DID-Core]

Sporny, M., Guy, A., Sabadello, M., and D. Reed, "Decentralized Identifiers (DIDs) v1.0", Aug 2021, <<https://www.w3.org/TR/2021/PR-did-core-20210803/>>.

[RFC6755] Campbell, B. and H. Tschofenig, "An IETF URN Sub-Namespace for OAuth", [RFC 6755](#), DOI 10.17487/RFC6755, October 2012, <<https://www.rfc-editor.org/info/rfc6755>>.

[RFC7517] Jones, M., "JSON Web Key (JWK)", [RFC 7517](#), DOI 10.17487/RFC7517, May 2015, <<https://www.rfc-editor.org/info/rfc7517>>.

[RFC7519] Jones, M., Bradley, J., and N. Sakimura, "JSON Web Token (JWT)", [RFC 7519](#), DOI 10.17487/RFC7519, May 2015, <<https://www.rfc-editor.org/info/rfc7519>>.

[SIOPv2] Yasuda, K. and M. B. Jones, "Self-Issued OpenID Provider v2", December 2021, <<https://openid.net/specs/openid->

[connect-self-issued-v2-1\\_0.html](#)>.

#### [Appendix A](#). Acknowledgements

Use cases for this specification were developed in the OpenID Connect Working Group of the OpenID Foundation. Specifically, it is being used a key identifier in the [[SIOPv2](#)] specification.

The following individuals also contributed to this specification:  
John Bradley and Adam Lemmon.

#### [Appendix B](#). Document History

[[ to be removed by the RFC Editor before publication as an RFC ]]

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- o Created initial working group draft from [draft-jones-oauth-jwk-thumbprint-uri-01](#).

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