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**Request by JSON ver.1.0 for OAuth 2.0**  
**draft-sakimura-oauth-requrl-02**

Abstract

The authorization request in OAuth 2.0 utilizes query parameter serialization. This specification defines the authorization request using JWT serialization. The request is sent through 'request' parameter or by reference through 'request\_uri' that points to the JWT serialized authorization request.

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## 1. Introduction

The parameters 'request' and 'request\_url' are introduced as additional authorization request parameters for the OAuth 2.0 [oauth2] flows. The 'request' parameter is a JSON Web Token (JWT) [JWT] whose body holds the JSON encoded OAuth 2.0 authorization request parameters. The [JWT] can be passed to the authorization endpoint by reference, in which case the parameter 'request\_uri' is used instead of the 'request'.

Using [JWT] as the request encoding instead of query parameters has several advantages:

1. The request may be signed so that integrity check may be implemented. If a suitable algorithm is used for the signing, then non-repudiation property may be obtained in addition.
2. The request may be encrypted so that end-to-end confidentiality may be obtained even if in the case TLS connection is terminated at a gateway or similar device.

There are a few cases that request by reference is useful such as:

1. When it is detected that the User Agent does not support long URLs - It is entirely possible that some extensions may extend the URL. For example, the client might want to send a public key with the request.
2. Static signature: The client may make a signed request file and put it on the client. This can just be done by a client utility or other process, so that the private key does not have to reside on the client, simplifying programming.
3. When the server wants the requests to be cacheable - The request\_uri can include a sha256 hash of the file, as defined in FIPS180-2 [FIPS180-2], the server knows if the file has changed without fetching it, so it does not have to re-fetch a same file, which is a win as well.
4. When the client wants to simplify the implementation without compromising the security. If the request parameters go through the Browser, they may be tampered in the browser even if TLS was used. This implies we need to have signature on the request as well. However, if HTTPS request\_url was used, it is not going to be tampered, thus we now do not have to sign the request. This simplifies the implementation.



### **1.1. Requirements Language**

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 [RFC 2119](#) [[RFC2119](#)].

## **2. Terminology**

Following parameter is defined as a request and response parameter.

**request object** A [[JWT](#)] that holds OAuth 2.0 authorization requests as JSON object in its body. It MAY include all the potential variables including extension and non-oauth variables. Request object can optionally be digitally signed or signed and encrypted. To sign, [[JWS](#)] is used. To encrypt, [[JWT](#)] is used.

**request\_uri** The absolute URL from which the request object is obtained.

**Request File** This is a physical or logical file that the 'request\_url' points to.

## **3. Authorization Request Object**

The Authorization Request object is used to provide authorization request parameters. It MUST contain all REQUIRED OAuth 2.0 authorization request parameters and MAY contain optional and extension parameters. It is a JSON Web Token (JWT) [[JWT](#)] that has the JSON object that holds the OAuth 2.0 authorization request parameters. The parameters are included as the top level members of JSON [[RFC4627](#)]. Parameter names and string values are included as JSON strings. Numerical values are included as JSON numbers. It MAY include any extension parameters. This JSON [[RFC4627](#)] constitutes the body of the [[JWT](#)].

The [[JWT](#)] MAY be signed or unsigned. When it is unsigned, it will be indicated by the [[JWT](#)] "signed":"none" convention in the [[JWT](#)] header. If signed, the authorization request object SHOULD contain the standard [[JWT](#)] "iss" and "aud" claims.

Following is the example of the JSON which constitutes the body of the [[JWT](#)].

```
{
  "redirect_url":"https://example.com/rp/endpoint_url",
  "cliend_id":"http://example.com/rp/"
}
```



request\_uri REQUIRED unless "request" is specified. The absolute URL that points to the authorization request object ([Section 3](#)) that holds authorization request parameters stated in the [section 4](#) of OAuth 2.0 [[oauth2](#)]. When sending the request by "request\_uri", the client MAY provide the sha256 hash as defined in FIPS180-2 [[FIPS180-2](#)] of the Request File as the fragment to it to assist the cache utilization decision of the Authorization Server.





state RECOMMENDED. An opaque value used by the client to maintain state between the request and callback. The authorization server includes this value when redirecting the user-agent back to the client. The parameter SHOULD be used for preventing cross-site request forgery as described in [Section 10.12](#). of OAuth 2.0 [[oauth2](#)]

The client directs the resource owner to the constructed URI using an HTTP redirection response, or by other means available to it via the user-agent.

For example, the client directs the end-user's user-agent to make the following HTTPS request (line breaks are for display purposes only):  
GET /authorize?request\_uri=https%3A%2F%2Fclient%2Eexample%2Ecom%2Fcb HTTP/1.1  
Host: server.example.com

The authorization request object MAY be signed AND/OR encrypted.

Upon receipt of "request\_uri" in the request, the authorization server MUST send a GET request to the "request\_uri" to retrieve the authorization request object unless it is already cached at the Authorization Server.

If the response was signed AND/OR encrypted, it has to be decoded accordingly before being processed.

Then, the Authorization Server MUST reconstruct the complete client request from the original HTTP request and the content of the request object. Then, the process continues as described in [Section 3](#) of OAuth 2.0 [[oauth2](#)] .

## 5. Authorization Server Response

Authorization Server Response is created and sent to the client as in [Section 4](#) of OAuth 2.0 [[oauth2](#)] .

In addition, this document defines additional 'error' values as follows:

- o "invalid\_request\_uri" - The provided request\_uri was not available.
- o "invalid\_request\_format" - The Request Object format was invalid.
- o "invalid\_request\_params" - The parameter set provided in the Request Object was invalid.



## 6. IANA Considerations

This document registers following error strings to the OAuth Error Registry.

- o "invalid\_request\_uri" - The provided request\_uri was not available.
- o "invalid\_request\_format" - The Request Object format was invalid.
- o "invalid\_request\_params" - The parameter set provided in the Request Object was invalid.

## 7. Security Considerations

In addition to the all the security considerations discussed in OAuth 2.0 [[oauth2](#)], the following security considerations SHOULD be taken into account.

When sending the authorization request object through "request" parameter, it SHOULD be signed with [[JWS](#)].

When obtaining the Request File, the Authorization Server SHOULD use either HTTP over TLS 1.2 as defined in [RFC5246](#) [[RFC5246](#)] AND/OR [[JWS](#)].

If the request object contains personally identifiable or sensitive information, the "request\_uri" MUST be of one-time use and MUST have large enough entropy deemed necessary with applicable security policy. For higher security requirement, using [[JWE](#)] is strongly recommended.

[[ToDo]]

## 8. Acknowledgements

Following people contributed to creating this document through the OpenID Connect 1.0 [[openid\\_ab](#)] .

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