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J. Richer, Ed.
The MITRE Corporation

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OAuth Token Introspection
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Abstract

This specification defines a method for a client or protected resource to query an OAuth authorization server to determine meta-information about an OAuth token.

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].

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 July 12, 2013.

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1. Introduction

In OAuth, the contents of tokens are opaque to clients. This means that the client does not need to know anything about the content or structure of the token itself, if there is any. However, there is still a large amount of metadata that may be attached to a token, such as its current validity, approved scopes, and extra information about the authentication context in which the token was issued. These pieces of information are often vital to Protected Resources making authorization decisions based on the tokens being presented. Since OAuth2 defines no direct relationship between the Authorization Server and the Protected Resource, only that they must have an agreement on the tokens themselves, there have been many different approaches to bridging this gap.

This specification defines an Introspection Endpoint that allows the holder of a token to query the Authorization Server to discover the set of metadata for a token. A Protected Resource may use the mechanism described in this draft to query the Introspection Endpoint in a particular authorization decision context and ascertain the relevant metadata about the token in order to make this authorization decision appropriately.

2. Introspection Endpoint

The Introspection Endpoint is an OAuth 2 Endpoint that responds to HTTP GET and HTTP POST requests from token holders. The endpoint takes a single parameter representing the token (and optionally further authentication) and returns a JSON document representing the meta information surrounding the token.

2.1. Introspection Request

token REQUIRED. The string value of the token.

resource_id OPTIONAL. A service-specific string identifying the resource that the client doing the introspection is asking about.

The endpoint MAY allow other parameters to provide context to the query. For instance, an authorization service may need to know the IP address of the Client in order to determine the appropriateness of the token being presented.

The endpoint SHOULD also require some form of authentication to access this endpoint, such as the Client Authentication as described in OAuth 2 Core Specification [RFC6749] or a separate OAuth2 Access Token. The methods of managing and validating these authentication

credentials are out of scope of this specification.

2.2. Introspection Response

The server responds with a JSON object [RFC4627] in "application/json" format with the following top-level members. Specific implementations MAY extend this structure with their own service-specific pieces of information.

valid REQUIRED. Boolean indicator of whether or not the presented token is valid.

expires_at OPTIONAL. Integer timestamp, measured in the number of seconds since January 1 1970 UTC, indicating when this token will expire.

issued_at OPTIONAL. Integer timestamp, measured in the number of seconds since January 1 1970 UTC, indicating when this token was originally issued.

scope OPTIONAL. Array of strings representing the scopes associated with this token.

subject OPTIONAL. Local identifier of the Resource Owner who authorized this token.

client_id OPTIONAL. Client Identifier for the Client that requested this token.

audience OPTIONAL. Service-specific string identifier of the intended audience for this token.

2.3. Non-normative Example

For example, a Protected Resource accepts a request from a Client carrying an OAuth2 Bearer Token. In order to know how and whether to serve the request, the Protected Resource then makes the following request to the Introspection Endpoint of the Authorization Server. The Protected Resource is here authenticating with its own Client ID and Client Secret as per OAuth2 [RFC6749] Section 2.3.1.

Following is a non-normative example request (with line wraps for display purposes only):

```
POST /register HTTP/1.1
Accept: application/x-www-form-urlencoded
Host: server.example.com
Authorization: Basic czZCaGRSa3F0Mzo3RmpmcDBaQnIxS3REUmJuZlZkbUl3

token=X3241Affw.4233-99JXJ
```

The Authorization Server validates the client credentials and looks up the information in the token. If the token is valid, it returns the following JSON document.

Following is a non-normative example valid token response (with line wraps for display purposes only):

```
HTTP/1.1 200 OK
Content-Type: application/json
Cache-Control: no-store

{
 "valid": true,
 "client_id":"s6BhdRkqt3",
 "scope": ["read", "write", "dolphin"],
 "subject": "2309fj32kl",
 "audience": "http://example.org/protected-resource/*"
}
```

If the token presented is not valid (but the authentication presented is valid), it returns the following JSON document.

Following is a non-normative example invalid response (with line wraps for display purposes only):

```
HTTP/1.1 200 OK
Content-Type: application/json
Cache-Control: no-store

{
 "valid": false
}
```

If the client credentials are invalid or there is another error, the Authorization Server responds with the appropriate error response from the OAuth2 Core.

3. IANA Considerations

This document makes no request of IANA.

4. Security Considerations

If left unprotected and un-throttled, the Introspection Endpoint could present a means for an attacker to poll a series of possible token values, fishing for a valid token. Therefore, the Authorization Server SHOULD issue special client credentials to any protected resources or clients that need to access the introspection endpoint. These credentials may be used directly at the endpoint, or they may be exchanged for an OAuth2 Access token scoped specifically for the Introspection Endpoint.

5. Acknowledgements

Thanks to the OAuth Working Group and the UMA Working Group for feedback.

6. Normative References

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997.

[RFC4627] Crockford, D., "The application/json Media Type for JavaScript Object Notation (JSON)", RFC 4627, July 2006.

[RFC6749] Hardt, D., "The OAuth 2.0 Authorization Framework", RFC 6749, October 2012.

[RFC6750] Jones, M. and D. Hardt, "The OAuth 2.0 Authorization Framework: Bearer Token Usage", RFC 6750, October 2012.

Author's Address

Justin Richer (editor)
The MITRE Corporation

Email: jricher@mitre.org