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Client ID Metadata Document

[https://datatracker.ietf.org/doc/draft-parecki-oauth-client-id-metadata-document/
draft-01](https://datatracker.ietf.org/doc/draft-parecki-oauth-client-id-metadata-document/draft-01)

OAuth Client Registration

OAuth clients need to register with the Authorization Server to establish things like:

- Redirect URI
- Name
- Logo
- Scopes
- Client Authentication Methods
- etc

OAuth Client Registration

Pre-registration is not possible when the client developer has no prior relationship with the authorization server, for example:

- Open source chat app connecting to self-hosted chat server
- Apps that connect to self-hosted services, such as Mastodon, where there is no single central server to register the OAuth client

Dynamic Client Registration

Dynamic Client Registration (RFC7591) is an option, but provides additional operational challenges:

- The AS has to maintain all received registrations for an indeterminate amount of time
- This has led to some AS's building a "cleanup" process that removes inactive clients
- Clients have no way to know if they've been "cleaned up"
 - RFC 6749 says the AS MUST NOT redirect on invalid client ID error
 - There is no standard "check client credentials" method, nor would this scale well
 - Not all clients have client credentials (i.e., public clients without a client_secret)
- This leads to a dead end for the user, leaving users confused and stranded
- Which then leads to clients doing Dynamic Client Registration on every user authorization to avoid the dead end situation
 - Which creates an application management problem for users and administrators, reducing security,
 - And uses an excessive amount of storage as the same client is stored multiple times.
(one real example has an instance with ~40,000 users storing ~400,000 clients)

See this thread for an example of this discussion <https://github.com/mastodon/mastodon/issues/27740>

Previously Proposed Solutions

draft-looker-oauth-client-discovery-01 ([Issue #5](#))

- <https://www.ietf.org/archive/id/draft-looker-oauth-client-discovery-01.html>
- Uses a .well-known endpoint of /.well-known/oauth-client
- Has the well-known problem of multi-tenant systems, e.g.
 - /.well-known/oauth-client/client1 VS
 - /client1/.well-known/oauth-client VS
 - /tenant1/.well-known/oauth-client/client1 VS
 - /.well-known/oauth-client/tenant1/client1
- Doesn't allow for the document to be hosted in a location that differs from the `client_uri`, preventing usage by e.g., mobile apps.
- Doesn't allow for non-public apps, e.g., apps on a corporate intranet that connect to a remote AS
(though this isn't the general use-case for `client_id` as URIs)

Client ID Metadata Document

- The client publishes their metadata (Dynamic Client Registration vocabulary) at a URL
 - <https://www.iana.org/assignments/oauth-parameters/oauth-parameters.xhtml#client-metadata>
 - Doesn't have to be at a predefined path, but it should be a “stable URL”, and may be displayed to the end user
- This URL is used as the Client ID in the OAuth flow
 - ...&client_id=https://example-app.com/client.json&scope=...

Client ID Metadata Document

These MUST match

(like in Protected Resource Metadata)

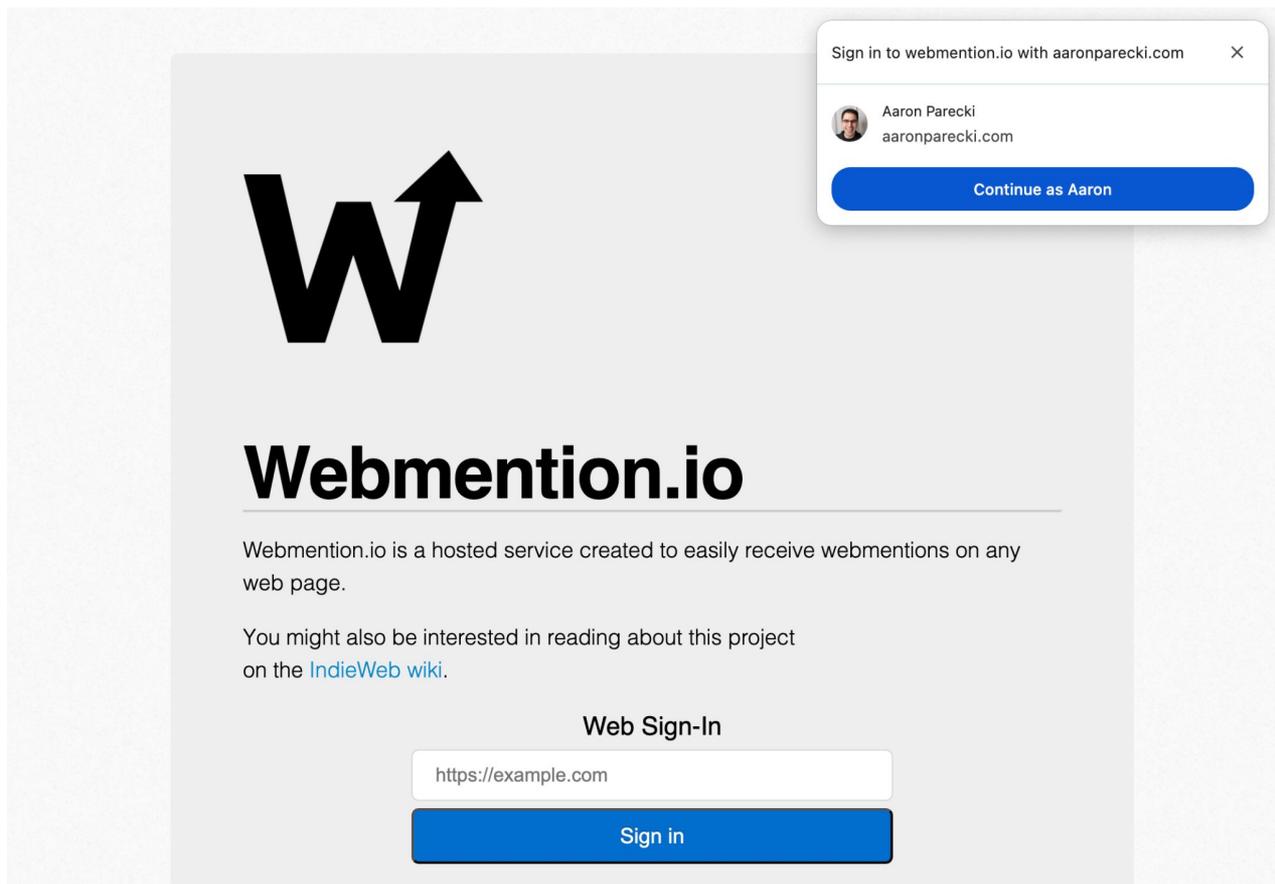
```
...&client_id=https://webmention.io/id&...
```

```
{  
  "client_id": "https://webmention.io/id",  
  "client_name": "Webmention.io",  
  "client_uri": "https://webmention.io",  
  "logo_uri": "https://webmention.io/img/webmention-logo-380.png",  
  "redirect_uris": [  
    "https://webmention.io/auth/callback"  
  ]  
}
```

Client ID Metadata Document

- The AS can fetch the metadata to display the client name and logo
 - Or it can choose to ignore it
 - AS should validate data within the document according to their security practices that would be applicable for Dynamic Client Registration
- Client metadata includes `redirect_uris`
- Client metadata can include a public key so the client can authenticate requests to the token endpoint and elsewhere
- Client metadata documents **MUST** be publicly accessible, such that the AS can fetch them.

Implementation with FedCM



The image shows a screenshot of the Webmention.io website. At the top left is a large black 'W' logo with an arrow pointing up and to the right. Below the logo is the text 'Webmention.io' in a large, bold, black font. Underneath, there is a horizontal line, followed by the text 'Webmention.io is a hosted service created to easily receive webmentions on any web page.' Below that, it says 'You might also be interested in reading about this project on the [IndieWeb wiki](#).' At the bottom, there is a 'Web Sign-In' section with a text input field containing 'https://example.com' and a blue 'Sign in' button. In the top right corner, a sign-in modal is open, showing a user profile for 'Aaron Parecki' with the email 'aaronparecki.com' and a blue 'Continue as Aaron' button. The modal title is 'Sign in to webmention.io with aaronparecki.com' and has a close button in the top right corner.

Webmention.io

Webmention.io is a hosted service created to easily receive webmentions on any web page.

You might also be interested in reading about this project on the [IndieWeb wiki](#).

Web Sign-In

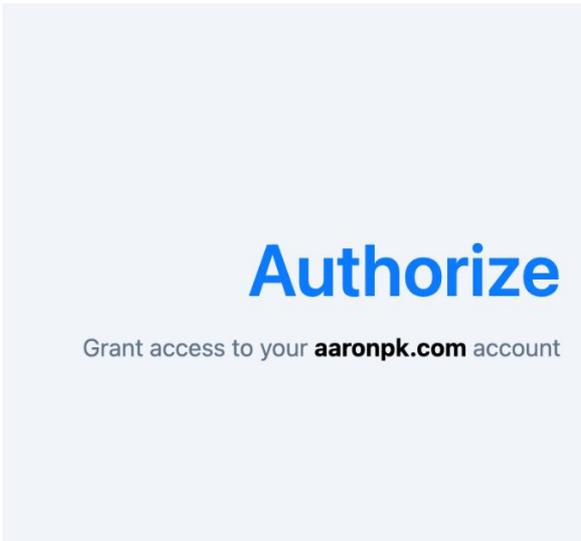
Sign in

Sign in to webmention.io with aaronparecki.com

Aaron Parecki
aaronparecki.com

Continue as Aaron

New Implementations: BlueSky and apps!



The image shows a screenshot of an OAuth authorization screen. On the left, there is a light blue box with the word "Authorize" in large blue font. Below it, in smaller grey font, it says "Grant access to your aaronpk.com account". To the right of this box, there is a paragraph of text explaining that frontpage.fyi is asking for permission to access the account (aaronpk.com). It lists the actions it will perform: "Uniquely identify you" and "transition:generic". At the bottom right, there are two buttons: a grey "Deny access" button and a blue "Accept" button.

Authorize

Grant access to your **aaronpk.com** account

frontpage.fyi/oauth/client-metadata.json is asking for permission to access your account (**aaronpk.com**).

By clicking **Accept**, you allow this application to perform the following actions in accordance to their [terms of service](#) and [privacy policy](#):

- Uniquely identify you
- transition:generic

Deny access

Accept

<https://docs.bsky.app/blog/oauth-atproto>

[frontpage.fyi](#)
[smokesignal.events](#)

Implementations

- Based on an early version of IndieAuth, now referenced by IndieAuth
 - indieauth.spec.indieweb.org
- Based on Solid-OIDC Client ID Documents
 - Solid-OIDC defines additional JSON-LD requirements, but should otherwise be compatible
 - Implemented in Enterprise Solid Server from Inrupt (via prior art)
- Live Implementations:
 - Clients: [smokesignal.events](#), [frontpage.fyi](#), [webmention.io](#), [indiebookclub.biz](#), [indielogin.com](#)
 - AS: Micro.blog, WordPress IndieAuth Plugin, ProcessWire IndieAuth Plugin, aaronparecki.com
 - **New AS: BlueSky** <https://docs.bsky.app/blog/oauth-atproto>
- Planned:
 - AS: Mastodon <https://github.com/mastodon/mastodon/issues/31151>
 - Clients: phanpy.social and other 3rd party Mastodon apps.
- Used in the OAuth profile for FedCM when used by decentralised services
 - <https://github.com/aaronpk/oauth-fedcm-profile>

What's Next

- Recommendations for localhost/development clients
- WG Adoption?

Open Questions

- Require that `client_uri` is a prefix of `client_id`? ([Issue #10](#))
- Recommendations when an AS sees a client has changed its keys ([Issue #11](#))
 - e.g. revoke consents
- Best way to handle localhost/development clients ([Issue #12](#))
- Require all URIs to be absolute and prohibit data: URIs? ([Issue #18](#), [#19](#))
- How can caching happen? How does invalidation happen? ([Issue #3](#))