Content Security Policy for Privacy

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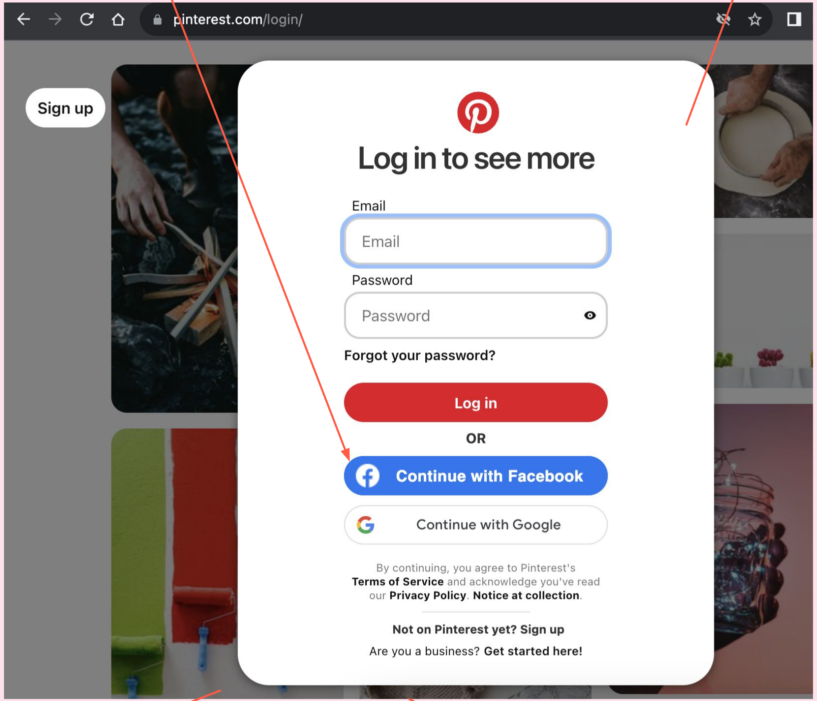
PEPR 2023

Third party domains and privacy

Identity Providers

Bot & fraud detection



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Analytics

Marketing Pixels

User data received by client side third parties

- Data sent by your application
- Cookies
- IP
- User agent
- Passive HTTP, TLS, or TCP fingerprinting

What is Content Security Policy (CSP)?

- HTTP header or meta tag
- Tells browser what domains are expected to be used by the website
- Commonly used to mitigate cross site scripting (XSS)

Example

```
Content-Security-Policy: default-src 'self'
        blob: s.pinimg.com; script-src 'self'
        'nonce-0260cb' 'strict-dynamic'
        *.example-analytics.com; img-src 'self'
        i.pinimg.com; report-uri /_/_/csp_report/
```

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```

`<img src=i.pinimg.com/pin.png />`

Allowed

`<img src=third-party.com/pin.png />`

Blocked

Benefits of CSP

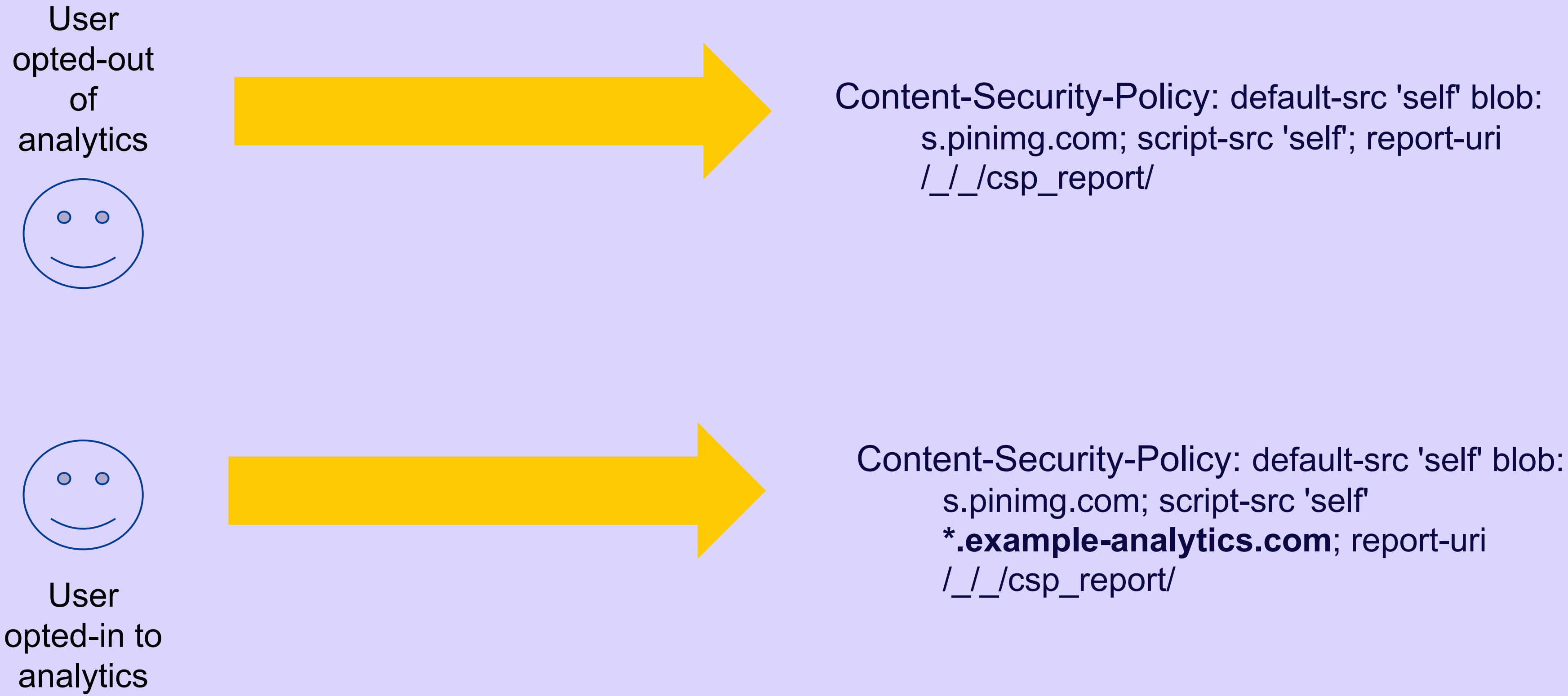
Central inventory of third parties used client side

- Important for responding to requests or ensuring compliance with new requirements
- More comprehensive than scanning based approaches

Gating function for onboarding new third parties

- Ensure appropriate legal and security stakeholders are involved before changes happen

Different policies based on the user consent and type



User
opted-out
of
analytics

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```

Deployment

Deploying a CSP for privacy

Come up with an initial policy
If you know your website you may be able to do this manually.

You can alternatively open developer tools and click around your website to see what is loaded or install a browser extension to do this automatically.

Ensure you have a default-src and don’t use * in any of your directives.

Report only mode
Put your policy inside a header like:

Content-Security-Policy-Report-Only: default-src 'self' blob: s.pinimg.com; script-src 'self' *.pinterest.com *.example-analytics.com; img-src 'self' i.pinimg.com; **report-uri *****/_/_/csp_report/***

This will send reports to the url listed in report-uri of any violations.

Enforce the policy
Put your policy inside a header like:

Content-Security-Policy: default-src 'self' blob: s.pinimg.com; script-src 'self' *.pinterest.com *.example-analytics.com; img-src 'self' i.pinimg.com; **report-uri *****/_/_/csp_report/?enforce***

Continue to monitor your reports to detect any issues. You can add query string parameters or custom fields to your report uri to help differentiate these reports if needed.

nonces in script-src

- Nonces or hashes in your CSP script-src are better for securing against XSS
- When you use nonces, you can’t use an allowlist in the same policy
- Solution: send multiple CSPs comma separated (does not work for safari <15.6)

Specific high risk integrations (and directives)

Javascript (script-src) - Full access to everything on the page and any actions your user can perform

Iframes (frame-src)- Ability to add other third parties, can use local storage and client side fingerprinting

Limitations

Same domain used for multiple purposes

Iframes can include third parties outside the CSP

Summary

- Central inventory of third parties used client side
- Gating function for onboarding new third parties
- Allows central blocking of certain assets per consent option or user type

Thank you!