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Ecosystem Effects of Web Packaging
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Abstract

This document analyzes how Web Packaging may affect the web ecosystem.

Note to Readers

This document has NOT been reviewed widely and probably contains lots of mistakes.

Discussion of this draft takes place on the wpack mailing list (wpack@ietf.org), which is archived at https://www.ietf.org/mailman/listinfo/wpack [1].

The source code and issues list for this draft can be found in https://github.com/jyasskin/wpack-ecosystem-effects [2].

Status of This Memo

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1. Introduction

Web Packaging, as currently defined in [I-D.yasskin-wpack-bundled-exchanges] and [I-D.yasskin-http-origin-signed-responses], is a system to allow content authored by one web origin to be retrieved in an optionally-trustworthy way from a peer or other intermediate server. The ESCAPE conference [3] was chartered to (among other things) look for any increase in consolidation that might result from standardizing Web Packaging. The known possible effects on centralization and power imbalances, arranged by the type of service provider, and not filtered by benefit, harm, or likelihood, follow.

2. General

- The implementation of any new technology is a smaller fraction of a large organization's budget, which pushes toward centralization.

3. Aggregators

- Aggregators' primary power comes from ranking: telling people that they probably want to visit particular URLs. That's not affected by packaging.

- Aggregators already rank based on sites' content and technology choices. e.g. Google's promotion of HTTPS sites. Packaging can give the aggregator more certainty about the user's experience, which might lead to more intrusive requirements.

  For example, the Google Search Carousel might be able to insist on particular Javascript that could handle swipe gestures where they might not be willing to rely on just having seen such JS on the last crawl. However, packaged Javascript must also be able to reload the page from the origin to deal with retracted content, and that could break reliance on knowing the exact content in the same way.

- Prefetch improves navigation speeds from aggregators that can predict which links users will click. The ability to make that prediction is an economy of scale which encourages centralization. This is likely to have more effect for some kinds of aggregators (search engines?) than others (news streams?).

4. Browsers

- Packages add pressure to have just one or a few versions of a site's content, which might reduce publishers' willingness to support lots of different browser engines with different features. They'll either settle on the lowest common denominator with some progressive enhancement or target the most popular couple engines, which is likely to be Chromium (Google Chrome, Edge, Brave, Samsung Internet, Opera, UC Browser, etc.) and WebKit (Safari), disadvantaging Gecko (Firefox).

  However, "we only tested in Chrome" is enough of a problem on the online web that it's not clear how big an additional impact packaging can have.

5. CDNs

- Adding a new kind of distribution might transfer traffic from CDNs to large aggregators, which would reduce CDNs' revenue.

- However, CDNs will still be needed to serve URLs that users type in, bookmark, or navigate to via same-site links, so there's

disagreement, even among employees of CDNs, about the likely size of this effect.

- CDNs might be able to acquire even more traffic by offering package caches to let smaller sites take advantage of prefetching.

6. Content Producers

- If Web Packages become an additional format publishers need to produce (https://xkcd.com/927/ [4]), that will advantage the larger publishers who can afford the engineering to maintain lots of formats. If instead they replace at least 2 of the existing formats (e.g. AMP, Apple News, Facebook Instant Articles), that'll reduce that advantage of larger publishers and contribute to decentralization.

- If aggregators use packaging to serve a significant fraction of content producers' bytes for free, this reduces the amount the producers need to pay CDNs, which would allow more marginal content producers to stay profitable, increasing diversity.

7. Other effects not necessarily related to centralization

- When an aggregator prefetches a web package, the static content will load instantly, but ads and other dynamic content will have a visible delay. Personalization might have a delay or might be loaded from local storage effectively instantly. It's not clear what ecosystem effects the changes in loading speed are likely to have.

8. Security Considerations

This document has no security implications.

9. IANA Considerations

This document has no actions for IANA.

10. References

10.1. Informative References

[I-D.yasskin-http-origin-signed-responses]
Yasskin, J., "Signed HTTP Exchanges", draft-yasskin-http-origin-signed-responses-07 (work in progress), September 2019.

[I-D.yasskin-wpack-bundled-exchanges]
Yasskin, J., "Bundled HTTP Exchanges", draft-yasskin-wpack-bundled-exchanges-02 (work in progress), September 2019.

10.2. URIs

[1] https://www.ietf.org/mailman/listinfo/wpack

[2] https://github.com/jyasskin/wpack-ecosystem-effects

[3] https://www.iab.org/activities/workshops/escape-workshop/

[4] https://xkcd.com/927/

Appendix A. Change Log

RFC EDITOR PLEASE DELETE THIS SECTION.

Appendix B. Acknowledgements

Thanks to the ESCAPE workshop attendees for coming up with many of the effects in this document.

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