Revolutionary DoH: Effective DNS Service

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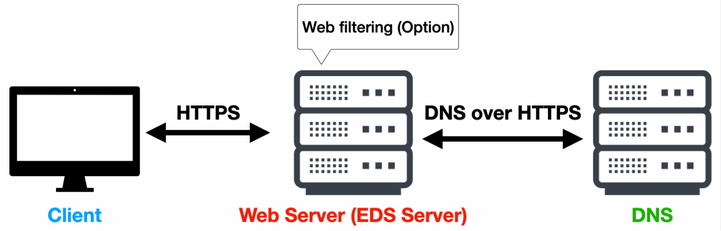
Abstract

DNS over HTTPS has a problem that makes difficult to identify which is name resolution request, so it is impossible to use web filtering, parental controls and so on. Furthermore, user-agent in HTTP header that is necessary for HTTPS communication would be a data to track users. In the field of implementation of DNS over HTTPS, there is a problem that requests to DNS are dominated by some companies. This time, I developed “Effective DNS Service (EDS)” that can solve these three problems: unable DNS encryptions, unable web filtering and unable to choose DNS server freely by setting a web server that mediates between client side and DNS server.

The structure of EDS



EDS speed

Direct access (8.8.8.8)

0.2 s

US EDS (Heroku US region)

1.2 s

0.2 s

Local EDS (localhost)

Response of EDS

```
[
  { record: 'CNAME', addresss: 'www.apple.com.edgekey.net' },
  {
    record: 'CNAME',
    addresss: 'www.apple.com.edgekey.net.globalredir.akadns.net'
  },
  { record: 'CNAME', addresss: 'e6858.dscx.akamaiedge.net' },
  { record: 'A', addresss: '23.41.22.84' }
]
```

Safety EDS and Third-party EDS

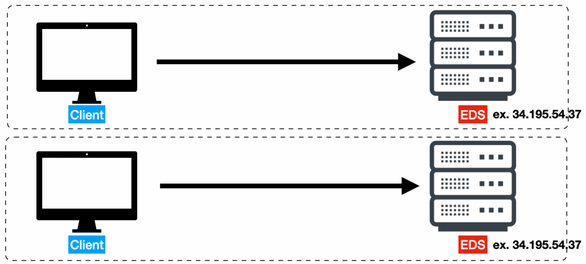
Safety EDS

- Created by official organization
- Certified as Safety EDS
- Any Cast EDS

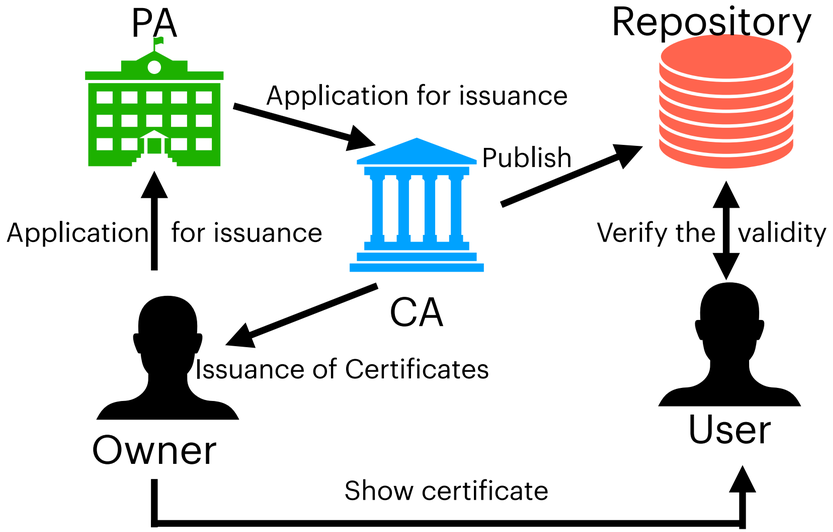
Third-party EDS

- Created by user
- Certified as Third-party EDS

Any Cast EDS system



EDS certificate system



References

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- (4) IETF - RFC 8484 DNS Queries over HTTPS (DoH), 2018, https://tools.ietf.org/html/ rfc8484

Acknowledgments

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