Prudent TLS for fun and profit

Jakob Schlyter

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The state of WebPKI 2018

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CA/Browser Forum

sets the policy

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Mozilla & Google
decides who you trust

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Clue- and reckless

CAs are distrusted

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Symantec

GeoTrust – RapidSSL – Thawte – VeriSign

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StartCom & WoSign

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Accountability

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Certificate Transparency is the new black

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Revocation still doesn't work

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Everyone wants

Let's Encrypt

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Automate or die

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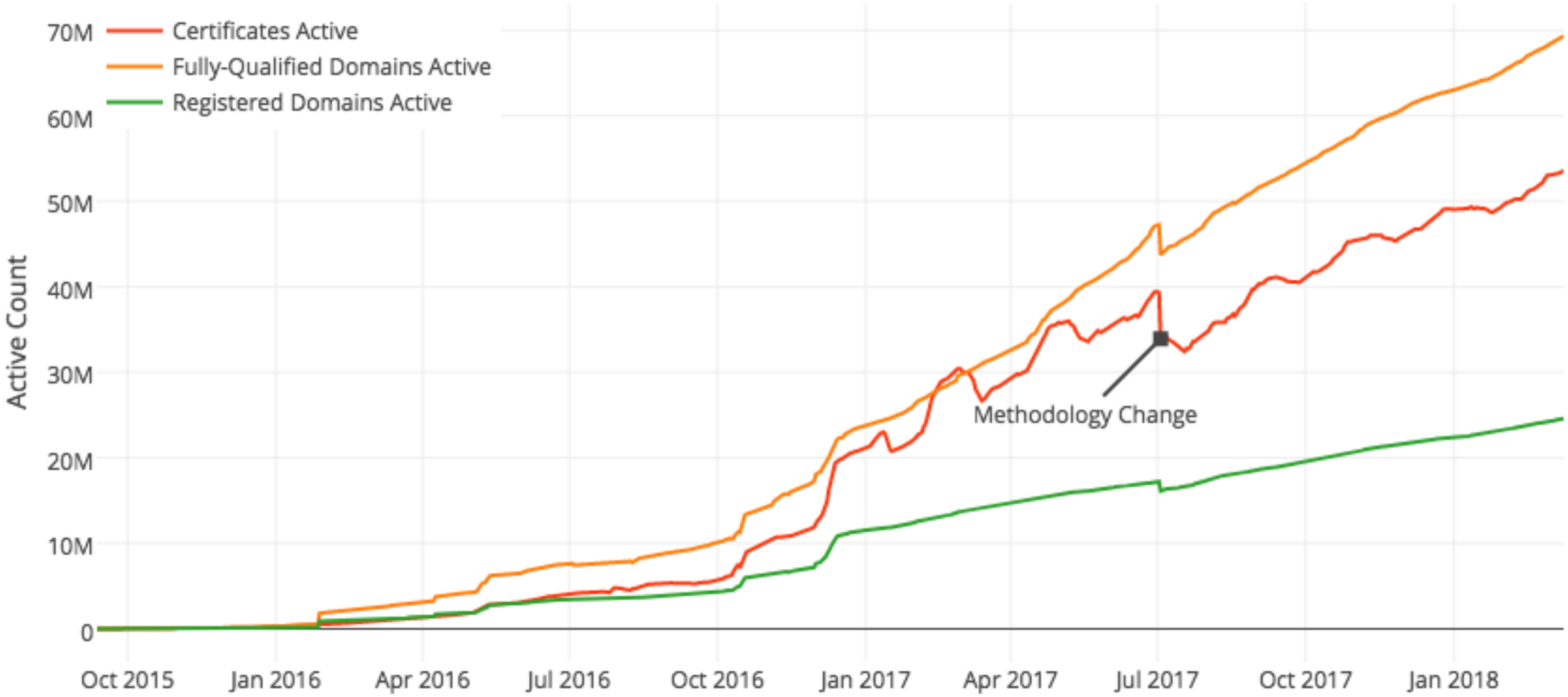
Certificates Active
Fully-Qualified Domains Active
Registered Domains Active
70M
60M
50M
40M
30M
20M
10M
0
Active Count
Methodology Change
Oct 2015
Jan 2016
Apr 2016
Jul 2016
Oct 2016
Jan 2017
Apr 2017
Jul 2017
Oct 2017
Jan 2018

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All other CAs struggling

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Prudent configuration

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DNS

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All your certs are belong to DNS

CAA

Who may issue certs for your domain?

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```
kirei.se. CAA 128 issue "letsencrypt.org"
```

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TLSA

Keeping PKI on a leash

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SMTP only so far

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_25._tcp.spg.kirei.se. TLSA 3 1 1 DEAD…BEEF

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HTTP

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HTTPS for everything

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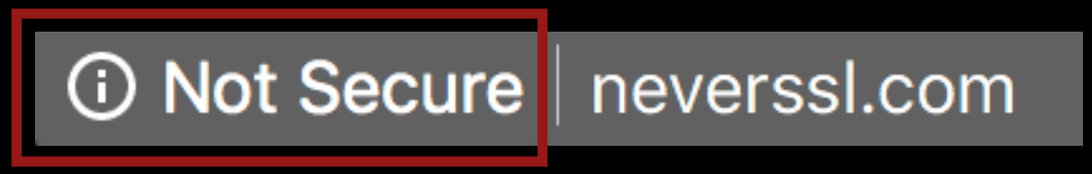
Not Secure
neverssl.com


Secure
https://www.netnod.se


SWEDBANK AB [SE]
https://www.swedbank.se

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Anyone still trying to do captive portals for wifi?

Force HTTPS

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HSTS

HTTP Strict Transport Security

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Strict-Transport-Security
max-age=63072000;includeSubdomains;preload

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HPKP

HTTP Public Key Pinning

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```
Public-Key-Pins
max-age=3600;
pin-sha256="HiMk…zt8=";
pin-sha256="3Rst…cjM="
```

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HPKP pining for the fjords :-(

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TLS today

TLS 1.2
only?

Perfect Forward Secrecy

ECDHE or DHE

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AES-GCM / SHA-2

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ChaCha20 / Poly1035

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OCSP Stapling

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No fancy pants

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TLS tomorrow

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TLS 1.3

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Faster, less cruft, less pervasive monitoring

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Prudent operations

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Analyze & Benchmark

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https://hardenize.com

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https://www.ssllabs.com

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Game on!

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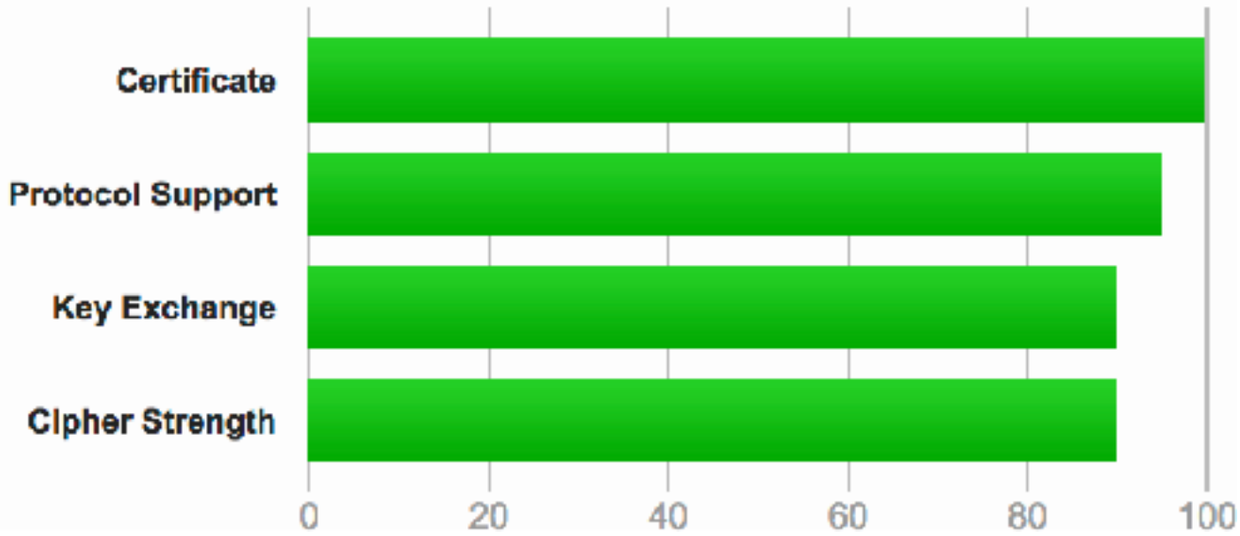
Overall Rating

A+



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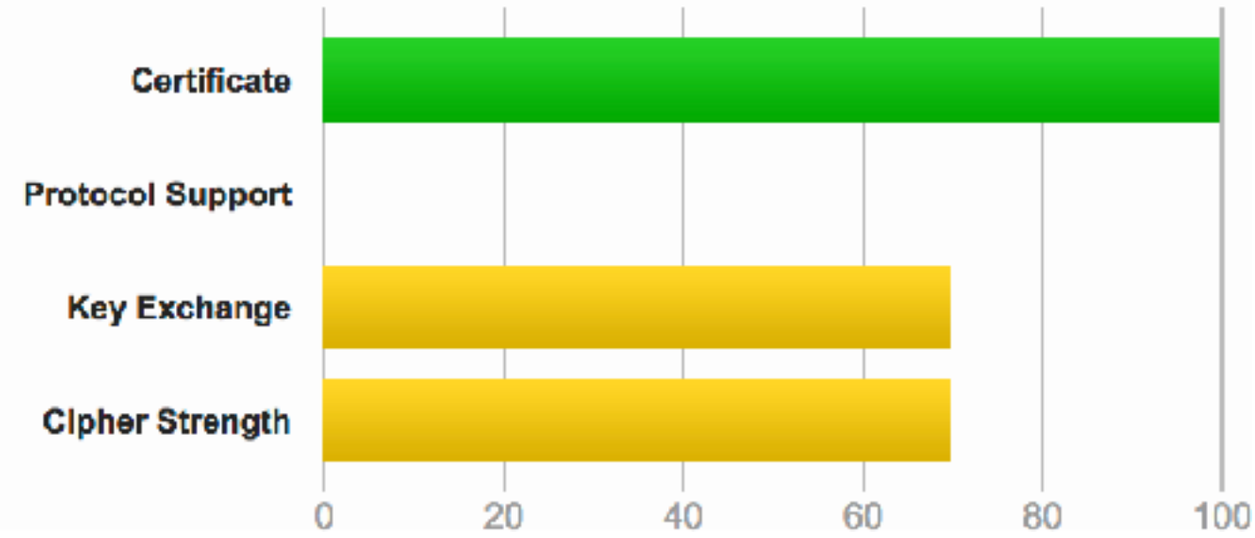
Overall Rating

F



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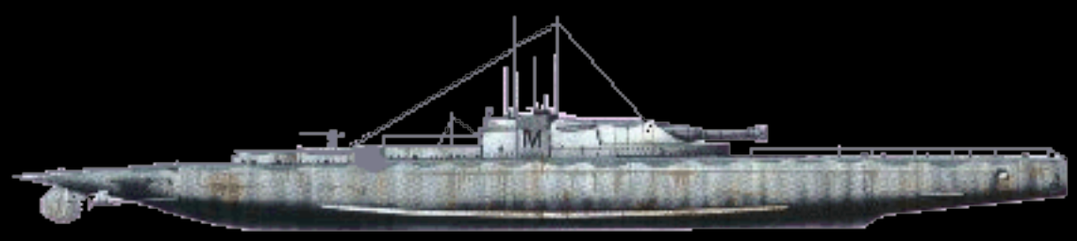
Monitor



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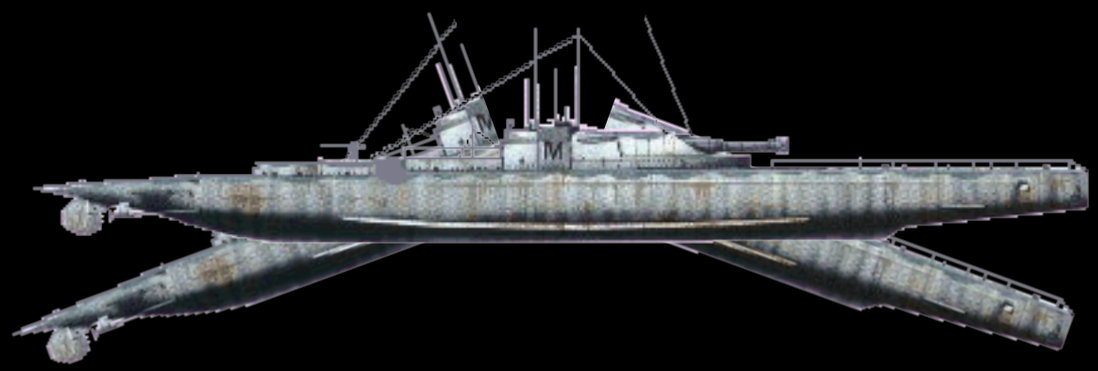

Detect breakage

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Watch certificate expiration

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Note certificate issuing

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https://crt.sh

https://sslmate.com/certspotter

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https://keychest.net

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