SWITCHpki News

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CAA Resource Record

- CAA - Certification Authority Authorization
- Resource Record in the DNS

- Standard already adopted in 2013

- Since September 8, 2017
  - **mandatory for CAs (**CA/Browser forum)
  - check and follow the CAA content

- **No requirement** in SWITCHpki **for domain owners** to implement CAA records

Why CAA

- "whitelists" authorities (CA's) issuing x509 certificates for a specific domain
- increase the security of the whole public key infrastructure

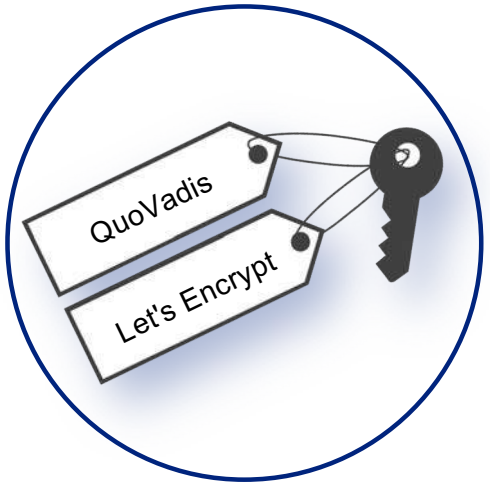
Heise Magazine c't 07/2018): *"Zertifizierungsstellen mit CAA-Records selbst reglementieren"*

CAA - Benefit

More security for your domain(s)...

- certificates only from the CAs I trust

- prevent unauthorized issued certificates
  - it still happens (sloppy CA...) !
  - attacker request certificate from other CAs
  - Various attack scenarios
    - Man in the middle
    - redirected to manipulated hosts



CAA in SWITCHpki

- Whitelist: Certification Authority QuoVadis
- CAA entries from several CAs allowed

Format:

```
example.com.    CAA    0    issue "quovadisglobal.com"
example.com.    CAA    0    issuewild "quovadisglobal.com"
example.com.    CAA    0    iodef "mailto:cert-admin@example.com"
```

IODEF (Incident Object Description Exchange Format) tag

- ➢ report malicious requests for the corresponding domain

CAA – Policy and Security

Policy

- e.g. a set of possible CAs for
  - second level domain (cover alle subdomains)
  - subdomain can overwrite policy
  - helpful: Certficiate Transperancy Logs for issuing CAs
    - Certificate Search: `https://crt.sh/`

Security

- Use DNSSEC to secure CAA records
- include your iodef contact

Errors

- wrong CAA records
- SERVFAIL
- Timeouts...
- CA QuoVadis not whitelisted
- ...

Subscriber will be informed in SWITCHpki

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Useful links

CA/B Baseline Requirements:
`https://cabforum.org/baseline-requirements-documents/`
`(CAA section 3.2.2.8)`

QuoVadis CAA documentation:
`https://swit.ch/qvcaa`

Generate and Proof CAA
`https://sslmate.com/labs/caa`
`https://www.ssllabs.com/ssltest/`

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Elliptic Curve Cryptography (ECC)

- assymetric cryptography
- based on calculation of elliptic curves

Main benfits

- ECC requires smaller keys (compared to non-ECC cryptography e.g. RSA)
  - reduces storage and transmission requirements
  - increase the speed in using ECC
  - less computing power

- used in mobile apps, IoT etc.

ECC in SWITCHpki

- ECC certificates available in SWITCHpki
  - Business ECC SSL: ready
  - soon: EV ECC SSLs

- Supported Curves in Trust/Link
  - 256 Bit curve (prime256v1)
  - Standard: ANSI / SECG

QuoVadis ECC documentation:
`https://swit.ch/qvecc`

Fusion QuoVadis - DigiCert

- Certificates will remain
  - TLS/SSL Zertifikate / Secure E-Mail
  - Order and renewal processes

- same Contact persons
  - for SWITCH: Service / Support QuoVadis
  - SWITCHpki participant: SWITCH – pki@switch.ch

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