Amazon Trust Services - CABF 59

- **Amazon Trust Services** (ATS) is the public CA operated by Amazon.

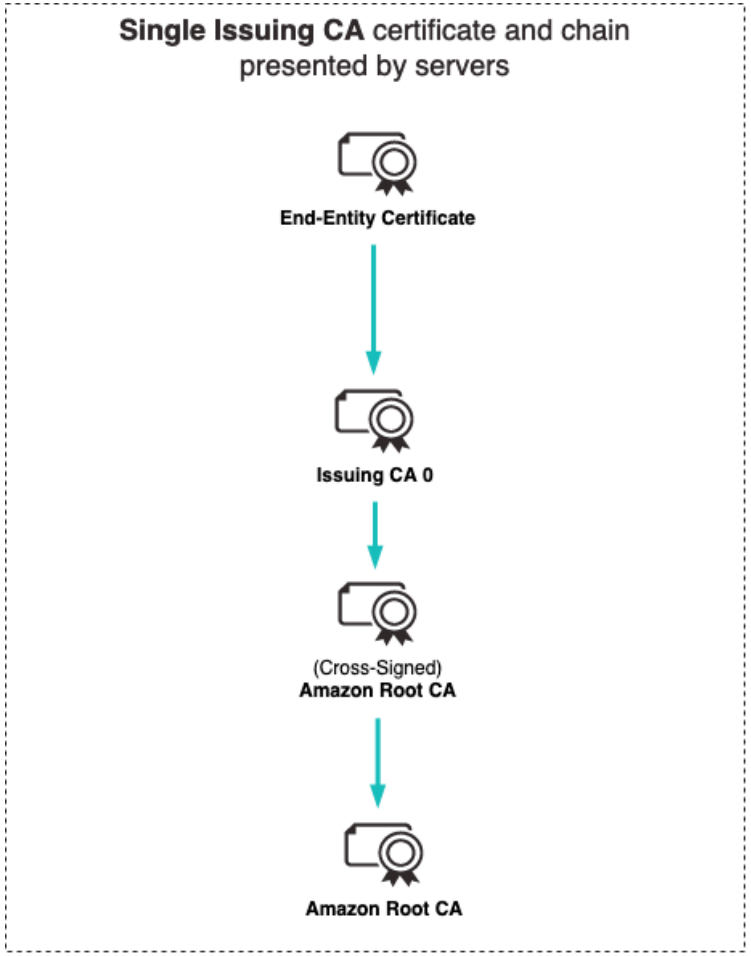
- **AWS Certificate Manager** (ACM) is an AWS service that obtains publicly trusted certificates from ATS

Motivation

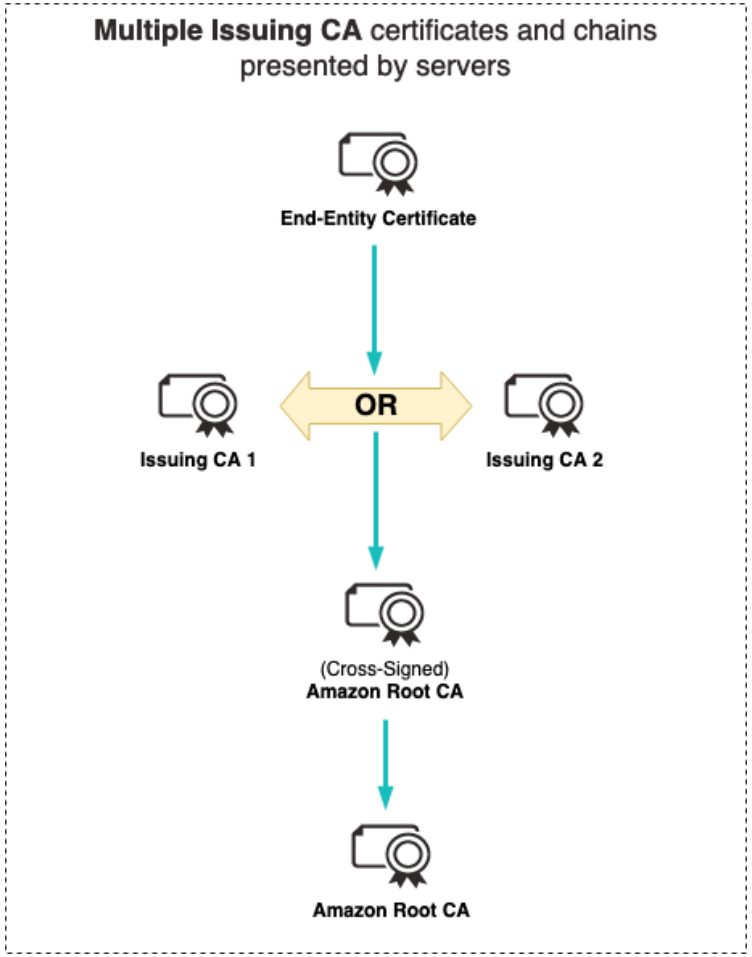
- Customers are looking for technical efficiency
- Existing documentation wasn’t moving the needle
- Amazon wanted to create a more **resilient** and **agile** certificate infrastructure

What We Did: Random Issuing CAs

2015 - 2022



2022 - Present



amazon trust services

How We Did It

- Automated closed-loop system
- Minimize impact through communication and outreach
  - Proactive blog posts, emails and direct contacts
  - Event notifications
- Customer were still impacted, so we worked with them
  - Hundreds of conversations, video calls and meetings

What We Learned

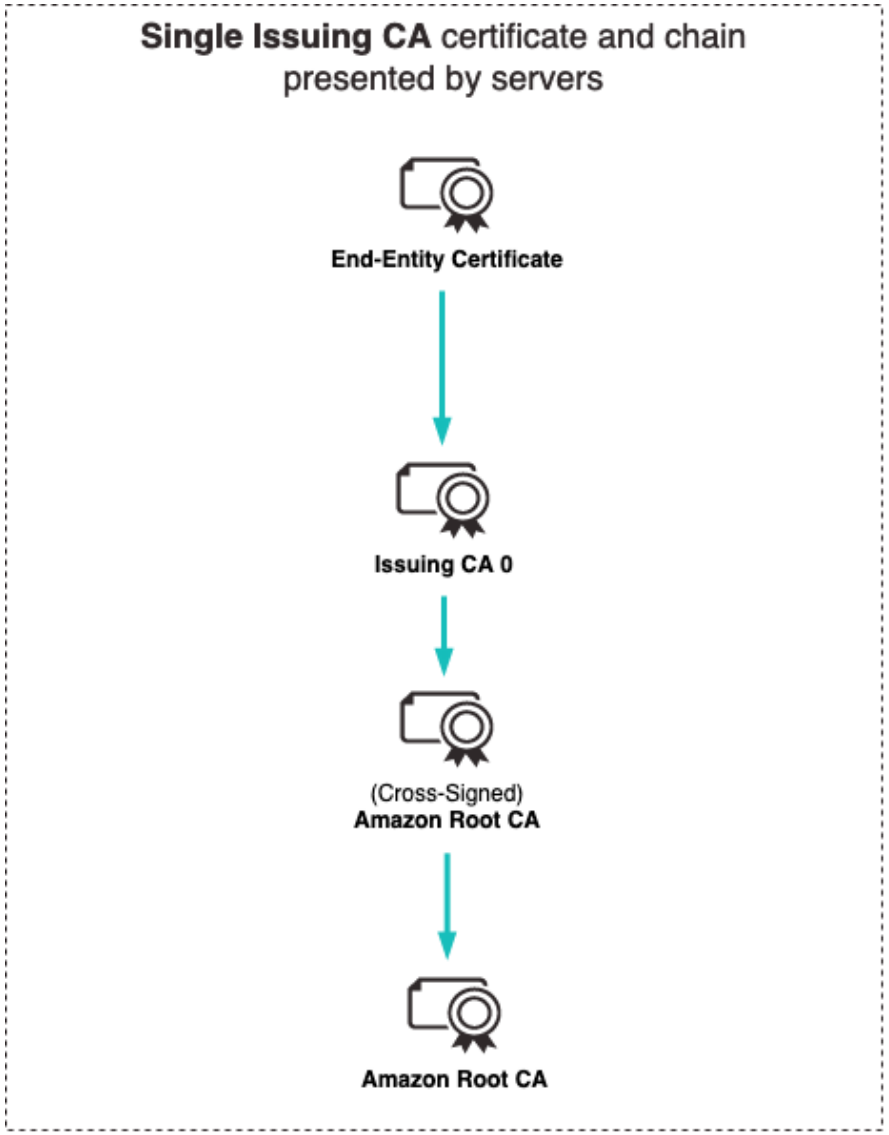
1. Customers are pinning

2. Communication gaps exist

3. Current “Best Practices” are conflicting

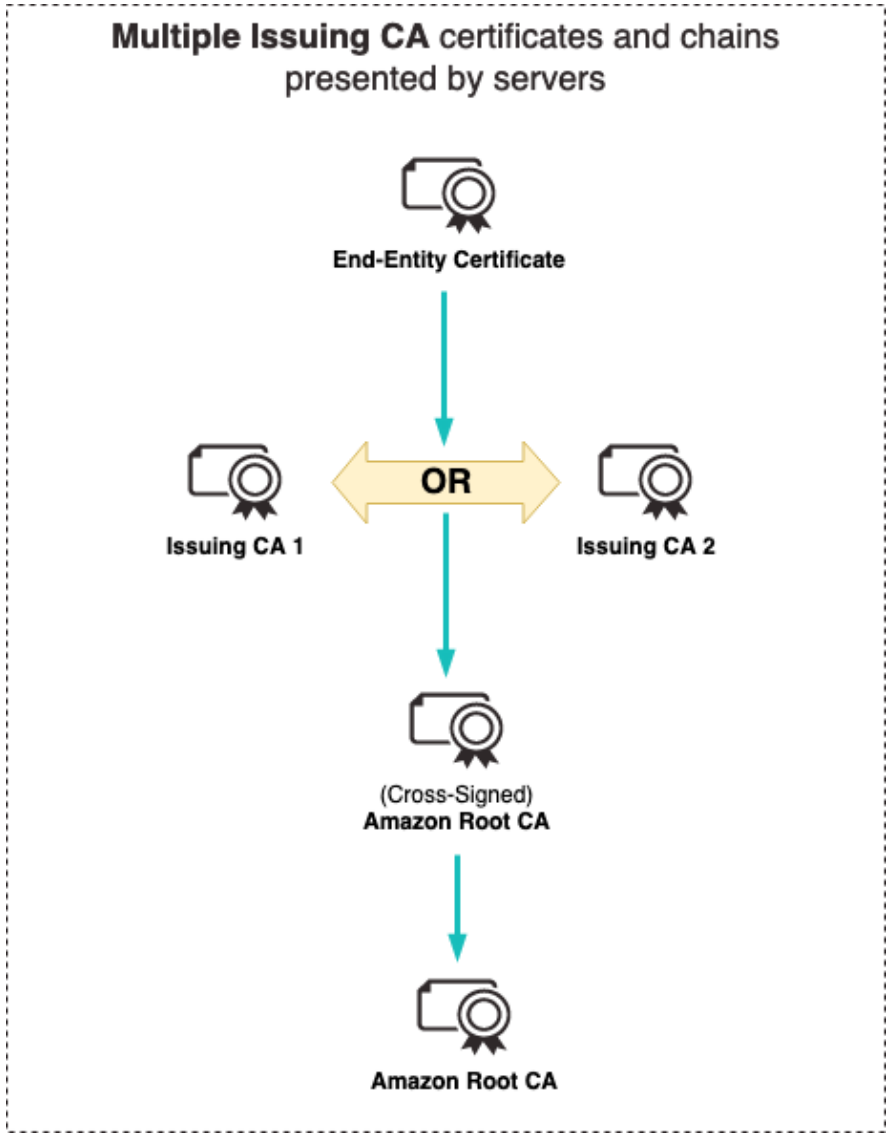
Observation 1: Customers are Pinning

- Customers are pinning to….
  - End-entity certificates they control
  - End-entity certificates they **do not** control
    - ex… s3.amazonaws.com
  - Issuing certificate authorities
  - Specific root certificates (not keys)
    - self-signed / cross-signed
- Customers are hard-coding URIs
- Custom trust stores



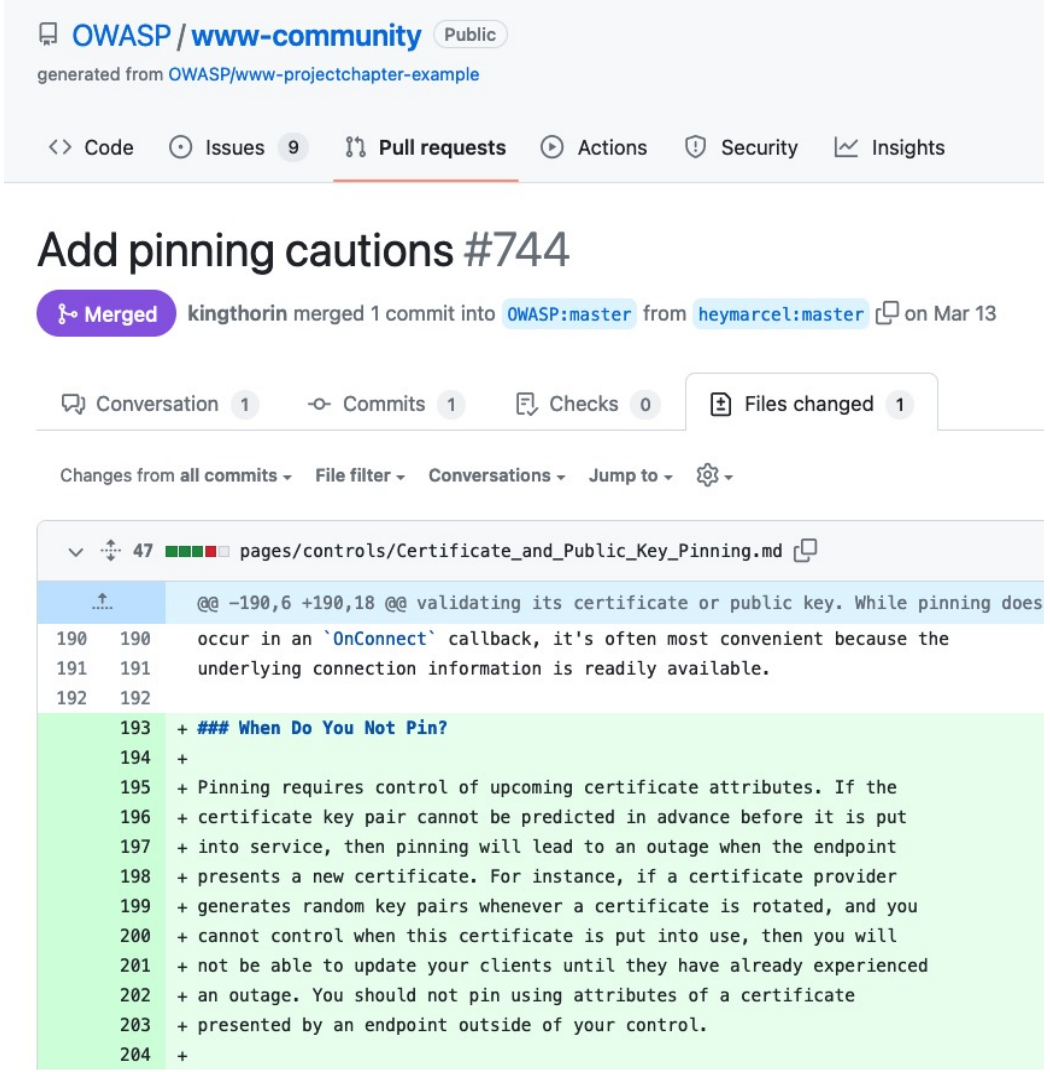
Observation 2: Communication Gaps Exist

- Automated closed-loop system
- Customers of customers
- Wide variety of use cases
- Misunderstandings



Observation 3: Current “Best Practices” are conflicting

- **OWASP** guidelines
- Apple and Google Android documentation
- Industry alignment is key



Lessons Learned

- Fully understanding the impact of PKI changes is difficult and takes time so we must be thoughtful about timelines
- There is a lack of mechanisms to effectively communicate with everyone potentially impacted by a change
- We must work together on cohesive industry guidance to further PKI agility and clarify recommendations.