ELASTIC Project

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TrustMee: Self-Verifying Remote Attestation Evidence

- **Remote Attestation:** Establishing **trust** in **platform** integrity and confidentiality
- **Challenge:** TEEs use **different evidence formats** and verification logic
- **Solution: Bundle evidence** with its sandboxed **verification logic** whose identity is checked by policy

Introduction

- Remote **attestation** allows a Relying Party to assess whether a remote **platform** is **trustworthy.**
- A trusted Verifier (1) parses the evidence, (2) validates its signatures and certificates, and (3) checks the platform measurements, expressed as claims, against reference values.

Problem

- **Each TEE** platform requires **platform-specific parsing and validation logic**.
- Adding support for a **new TEE** or evidence format requires **adding** new code to the Verifier **TCB**.
- **Parsing and validation** code are **complex** and **vulnerability-prone**.

TrustMee

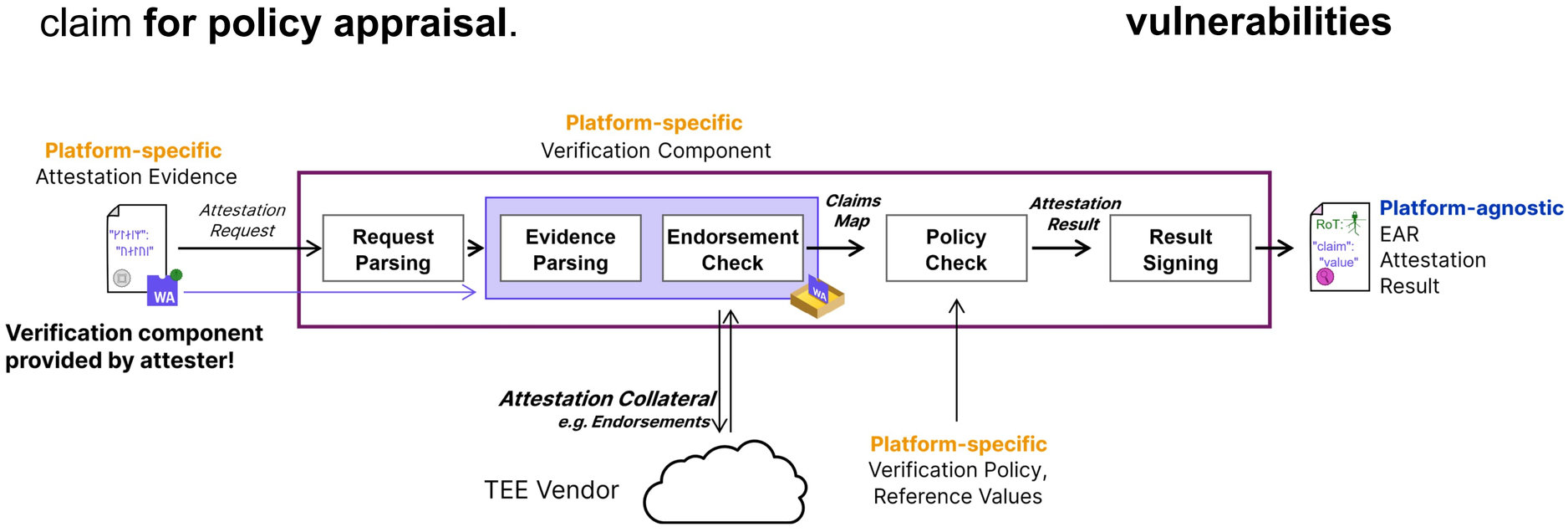
- The attester provides a **portable WebAssembly verification component** together **with** the **evidence**.
- The Verifier executes the component in a sandbox, limits its computation and network access, and **emits** the **component identity** as a claim **for policy appraisal**.

Sample Output

```
"ear.status": "affirming",                          // status of verification
    "annotated_evidence": {
        "tee_type": "tdx",                          // wasm verifier claim
        "verifier_component": "5a36...df5f",        // wasm verifier hash
        "claims": {                                 // platform-specific claims
            "rtmr_0": "5b5e...c913",
            "rtmr_1": "86d9...0394",
            ...
        }
    }
```

Contributions

- TrustMee extends verifier capabilities while keeping the verification latency within the state-of-the-art native verifier's range.
- TrustMee enables:
  - **Platform-agnostic** attestation verification
  - **Support** for **new TEEs without** Verifier code change or **redeployment**
  - **Reduces** the Verifier **TCB** and stops it from growing when supporting new TEEs
  - **Layered** and composite **attestation** verification
  - **Custom** evidence-**format verification**
  - **Sandboxed** execution of **complex** parsing and validation **logic**
  - **Prevents** cross-TEE verification **vulnerabilities**



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