IETF Hackathon – SCITT code hack

IETF 117
22-23 July 2023
San Francisco, California

SCITT high level promises

A scalable and flexible, decentralized architecture to enhance auditability and accountability across various existing and emerging supply chains. It achieves this goal by enforcing the following complementary security guarantees:

1.Statements made by Issuers about supply chain Artifacts must be identifiable, authentic, and non-repudiable;

2.such Statements must be registered on a secure append-only Log, so that their provenance and history can be independently and consistently audited;

3.Issuers can efficiently prove to any other party the Registration of their Signed Statements; verifying this proof ensures that the Issuer is consistent and non-equivocal when producing Signed Statements.

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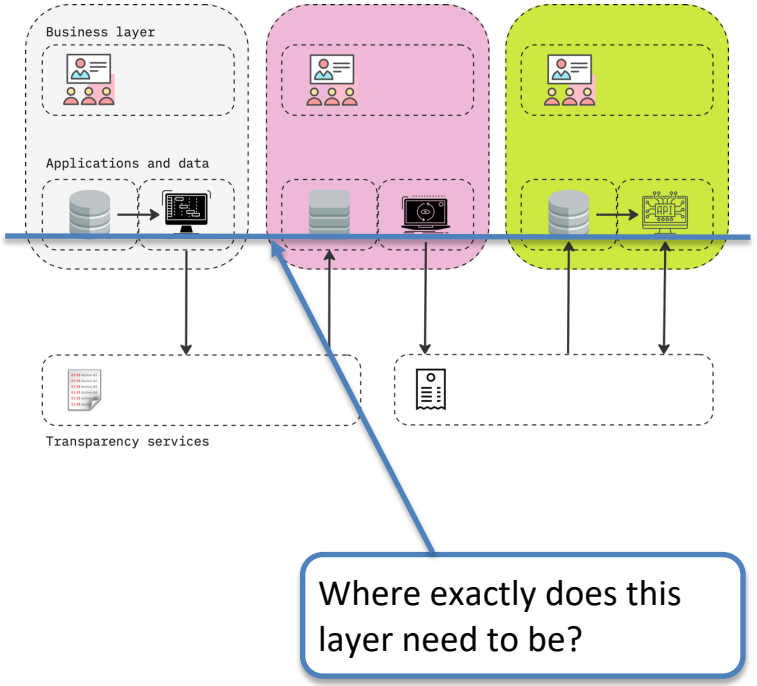
Intent of the code hack

Use the RKVST implementation of the SCITT API and COSE Merkle tree receipts to show the practicality of building systems on top of the SCITT building blocks that solve the problems the SCITT WG set out to solve.

Planned activity:

- Continue building on the open interop client
- Add initial creation of signed claims to the emulator client (not in a very secure way, but just to illustrate the steps required for a generalized solution)
- Experimenting with various application layer payloads, but particularly the Vendor Response Form
- Show different models for storage and retrieval of payloads and receipts.

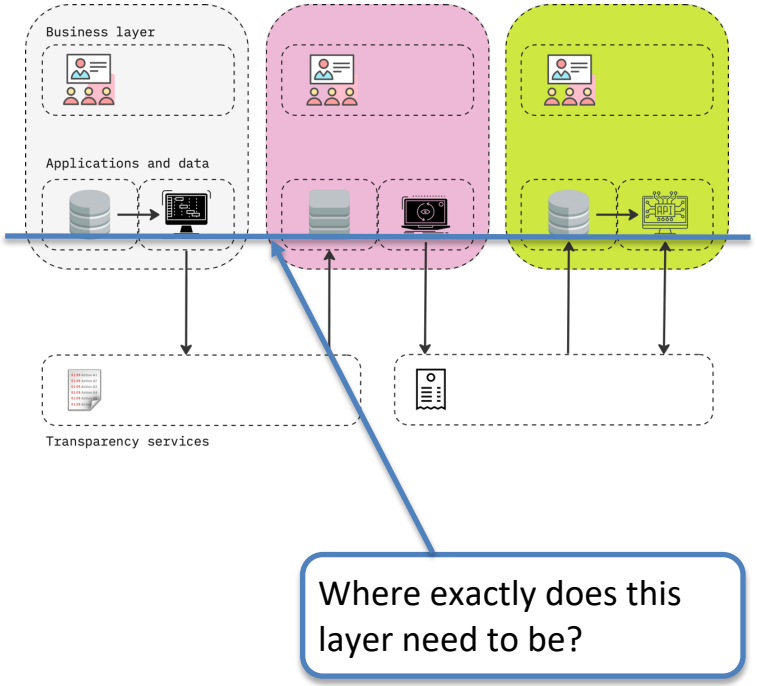


Outcome of the code hack

Use the RKVST implementation of the SCITT API and COSE Merkle tree receipts to show the practicality of building systems on top of the SCITT building blocks that solve the problems the SCITT WG set out to solve.

Hoped-for outcomes:

- Successful end-to-end demonstration of attesting and verifying a Vendor Response Form
- Driving the spec forward in understanding the different places where company identifiers might show up
- Driving the spec forward in understanding which higher level concepts (especially storage, ‘indexing’ and ‘searching’ of stuff) need to be brought into scope, and which stay up in some unspecified application layer.



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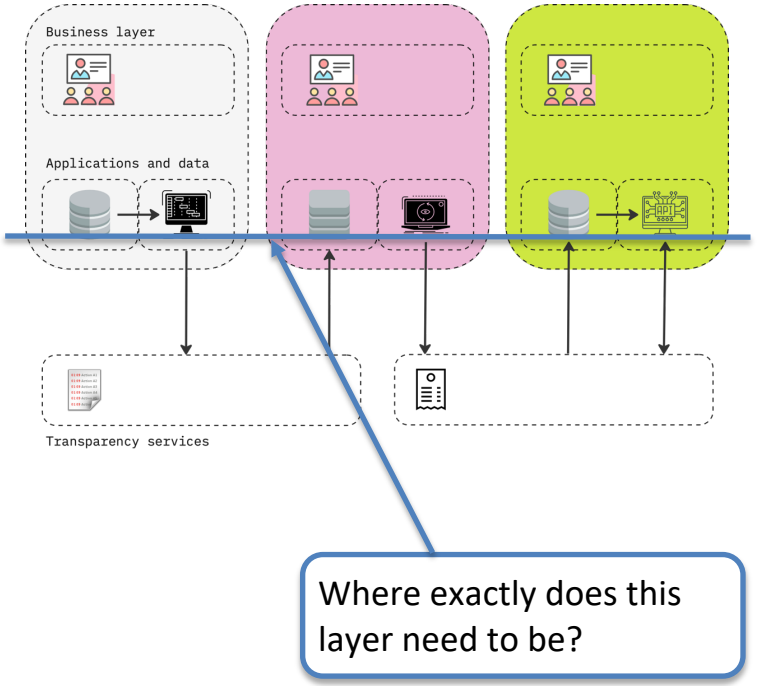

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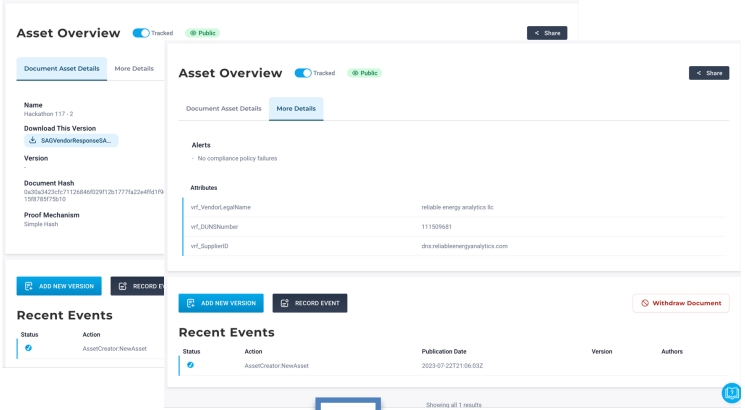


```
$ ./scitt-emulator.sh client retrieve-claim --entry-id
0xfd0ecf4ca4d3694e7ee732d143af7617b2b6f6f8a0729a9ae12aa4dd82359c4c --
out 117-vrf
Claim written to 117-vrf

$ cat 117-vrf
ˆX&?&papplication/json?mapp.rkvst.com?Xe{"identity":"","transaction_id"
:"0xfd0ecf4ca4d3694e7ee732d143af7617b2b6f6f8a0729a9ae12aa4dd82359c4c"}X
@{'6"K?????|??Y?b???)/?%?~?i???|?`??
                                                    ?????*T<bX?|(X??
```

```
$ ./scitt-emulator.sh client submit-claim --claim 117-vrf --out 117-
vrf.cbor
Claim registered with entry ID 1
Receipt written to 117-vrf.cbor

$ head 117-vrf.cbor
?X0?jservice_ideRKVSThtree_algeRKVSTiissued_atd?f?Y?o?XI?htree_algvEIP1
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7f650a0b084301e717a49fc5c2957f70d537e5973a2cc239e2a1fa8ee02641dd1b80e23
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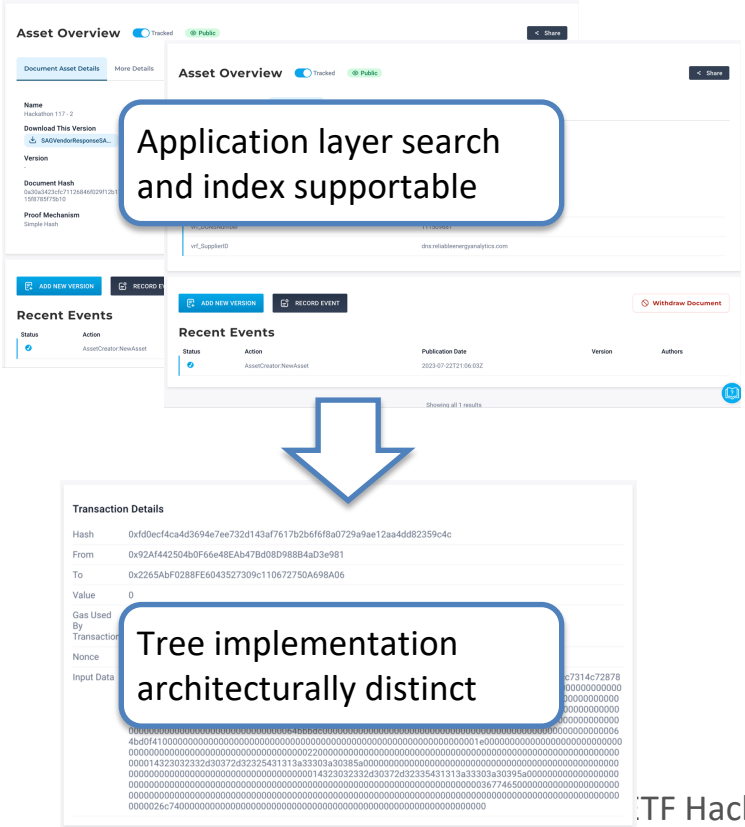
```

Outcome of the code hack

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0xfd0ecf4ca4d3694e7ee732d143af7617b2b6f6f8a0729a9ae12aa4dd82359c4c --
out 117-vrf
Claim written to 1

$ cat 117-vrf
^X&?&papplication/
:"0xfd0ecf4ca4d369
@{'6"K?????|??Y?b??
","transaction_id"
12aa4dd82359c4c"}X
?????*T<bX?|(X??
```

Accessible through interoperable client with COSE...

```
$ ./scitt-emulator.sh client submit-claim --claim 117-vrf --out 117-
vrf.cbor
Claim registered with entry ID 1
Receipt written to 117-vrf.cbor

$ head 117-vrf.cbor
?X0?jservice_ideRKVSThtree_algeRKVSTiissued_atd?f?Y?o?XI?htree_algvEIP1
186NamedSlotProofsiissued_atd?f?jservice_idmapp.rkvsl|??ϙ)0?IY??{"appli
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7f650a0b084301e717a49fc5c2957f70d537e5973a2cc239e2a1fa8ee02641dd1b80e23
a060c48c05feccde51bb
```

...and CBOR structures as defined in the spec

Outcomes of the code hack

POSITIVES

- VRF use case end-to-end proven 🎉
- Other very different use cases discussed and also seem to be supported without much fuss
- Core fundamentals continue to be strong
- Highlighted (relatively) simple next step in terms of Feed specification

CHALLENGES

- Not nearly as much time to hack as I'd hoped – didn't get interoperable submission working, because...
- ...Feeds are a moving target (but at least they ARE a target 🙂)
- Client/emulator risks rotting: consider significant maintenance and quality updates alongside new API spec doc