# Security Event Token (SET)

draft-ietf-secevent-token

Phil Hunt

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# Agenda

- Background
- Current Status
- Draft 03 Updates
- Discussion:
  - Post 03 "Event" Simplification Proposal

# Background

- Security Event Token
  - In a RESTful context, it is a simple statement of state change
    - Does not typically convey history (why)
    - Is not a command (receiver decides action)
    - Contains an event type and subject information
  - Useful as a signal/trigger between federated entities (across security domains)
- Timeline
  - Nov 2015 IETF94 (Tokyo) – Informal agreement to draft proposal
  - Apr 2016 IETF95 (Buenos Aires) – Informal BoF at SCIM WG
    - 3 IDs presented (Token, Distribution, Example SCIM Profile)
  - Nov 2016 IETF97 (Seoul) – First SECEVENT Meeting

# SET Examples

- SCIM (RESTful provisioning)
  - A trigger to inform clients of independent state changes made by other RESTful clients in a system.
- OAuth / OIDC (Authorization and Federation)
  - Ability to revoke tokens and/or sessions
- RISC (Risk Incident Sharing and Coordination)
  - Ability to share events based on risk analysis
- HEART (Health Relationship Trust)
  - Ability to share consent events

☞ All areas were proposing using JWTs in similar ways

# Draft Status Review

- Completed WGLC
- Current version draft-ietf-secevent-token-03
  - Addresses WGLC feedback from 02
  - Most responses "Good-to-go as is"
  - History
    - 4 WG drafts
    - 8 ID drafts (since March 2016)
- Functionally stable

# Draft 03 Updates

- Editorial
  - Corrected old term "subscriber" to "Event Receiver"
  - WGLC Feedback proposing updates from
    - Nat Sakimura
    - Annabelle Backman
    - Marius Scurtescu
    - Others – Good to go
- Definitions
  - Clarified Event Receiver is a JWT recipient
  - Replaced use of "nbf" with "toe" (time of event)*

# DISCUSSION

# Post 03 – Annabelle's Event Simplification Proposal

- Proposal to allow only one event
  - https://www.ietf.org/mail-archive/web/id-event/current/msg00710.html
  - Make "events" singular / simple
  - Extensions TBD by Event Profiler

```
event
   A JSON object containing an "event_type"
   member whose value is a URI representing a
   type of event defined in a Profiling
   Specification. The object MAY otherwise be
   empty, or MAY contain additional members as
   described by the Profiling Specification.
```

# Annabelle's Proposed SET

```
{
  "jti": "4d3559ec67504aaba65d40b0363faad8",
  "iat": 1458496404,
  "iss": "https://scim.example.com",
  "aud": [
    "https://scim.example.com/Feeds/98d52461fa5bbc879593b7754",
    "https://scim.example.com/Feeds/5d7604516b1d08641d7676ee7"
  ],

  "event": {
    "event_type": "urn:ietf:params:scim:event:create",
    "ref": "https://scim.example.com/Users/44f6142df96bd6ab61e7521d9",
    "attributes": ["id", "name", "userName", "password", "emails"]
  }
}
```

Move "event_type" to top level?

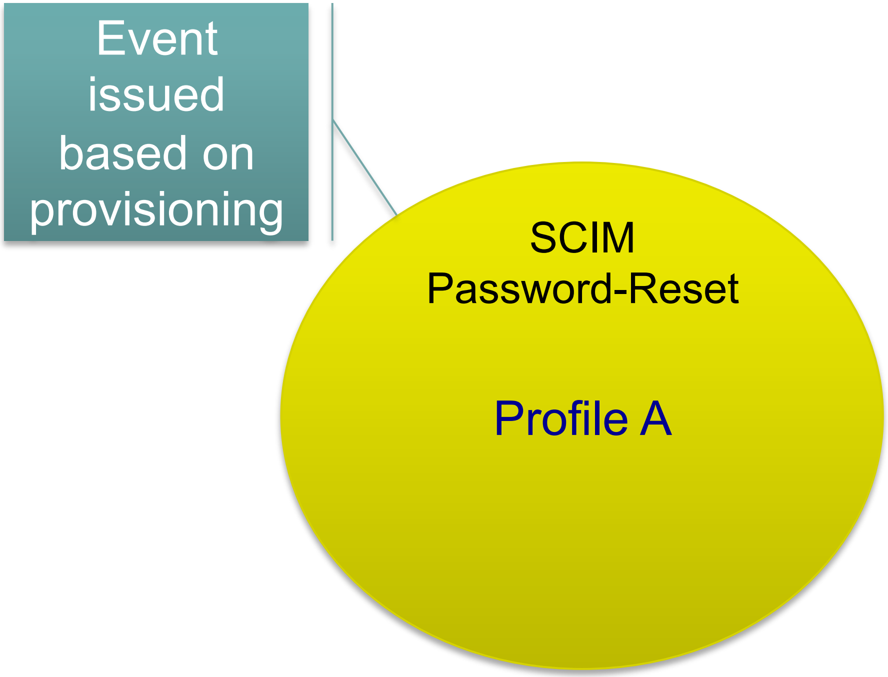
# Proposal Justification

- 1 Event is simple
  - Event receivers may not able to make sense of multiple payloads; more information may be confusing
  - Processing multiple payloads could be complex
- Related Comment:
  - JSON attribute name "events" suggests multiple logical events are allowed
    - However repeat URI's are not allowed (can't repeat a JSON attribute name)
    - Normative language specifies 1 logical event despite name
    - "events" values can convey multiple aspects of same event

# 03 Draft Reflects Previous Consensus

- Mulitple payloads provide multiple benefits
  - Versioning – specs do not version like code
  - Payloads mean namespaces do not need to be registered (collision free)
  - Ad-hoc spec development allowed (via use of URIs payloads)
  - Utility profiles can be defined to simplify profiles
    - E.g. Subject addressing using multiple identifier types
  - Localized transmitter/receiver extensions (non-standard)
  - Concern: Independent profiles may causes event overlaps
    - That's ok: When profiles overlap, both events may be sent to give full picture if receiver understands both event URI types.
  - Performance:
    - Signing a single SET for a transaction is less costly
    - Multi-SET would require multi-part new signalling protocol
      - Rcvr: Have I received everything related to this event?

# Multi-Event Venn

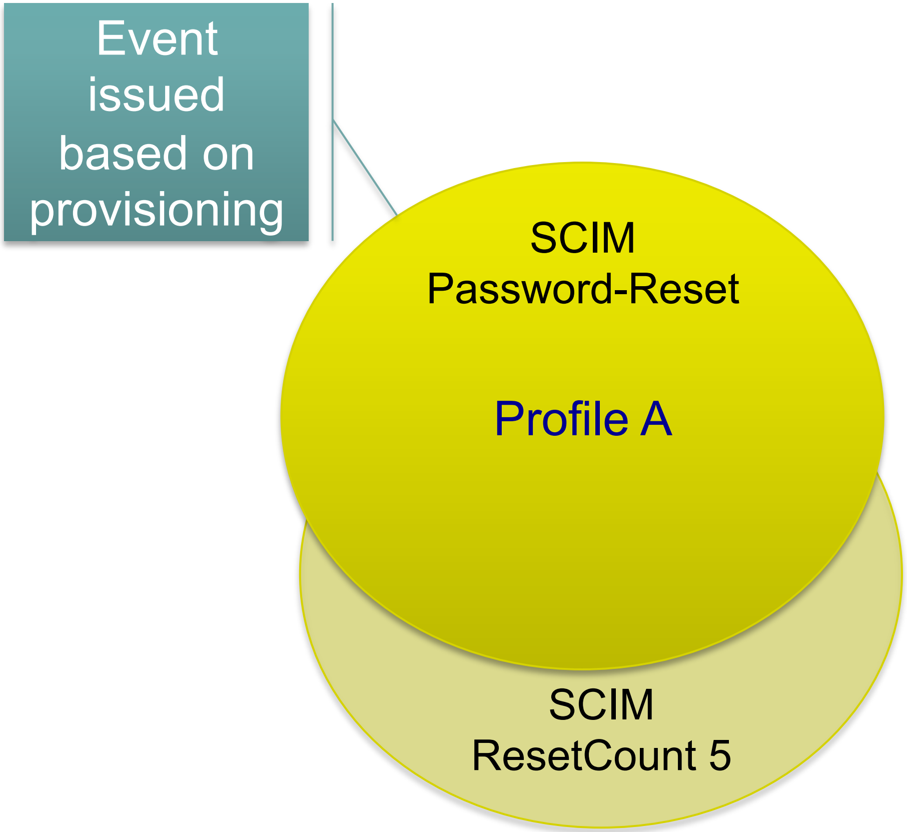


Event issued based on provisioning

SCIM Password-Reset

Profile A

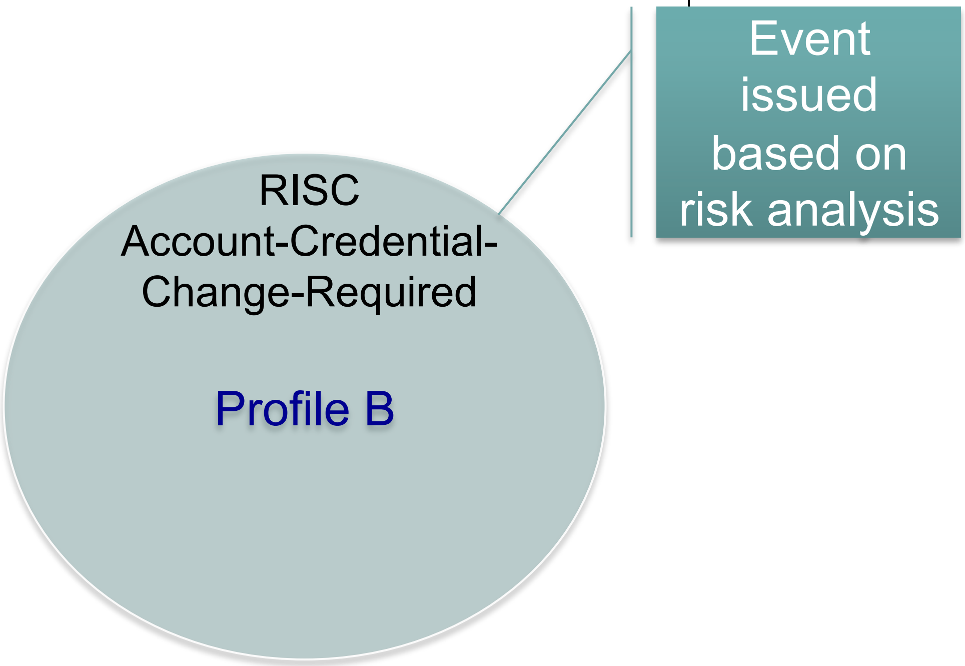
# Multi-Event Venn



What if the count of resets matters to the receivers?

Can that be conveyed separately?

# Multi-Event Venn



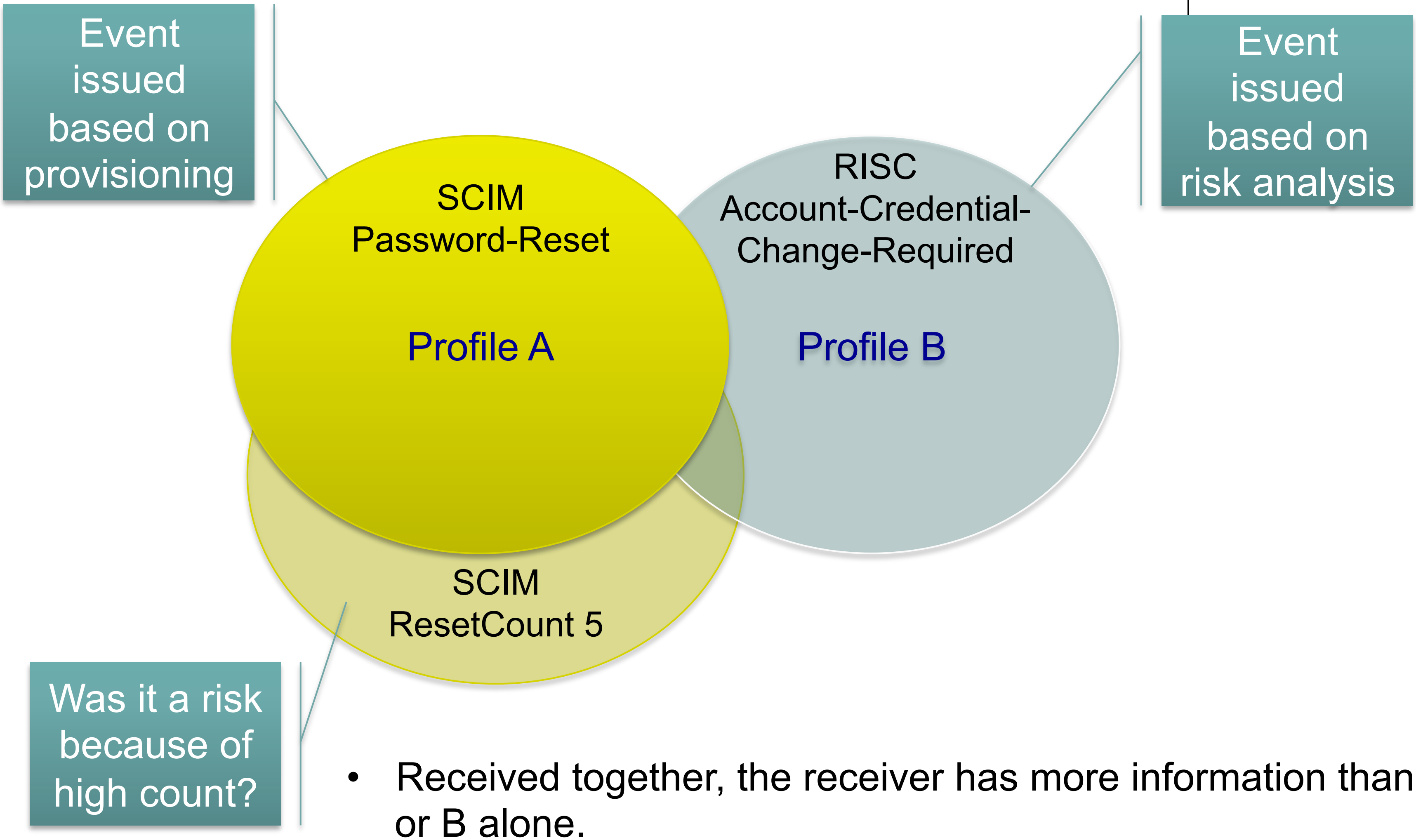
Event issued based on risk analysis

RISC Account-Credential-Change-Required

Profile B

- This RISC event is similar but is not specific to passwords.
- It suggests the event is triggered by risk analysis rather than user-action

# Multi-Event Venn


Event issued based on provisioning
SCIM Password-Reset
Profile A
RISC Account-Credential-Change-Required
Profile B
Event issued based on risk analysis
SCIM ResetCount 5
Was it a risk because of high count?

- Received together, the receiver has more information than A or B alone.

# Password Reset - Compare

```
{
  "jti": "3d0c3cf797584bd193bd0fb1bd4e7d30",
  "iat": 1458496025,
  "iss": "https://scim.example.com",
  "aud": [
    "https://jhub.example.com/Feeds/
98d52461fa5bbc879593b7754"
   ],
   "events": {
     "urn:ietf:params:scim:event:passwordReset":
       { "id":"44f6142df96bd6ab61e7521d9"},

     "https://example.com/scim/event/
passwordResetExt":
       { "resetAttempts":5},

     "http://schemas.openid.net/secevent/risc/
event-type/\
       account-credential-change-required": {
         “sub”:”7375626A656374”,
         “iss”:"https://idp.example.com/"
       }
  }
}
```

- 3 payloads processed same way
- receiver infers meaning (robust)

```
{
  "jti": "3d0c3cf797584bd193bd0fb
  "iat": 1458496025,
  "iss": "https://scim.example.co
  "aud": [
    "https://jhub.example.com/Feeds/
98d52461fa5bbc879593b7754"
   ],
   "event": {
     “event_type”:
      "urn:ietf:params:scim:event:passwordReset”,
     "id":”44f6142df96bd6ab61e7521d9”,
     “extensions”:{
       "https://example.com/scim/event/
passwordResetExt":
         { "resetAttempts":5},

        "http://schemas.openid.net/secevent/risc/event-
type/\
          account-credential-change-required": {
          “sub”:”7375626A656374”,
          “iss”:"https://idp.example.com/"
        }
      }
    }
}
```

Event payload has normative attributes

- profile def'd exts
- differing fmts
- recursively / deeply nested JSON
- Namespace collisions?

# Observations

- A single SET currently conveys the whole picture
  - Each piece adds value
- If receivers may only understand one type
  - They are free to ignore pieces they don't care about
- Forcing single payload may cause
  - More similar event definitions each with specialization
  - No standard extension support if at all
  - Outcomes:
    - Profiles would need to be reviewed to avoid overlap OR,
    - Multi-SET signalling to inform receivers a SET has multiple distinct SET messages to form a logical event

# Authors' Recommendation

- Do not adopt – change fundamentally different from past consensus
  - Simple single "event" payload increases overall complexity
    - Nested JSON, possible attribute name conflicts
    - Delivery signalling protocol for multiple-SET delivery (txn not enough)
  - Alters/drops foundational features (more than "breaking")
  - May lead to requirement for event registry
  - Would incur substantial re-write
  - Not an issue for receivers that only understand one event uri type
    - Can ignore event URIs that are not understood
    - Transmitters not obliged to include unwanted event data