SCIM Notify

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Agenda

- Introduction
- Use Cases
- Proposal

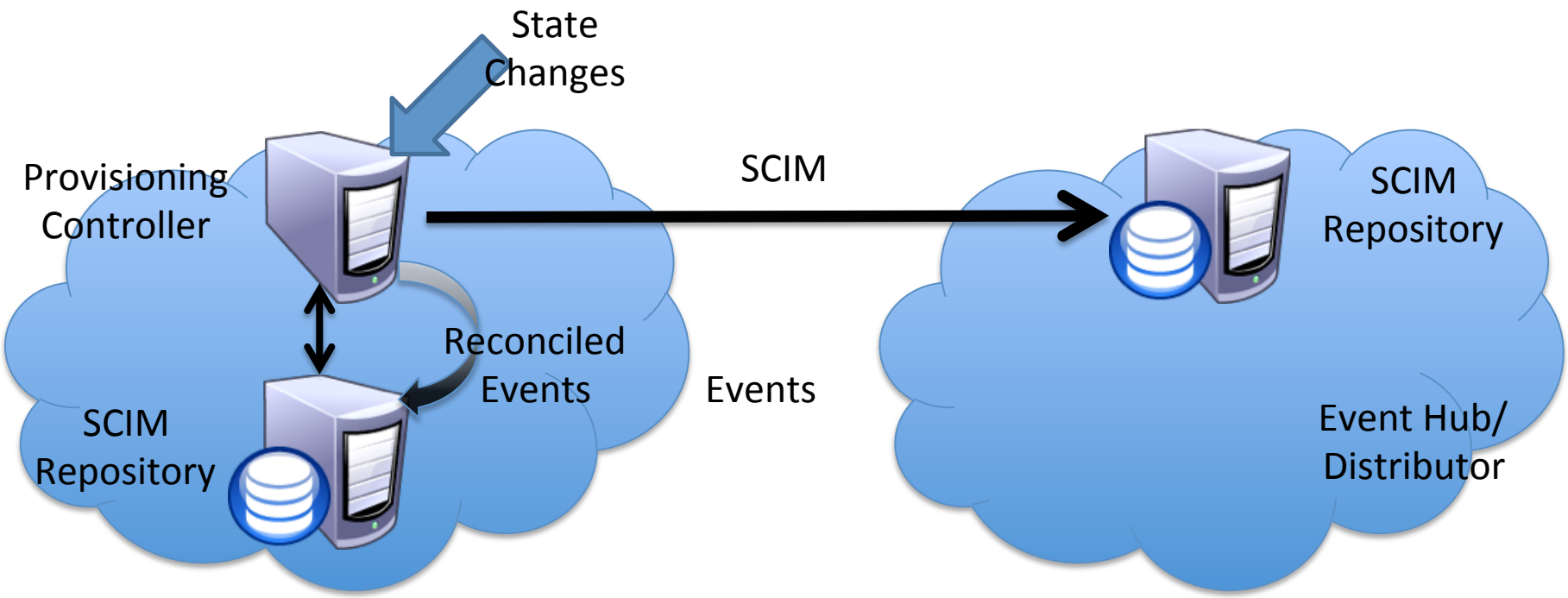
Introduction

- Many REST APIs generate a volume of web accessible resources each with individualized state.
  - Subscribers want to know about changes in state
  - Systems need to co-ordinate events and workflows
- Identity data systems
  - Multiple silos of Identity (federated, local, …)
  - Multiple domains
- SCIM service providers need to
    - Co-ordinate events with enterprise internal IDM systems
    - Co-ordinate events cross-cloud between providers/tenancies

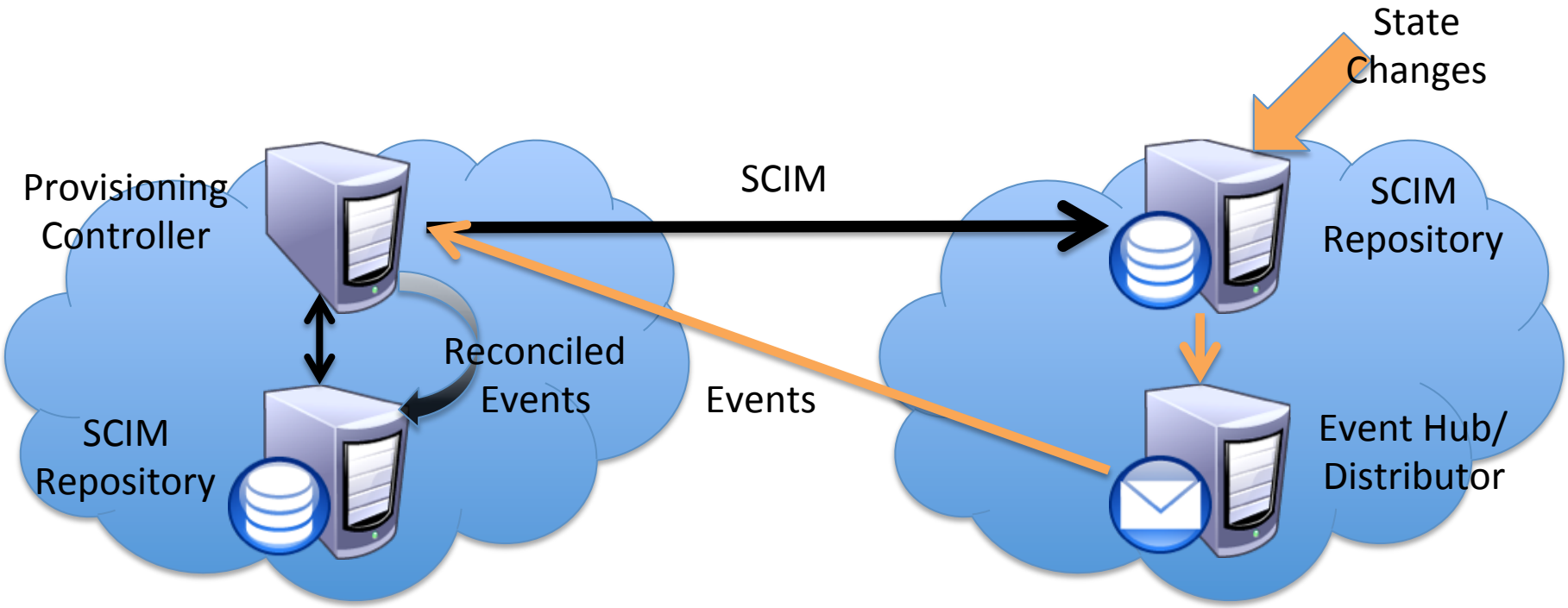
RESTful vs. Eventful

- With restful SCIM, "control" resides with the client requestor.
  - The client is transferring state to/from the service provider which responds to the client requests as information "owner"
- In Change Notify, "control" resides with a subscriber, in response to a published event.
  - "State change" instead of "state transfer"
  - Subscriber decides relevance
  - Subscriber uses SCIM to "reconcile" or request more information (transformation)
  - Delivery of event matters
    - The publisher is not aware of "completion" on the subscriber side

Typical SCIM



SCIM and Event Notification



"State" Problem

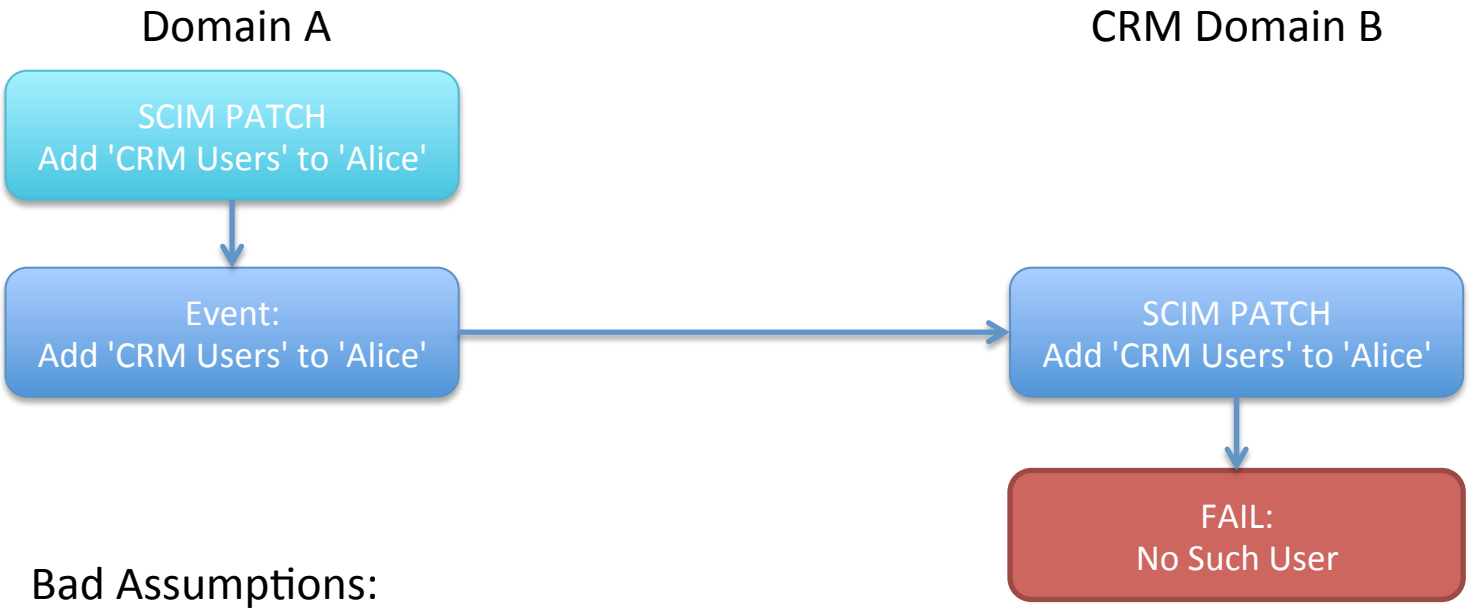
- Domains are independent
  - Resources may be different (e.g. populations)
  - Resources may have differing life-cycles/ workflows
  - Schema may be different (e.g. extensions)
  - Error signals can leak confidential information
  - State is never 100% synchronized
- Events need interpretation / transformation in context

SCENARIOS & USE CASES

Example Scenarios

1. Alice is given the CRM role causing her to be provisioned in another domain.
2. Alice's role in CRM is revoked.

Scenario 1 Flow – Replica Style



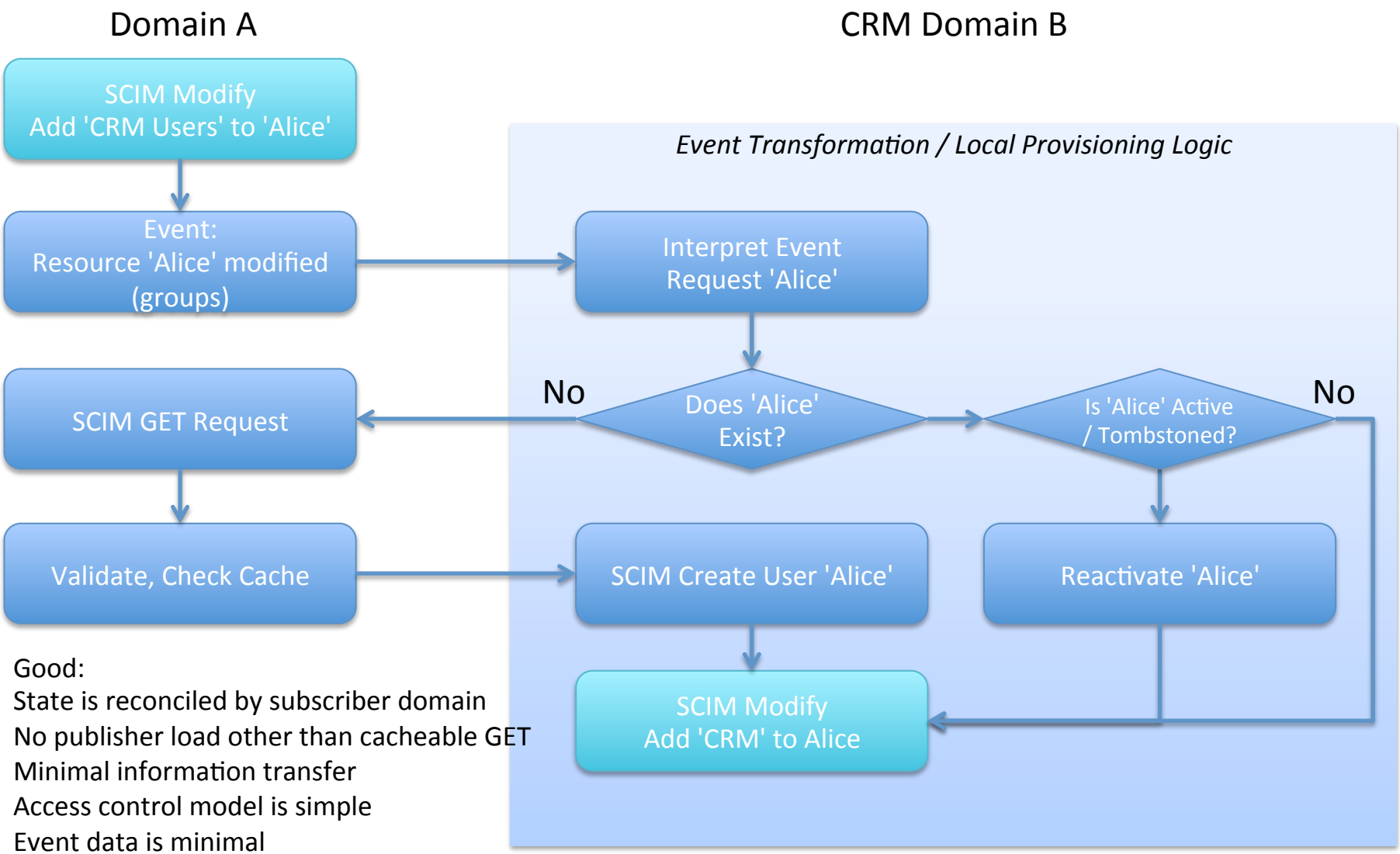
Bad Assumptions:

- Domain A Users == Domain B Users
- Domain B can copy domain A events 1:1
- A and B are same enterprise 'tenant', all data can be the same

Cause:

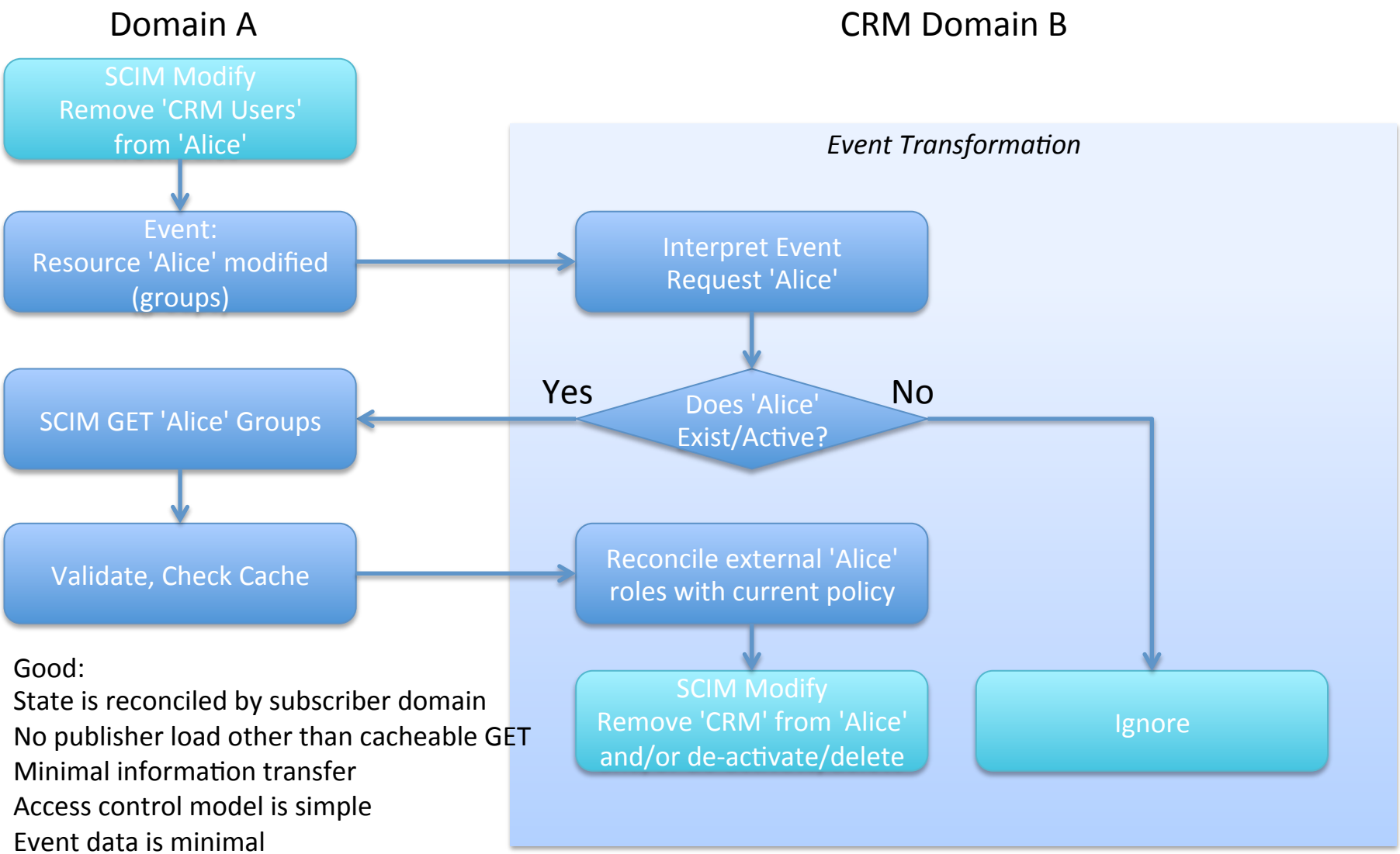
- Domain B only keeps data it needs
- Schema will vary by domain
- Life-cycles of resources vary by domain
- Transactions MUST transform

Scenario 1 Flow – Notify Style



Good:
State is reconciled by subscriber domain
No publisher load other than cacheable GET
Minimal information transfer
Access control model is simple
Event data is minimal

Scenario 2 Flow – CRM Revoked



Good:
State is reconciled by subscriber domain
No publisher load other than cacheable GET
Minimal information transfer
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Scenario Observations

- Control / Authority
  - Ownership or authority of "Users" may change over time
    - Shifting center of authority
    - Corporate and service restructuring
  - User population will vary by domain
  - Different domains have different life-cycles and policies

Observations 2

- "Schema"
  - Each each administrative domain may have different justified use of attributes
  - Cloud based apps use data on need-to-know
  - There are many new attributes and applications in cloud that are not part of enterprise directory
    - MDM, MAM, are all new vs. Legacy Windows

Cross-Domain Use Cases

- Cloud-to-Enterprise
  - Pass changes to attributes in cloud back to enterprise domain
  - Real-time and polling
  - Challenge: co-operative reverse provisioning, cross-tech platform (SCIM to LDAP?)
  - Identity "sync" oriented
- Cloud-to-Cloud (tenancy-to-tenancy)
  - Hub-to-hub / Each side has independent changes
  - Event based provisioning life-cycles
  - Bi-directional attribute flows
  - Real-time and polling updates
  - Challenge: security, scale, feeds may contain millions of users.

Internal Domain Cases

- Web-Application Notification
  - E.g. Cache Invalidation
  - The ability to notify a subscriber that data has changed in order to invalidate the subscriber's cache and/or update it
  - Challenge: ability to customize information in event
- Mobile Notification
  - Client needs to be notified of profile or entitlement change
  - Challenge: scale - millions of subscribers using single-resource feeds, non-HTTP delivery (e.g. APNS, GMS, WNS)

Proposal to SCIM WG

- Develop a protocol for supporting publish/ subscribe feeds
- Describe
  - SCIM Feeds (e.g. what Users in a particular feed?)
  - SCIM Events
    - Types (POST/PUT/PATCH/DELETE + Add/Remove from Feed + Other)
    - Format (e.g. JWT)
    - Security/Confidentiality Model
  - Profile or Create an Event Distribution Protocol
    - e.g. Derivative of PubSubHubub, WebPUSH, etc