Federated provisioning (Why and how)

Federation Boot Camp,
Vienna Feb. 05-06, 2018

Peter Gietz, DAASI International
Peter.gietz@daasi.de

Problem Statement

- Provisioning is the process of providing identity information to a target system (here an application secured by a SAML Service Provider)
- In SAML2 based federations provisioning is done „just in time“
  - User logs in at the IdP and IdP sends an assertion to SP that the user has correctly authenticated
  - IdP can also add assertions about user attributes (i.e. identity information)
- There are good reasons why this is not enough, we also need a „just in case“ (Peter Schober) provisioning

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Use cases for „just in case“ (de-)provisioning

- The SP protected application needs to know membership information before actual first log-in, e.g.
  - E-Learning system needs to plan courses and needs membership information from Identity store.
  - Teachers may want to know how many people will join her course
- With just in time, the application will never know, if a user has left the organization
  - Application will have information about people it shouldn‘t have any information about any more (data privacy legislation!)
  - E-Learning system cannot plan courses correctly, because it has a wrong number of potential course members

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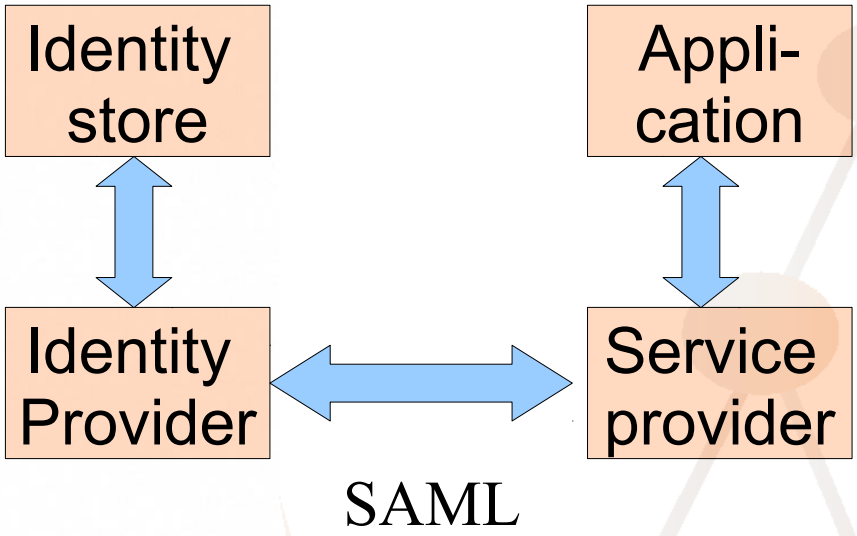
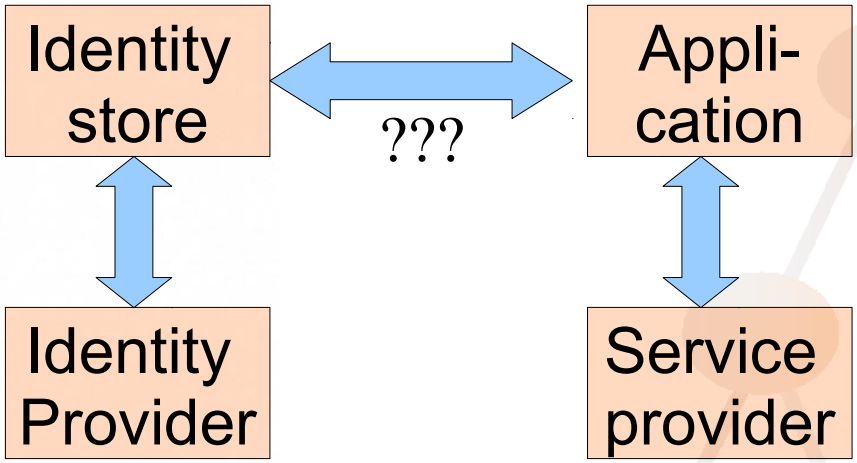
General Architecture

Just in time



General Architecture

Just in case



Provisioning strategies 1/2

- Push versus pull
  - Push:
    - Identity store sends information to the application
  - Pull:
    - application requests information from identity store

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Provisioning strategies 2/2

- Mass versus one-by-one
  - Mass:
    - Identity store provides all identities at t once
    - Application has to do a diff with its own information and add, modify or delete identities respectively
  - One-by-one (only push):
    - When a new identity is added, modified or deleted in identity store it will tell this to the Application
    - Application adds, modifies or deletes the respective identity

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Solution 0,5: The SAML way

- The SP could regularly check all identities it has with the IdP
  - SAML attribute query protocol
    - “Hey give me the attributes of subject 1234“
    - If attributes come, the user is still existent and the application can check, if data have changed
    - Otherwise the IdP sends „I don‘t know subject 1234“ and application can delete user
- This only works for the de-provisioning use case
- It is quite costly if application has a lot of users in terms of time and bandwidth

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Solution 1: SPML

- Service Provisioning Markup Language
- As SAML an XML-based OASIS standard (v2 from 2006)
- Rich protocol that allows for provisioning and de-provisioning
- Supports different data schemas: standard DSML (OASIS again) or custom schemas
- Extensible standard with core and extensions
- Uptake was not too impressive
  - Implemented in a lot of provisioning systems
  - But not a lot at the target side
- I still think it is a well thought through protocol and it was successfully implemented within organizations

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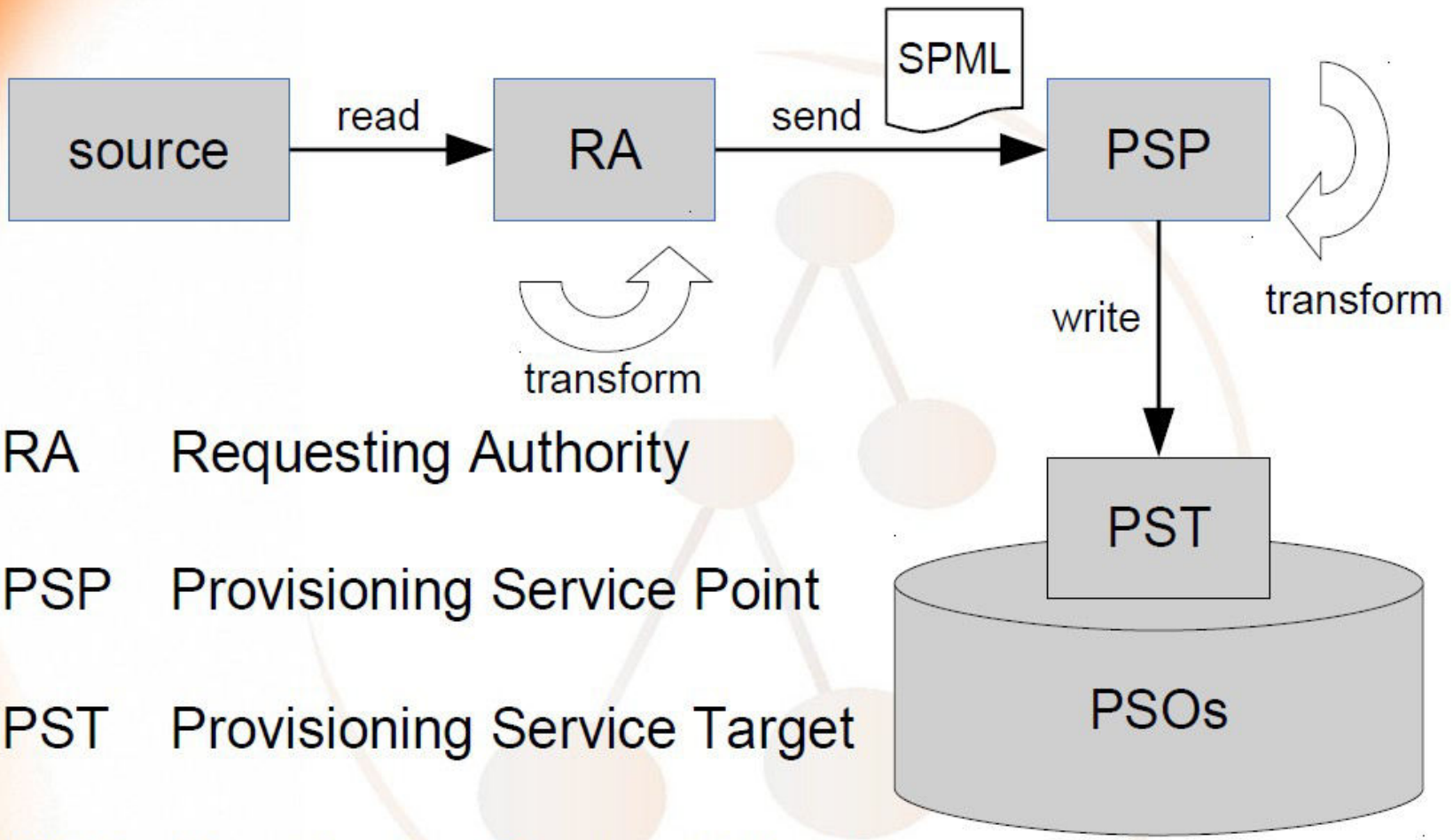
SPML



RA Requesting Authority

PSP Provisioning Service Point

PST Provisioning Service Target

PSO Provisioning Service Object

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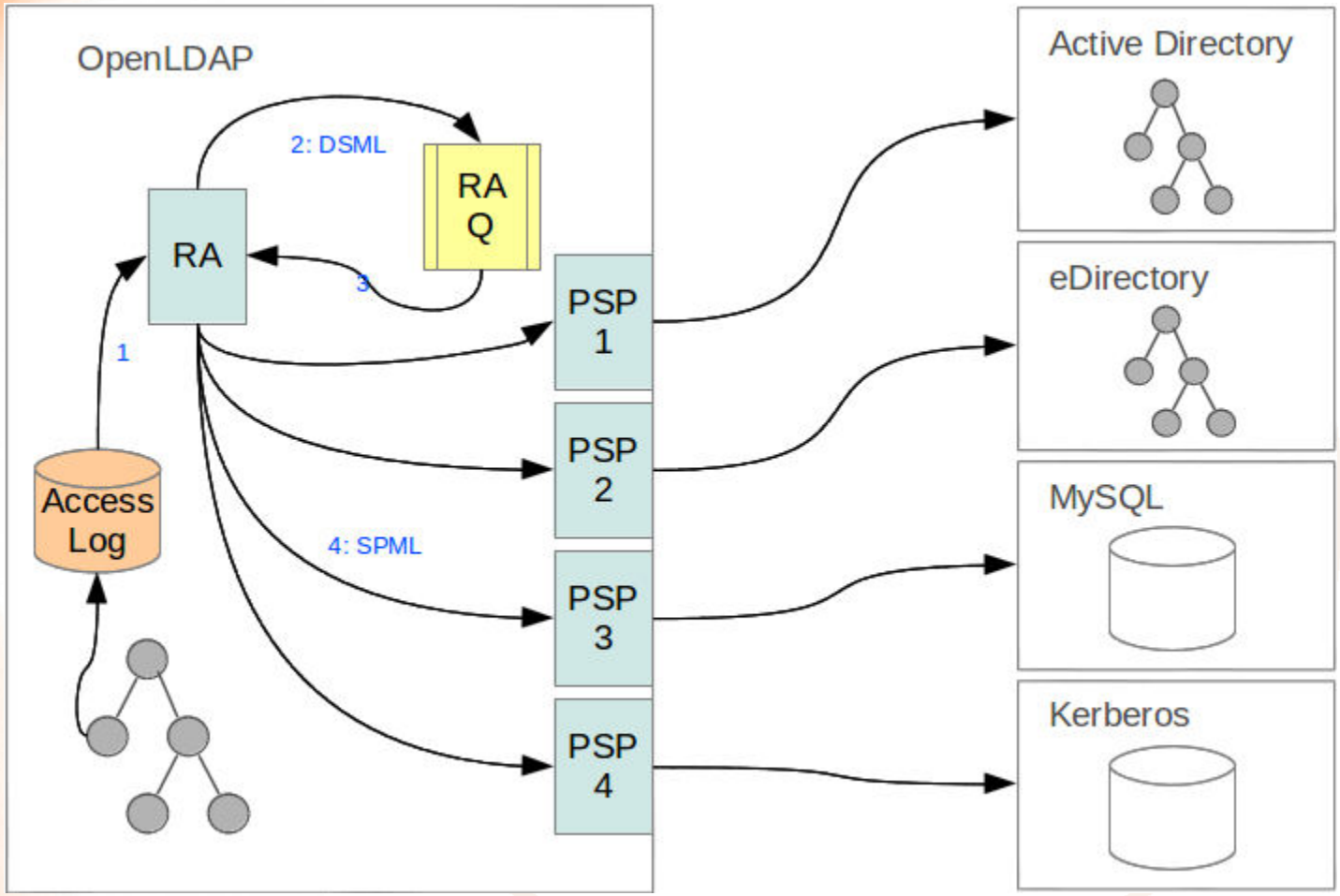
SPML-Provisionierung



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Solution 2: SCIM

- System for Cross-domain Identity Management
  - Originally it stood for Simple Cloud Identity Management
  - Sort of the “LDAP in the cloud“
- Version 1.0 (OWF Dezember 2011), Version 1.1 (OWF Juli 2012)
- Version 2.0 (IETF September 2015, RFC7642, RFC7643 and RFC7644)
- It is much simpler than SPML
  - Fixed schema for user and group
- Uses JSON instead of XML
- Synchronous REST HTTP for CRUD instead of SOAP
- OAuth or mutual X.509 for security
- Protocol Binding for SAML, LDAP

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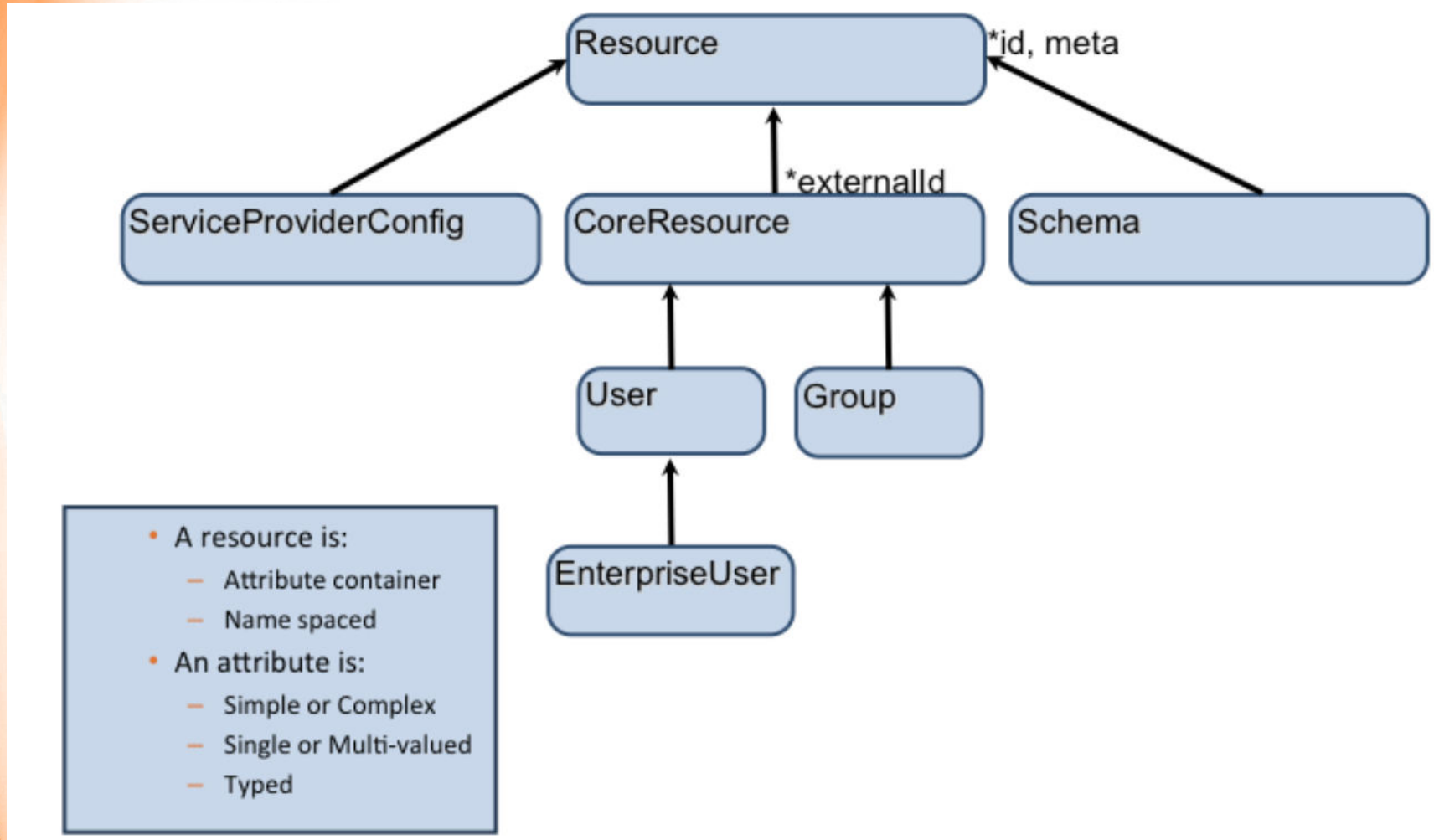
Solution 2: SCIM



Thanks for your attention!

- Any questions?

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- SCIM: http://datatracker.ietf.org/wg/scim
- https://www.terena.org/mail-archives/tf-emc2/pdfat8UjFqw99.pdf