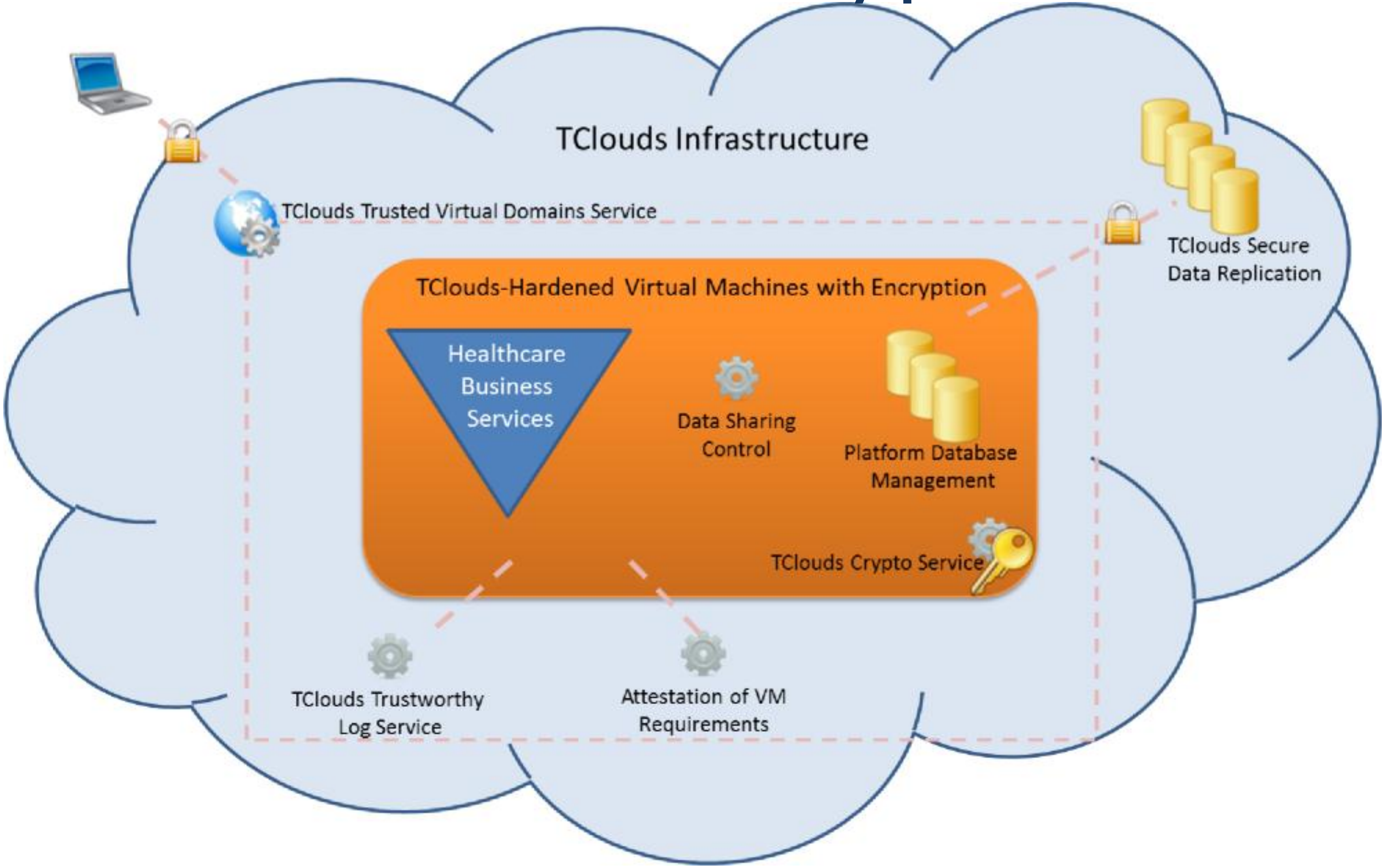
Rights Delegation in the Trustworthy Healthcare Platform

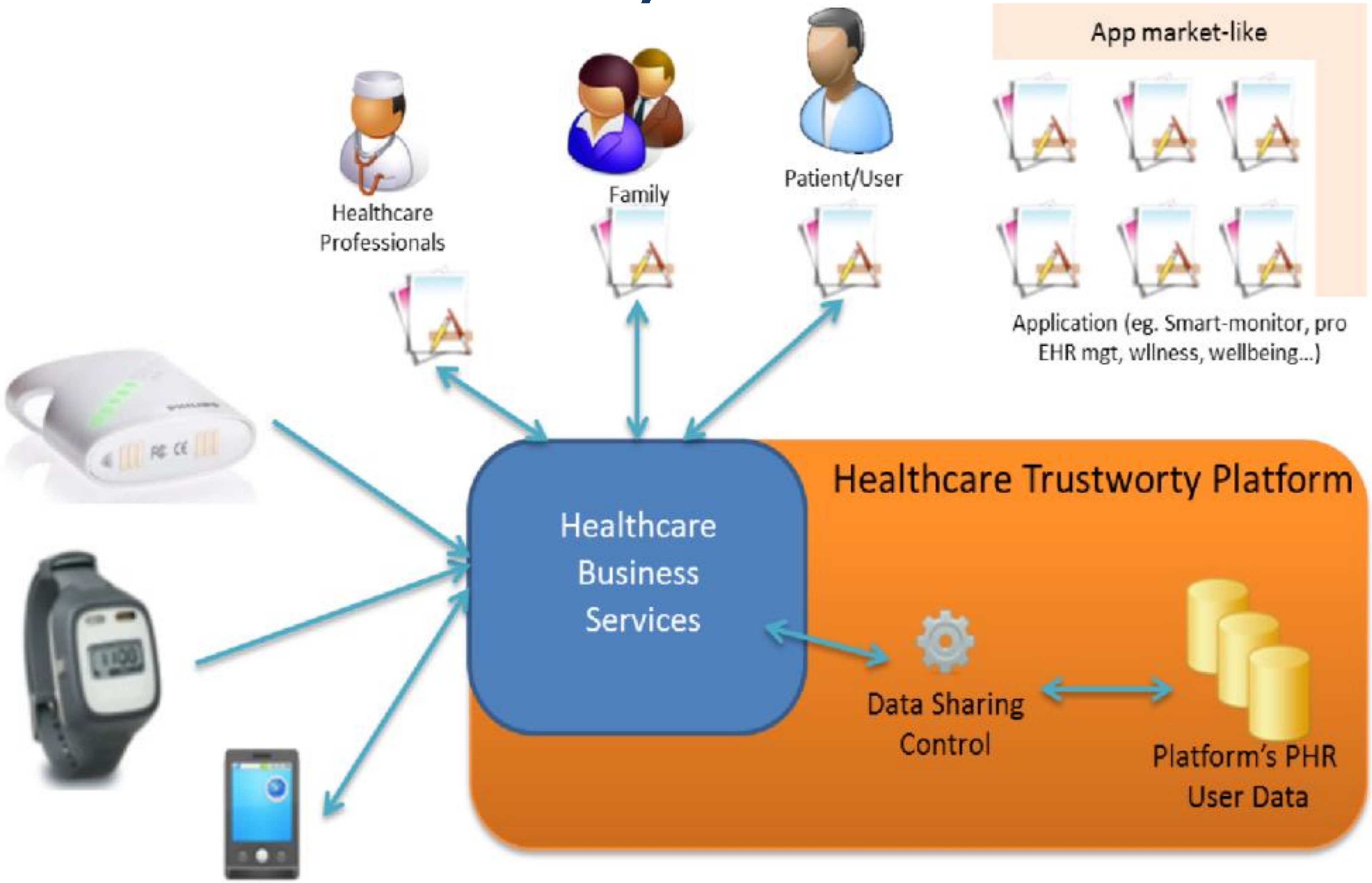
healthcare trustworthy platform



characteristics

- Privacy Policies, End-User‘s Responsibility & Third Parties
- Secure In-Transit Data
- Legal Compliances
- Trusted Audits and Log
- Security on Commodity Clouds
- Secure Data Storage
- Geolocalization of EHR Databases
- REST interfaces to support applications

eco system


App market-like
Healthcare Professionals
Family
Patient/User
Application (eg. Smart-monitor, pro EHR mgt, wllness, wellbeing...)
Healthcare Trustworty Platform
Healthcare Business Services
Data Sharing Control
Platform's PHR User Data

requirements

- patient is in control of his or her personal health data (includes EHR)

- hospital personal needs access e.g.
  - doctor to add and read data
  - administrative personal to make appointments

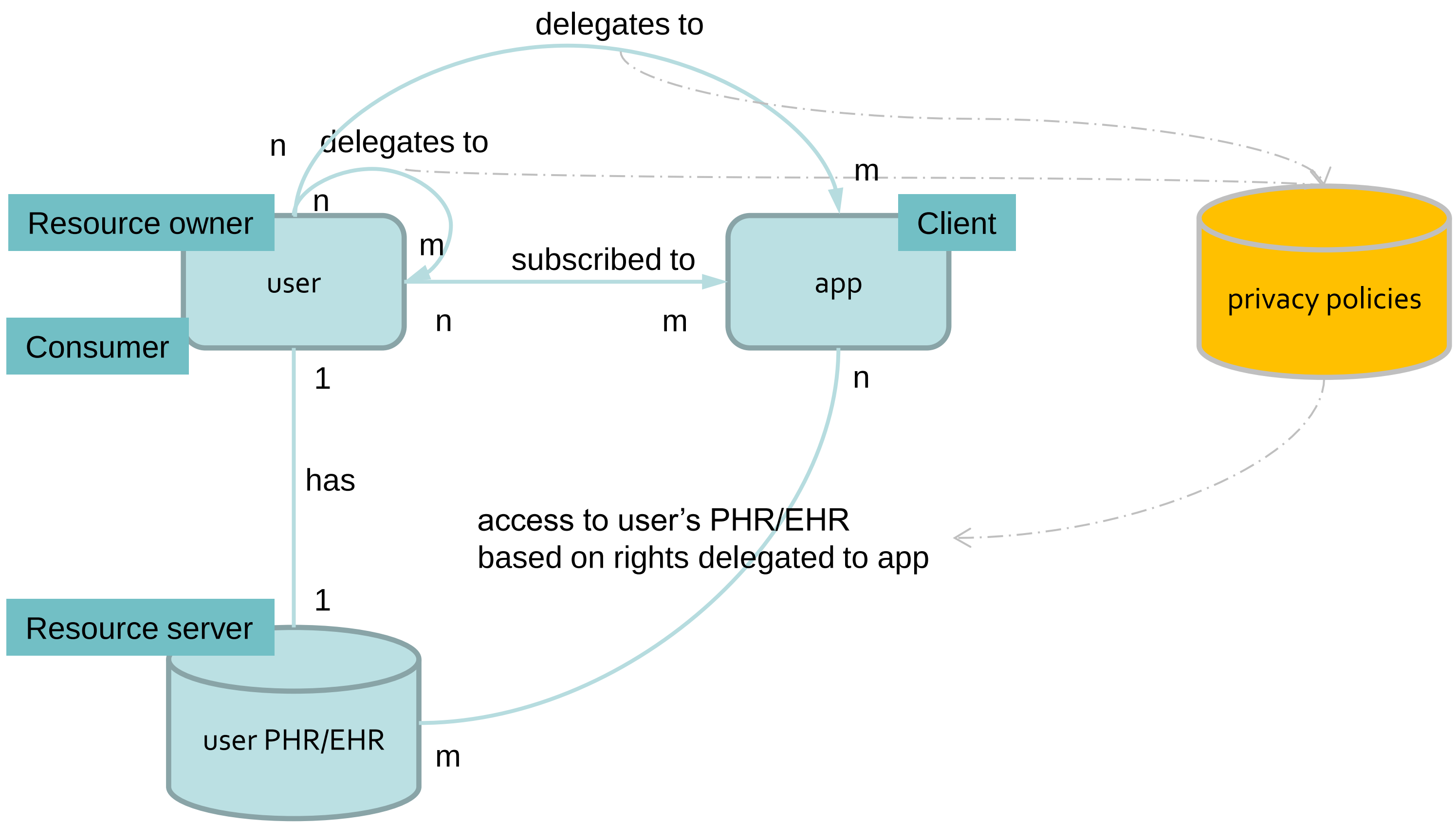
- devices need to be able to add data e.g.
  - activity by ActiWatch
  - weight information by a scale

use cases

1. owner
   - user accesses his or her own data
2. client
   - user delegates right to access (part of) his or her data to an independent device
3. authorized user
   - user delegates right to access (part of) his or her data to another user
4. authenticated user
   - user delegates right to access (part of) his or her data to an application to be used by any identified user

relationship

Used (OAuth2.0) terminology



delegates to

n

delegates to

m

n

Resource owner

m

subscribed to

Client

user

app

privacy policies

n

m

Consumer

1

n

has

access to user's PHR/EHR
based on rights delegated to app

1

Resource server

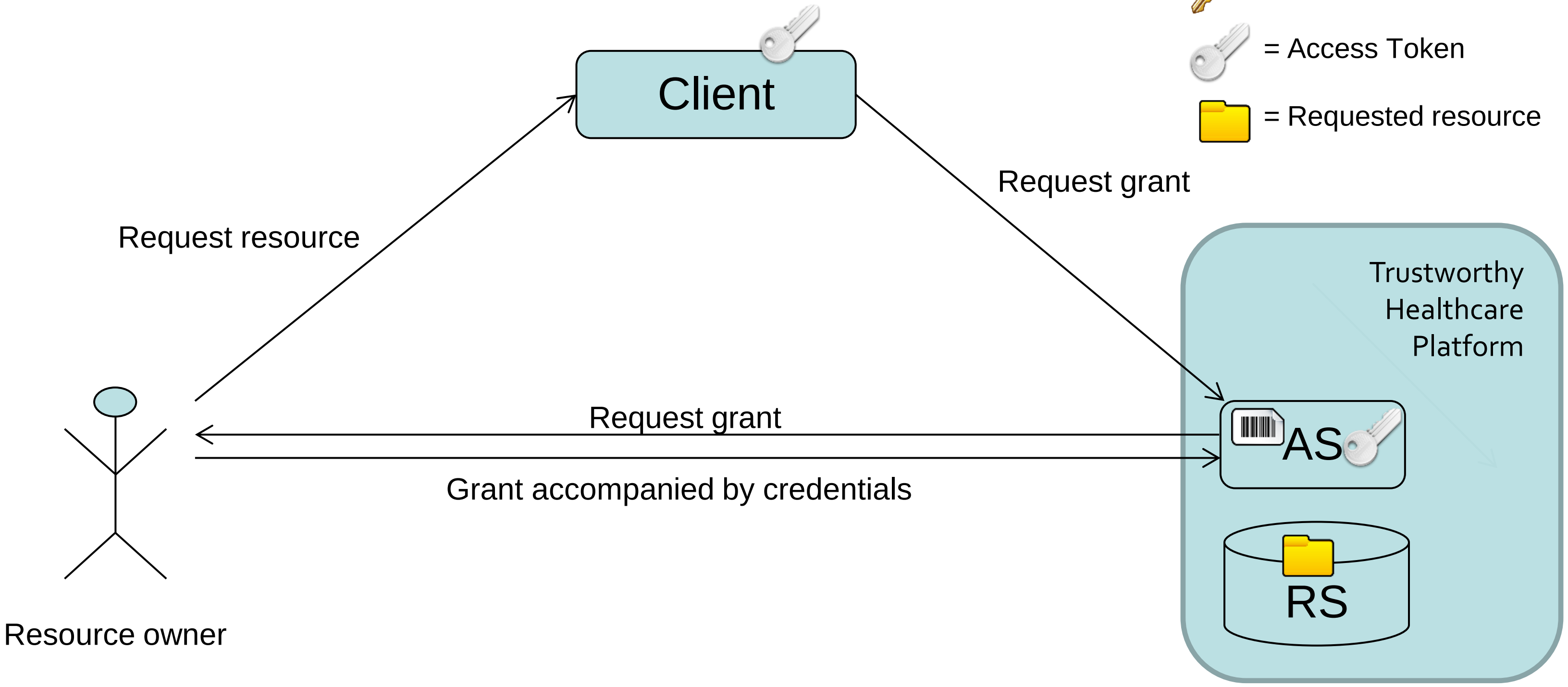
user PHR/EHR

m

use case: owner

- user accesses his or her own data
- uses standard OAuth 2.0

AS = Authorization Server
RS = Resource Server



= Owner Grant

= Refresh Token

= Access Token

= Requested resource

use case: client - setup

- Owner delegates rights to client
- OAuth2.0 framework is sufficient

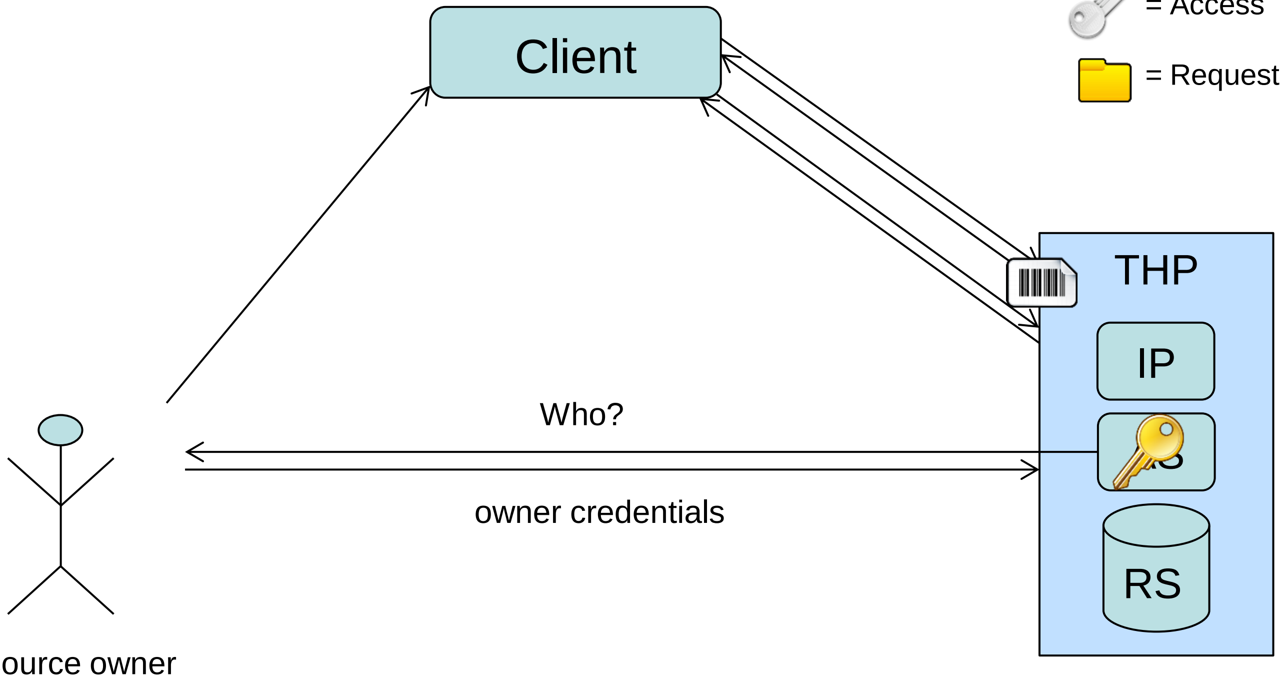
AS = Authorization Server
IP = Identity Provider
RS = Resource Server

▥ = Owner Grant

🔑 = Refresh Token

🗝 = Access Token

📁 = Requested resource



use case: client - resource access

AS = Authorization Server
IP = Identity Provider
RS = Resource Server

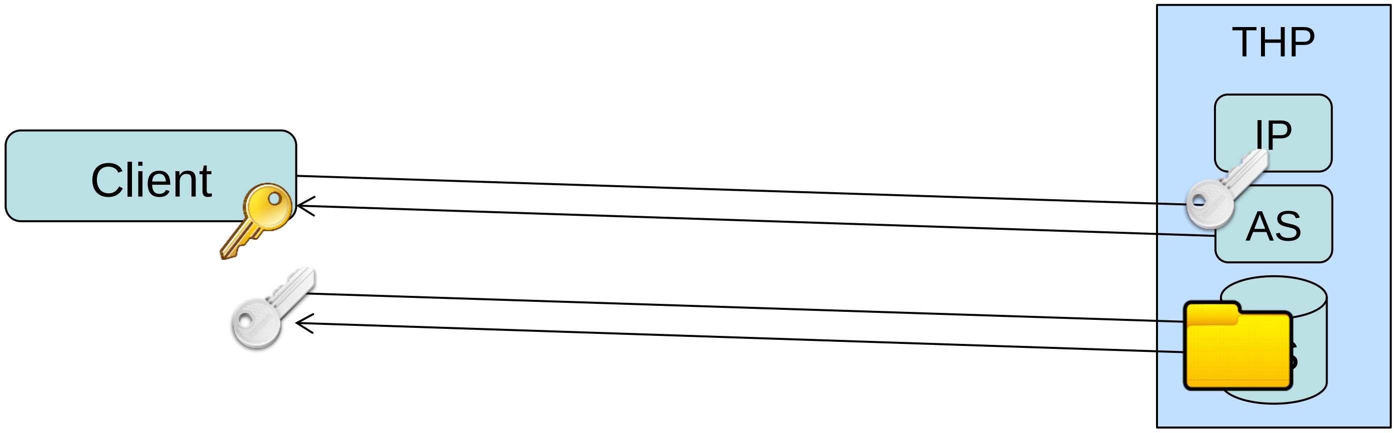
▥ = Owner Grant

🔑 = Refresh Token

🗝 = Access Token

📁 = Requested resource

- Refresh Token to generate Access Token with limited lifetime
- Same access token can be used to perform several accesses.
- Lifetime for refresh token established by owner.
- Difference w.r.t. to OAuth 2.0, client is autonomous

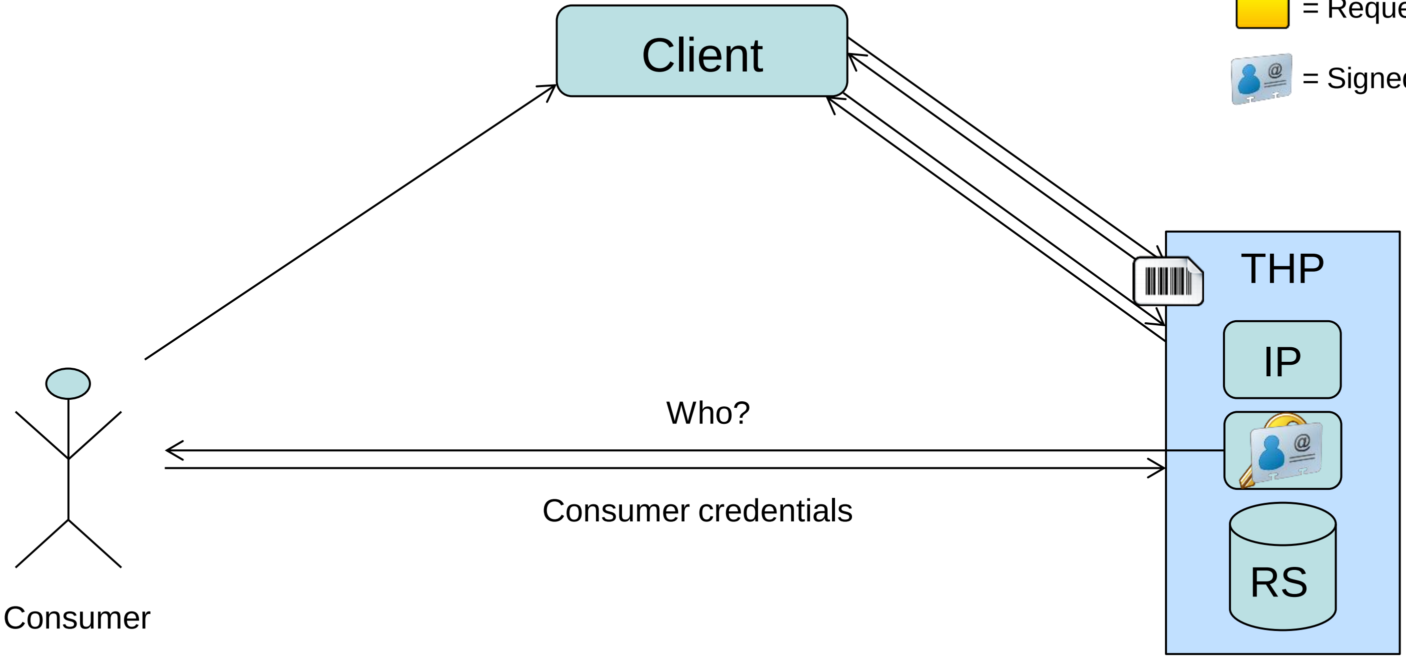


use case: authorized user - setup

AS = Authorization Server
IP = Identity Provider
RS = Resource Server

▥ = Owner Grant
🔑 = Refresh Token
🗝 = Access Token
📁 = Requested resource
🪪 = Signed Identity

- user delegates right to access (part of) his or her data to another user
- consumer are specific THP users, THP keeps track of delegations
- Identity of consumer required by client.
- Rights given by the owner to the consumers, not to the app/client.
- OpenIdConnect needed.



use case: authorized user - resource access

AS = Authorization Server
IP = Identity Provider
RS = Resource Server

- Refresh Token to generate Access Token with limited owner-scope
- Same access token can be used to perform several accesses.
- Lifetime for refresh token short. One refresh token per session.
- Consumer must be online.

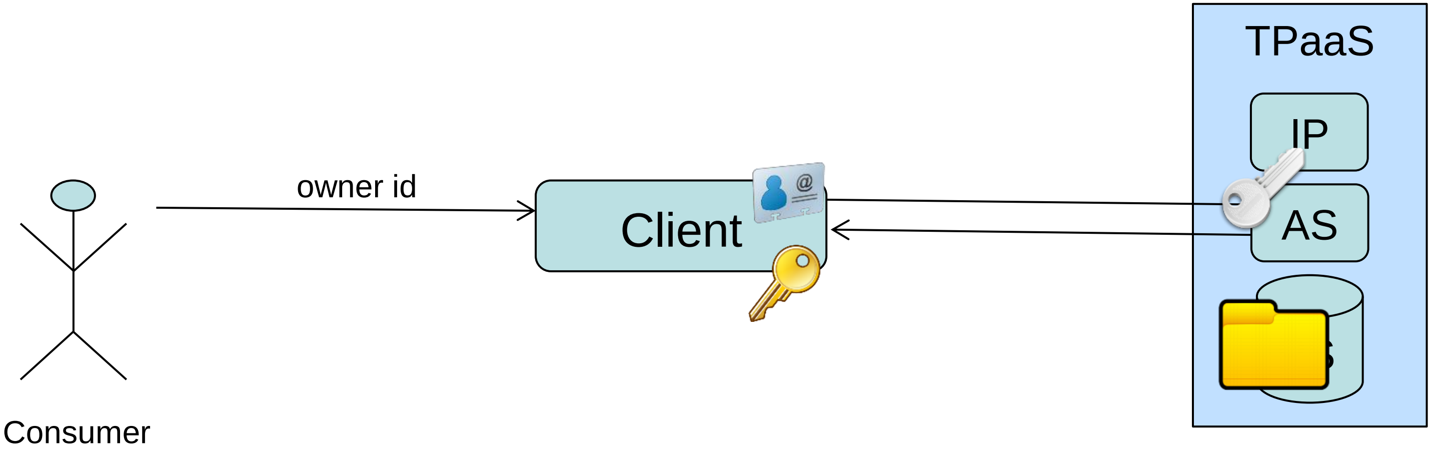
🎫 = Owner Grant

🔑 = Refresh Token

🗝 = Access Token

📁 = Requested resource

🪪 = Signed Identity



use case: authenticated user - setup

- user delegates right to access (part of) his or her data to an application to be used by any identified consumer
- the consumers are any THP users.
- identity of both owner and consumer required by client.
- rights given by the owner to the client, not to the consumers.
- OpenIdConnect needed.

AS = Authorization Server
IP = Identity Provider
RS = Resource Server

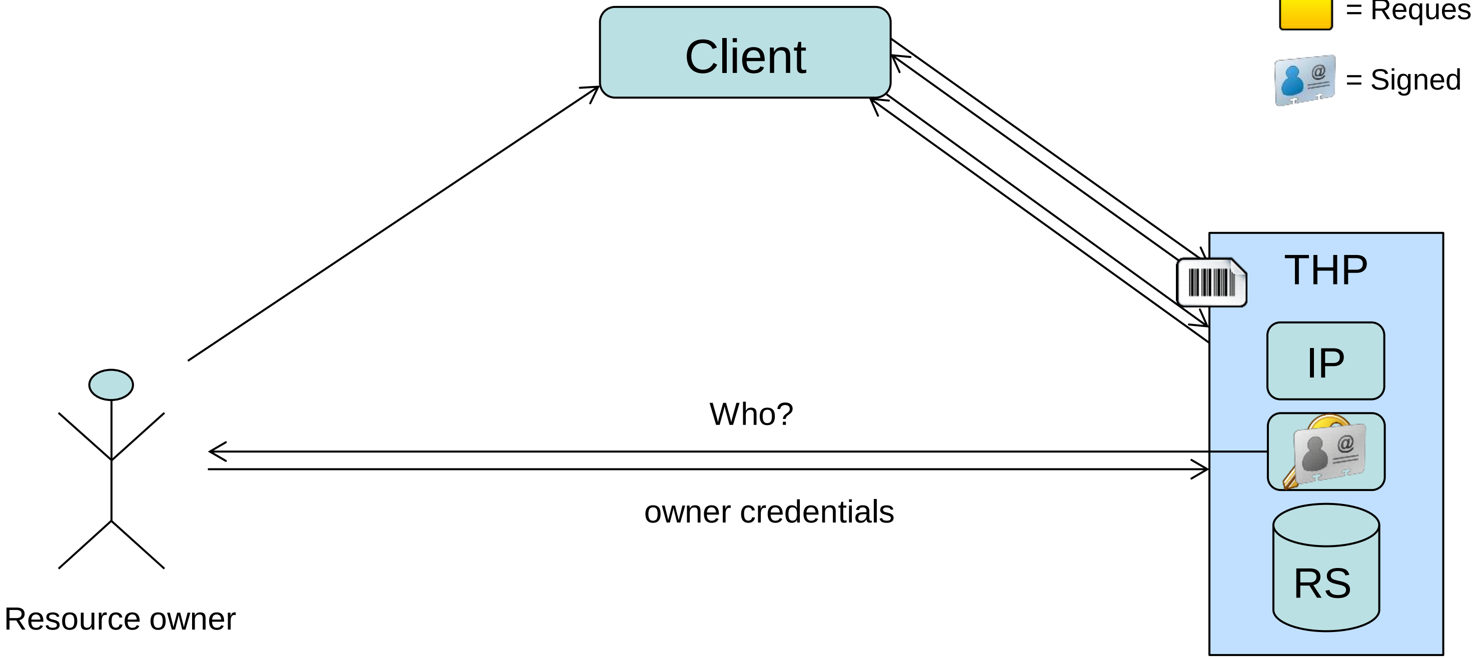
▥ = Owner Grant

🔑 = Refresh Token

🗝 = Access Token

📁 = Requested resource

🪪 = Signed Identity

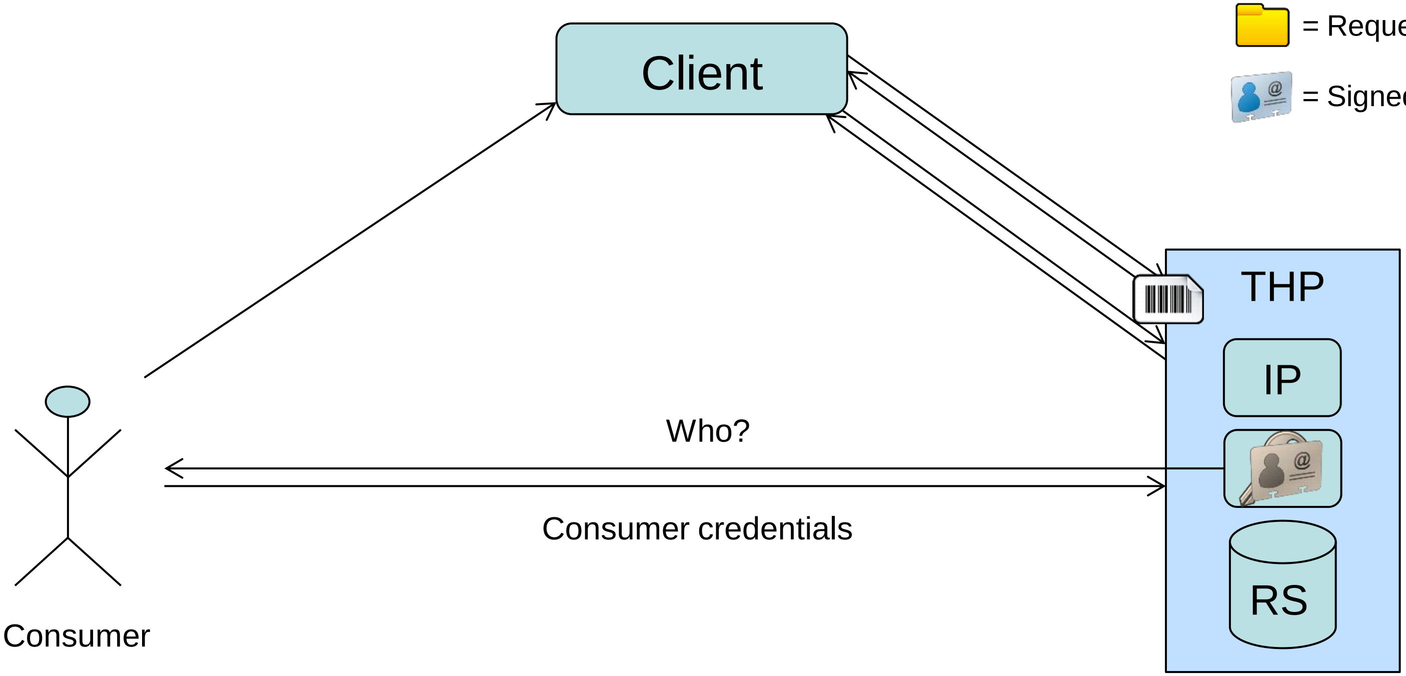


use case: authenticated user - “logon”

- user delegates right to access (part of) his or her data to an application to be used by any identified consumer
- the consumers are any THP users.
- identity of both owner and consumer required by client.
- rights given by the owner to the client, not to the consumers.
- OpenIdConnect needed.

AS = Authorization Server
IP = Identity Provider
RS = Resource Server

= Owner Grant
= Refresh Token
= Access Token
= Requested resource
= Signed Identity



use case: authenticated user - resource access

- Refresh Token to generate Access Token with different consumer
- Lifetime for refresh token established by owner.
- Consumer must be online.

AS = Authorization Server
IP = Identity Provider
RS = Resource Server

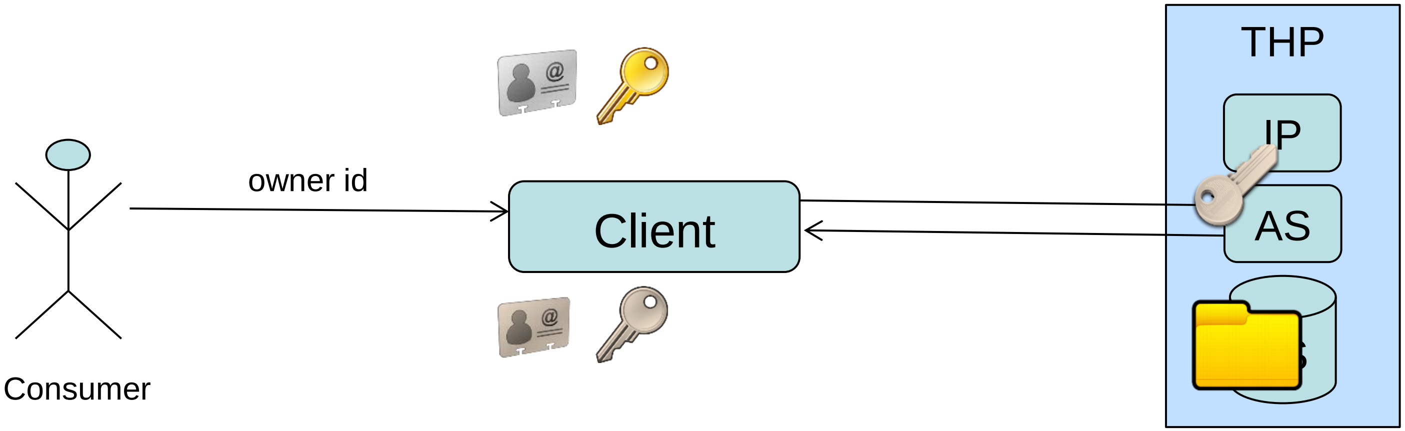
▥ = Owner Grant

🔑 = Refresh Token

🗝 = Access Token

📁 = Requested resource

🪪 = Signed Identity



Summary

- extending OAuth2.0
- using OpenIDConnect
- logging all resource requests for auditing purposes
- REST full interface

demo description

- demo shows use cases 1 and 2
- 4 VMs
  - one running all databases
  - one running logservice
  - one running OAuth2Share
  - one running the applications

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