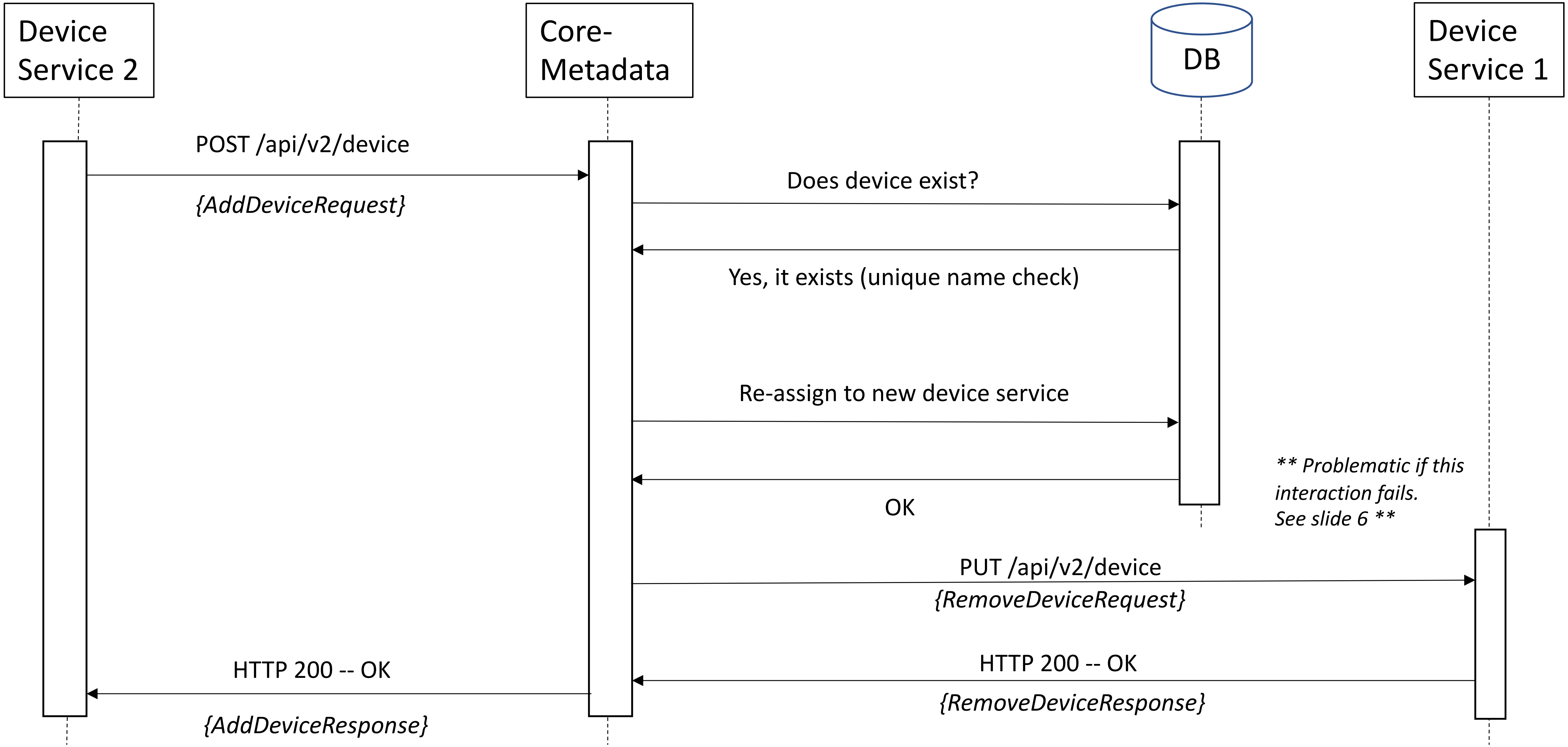
Movable Device Provisioning

EdgeX Foundry – Geneva Release

Use Case

- Device moves from Device Service 1 to Device Service 2
- Example: a wearable device on a person that moves from building to building
- How best to define an API to support this?
- Note – At the time of writing, design on Geneva’s “Provision Watcher” API is not finalized
- Assumption – Transport shown in these use cases is REST API. Review with an eye toward possibility of pub/sub.

Option 1: Implicit Re-assignment



*** Problematic if this interaction fails. See slide 6 ***

Option 1: Pros / Cons

- Pros

Less effort for clients to integrate. In fact this can be done with minor changes to the current API

Reconciliation of device to service association centralized in core-metadata

- Cons

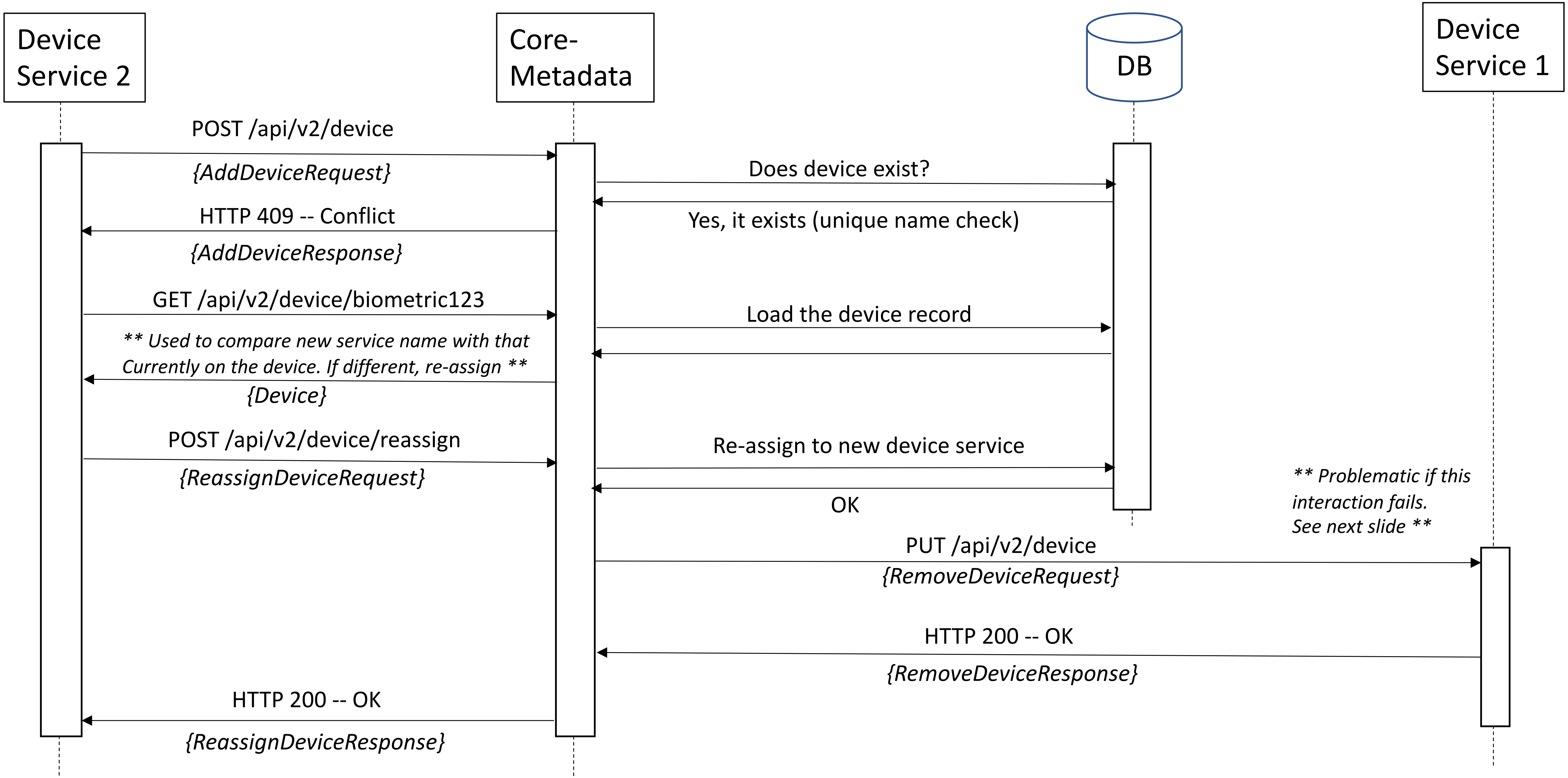
Re-assignment of device to new service is implicit via dual-purpose endpoint

Less granular observability

Notification to Device Service 1 could fail, orphaning device (possible issue today)

Knowledge of how to interpret a 409 conflict on the Device Service’s behalf is in Core-Metadata. Doesn’t seem like the right responsibility.

Option 2: Explicit Re-assignment



Device Service 2

Core-Metadata

DB

Device Service 1

POST /api/v2/device

{AddDeviceRequest}

Does device exist?

Yes, it exists (unique name check)

HTTP 409 -- Conflict

{AddDeviceResponse}

GET /api/v2/device/biometric123

Load the device record

*** Used to compare new service name with that Currently on the device. If different, re-assign ***

{Device}

POST /api/v2/device/reassign

{ReassignDeviceRequest}

Re-assign to new device service

OK

*** Problematic if this interaction fails. See next slide ***

PUT /api/v2/device

{RemoveDeviceRequest}

HTTP 200 -- OK

{RemoveDeviceResponse}

HTTP 200 -- OK

{ReassignDeviceResponse}

Option 2: Pros/Cons

- Pros

Explicit differentiation between “AddDevice” and “ReassignDevice” b/c of need to handle 409

Following from above, more granular observability

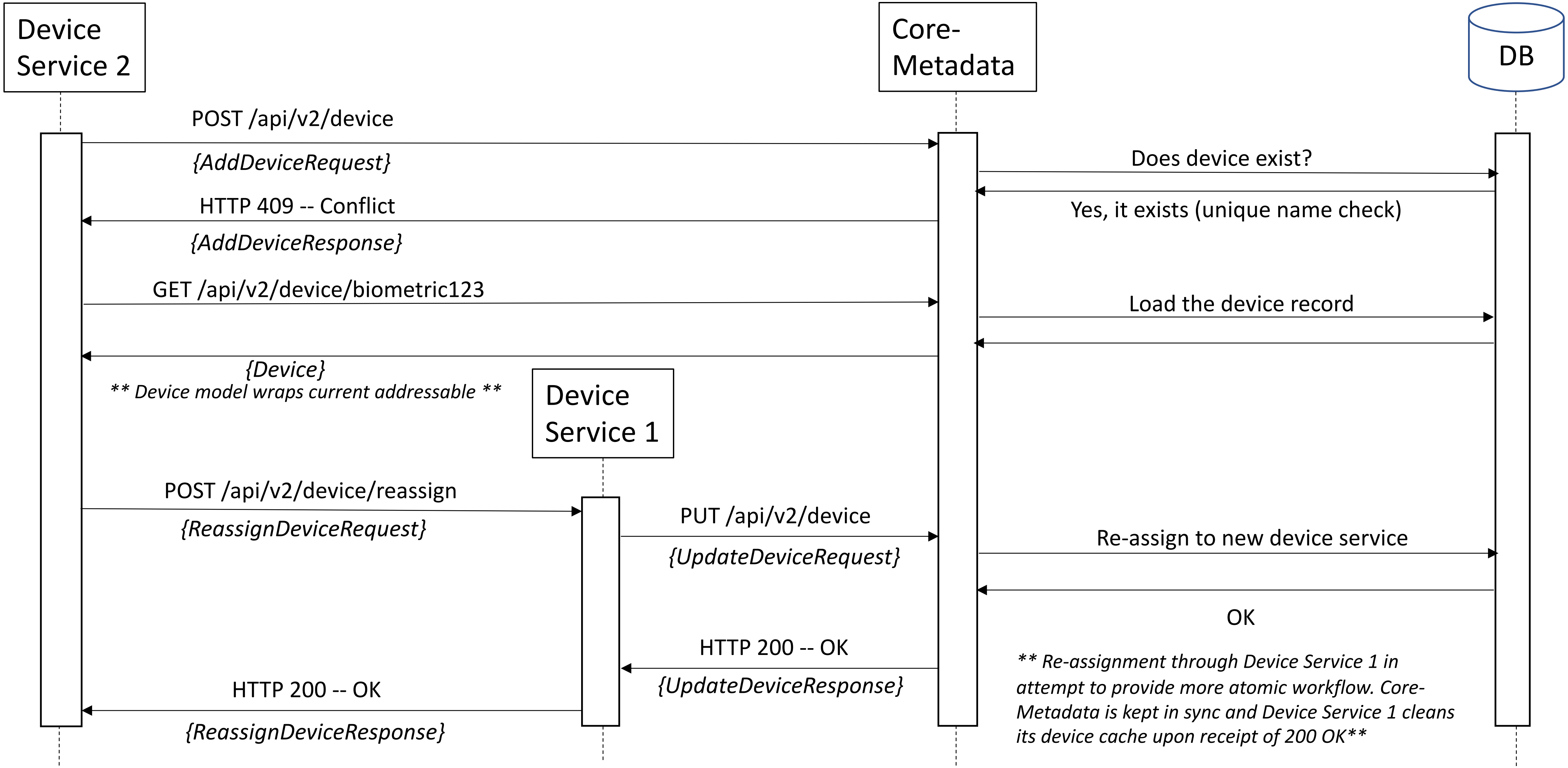
Separation of concerns – from core-metadata’s perspective, does a conflict always result in a device reassignment? Device Service can make this decision.

- Cons

Interaction between DeviceService and Core-Metadata is a bit more complex due to explicit contract

Doesn’t resolve possibility for orphaned device due to failed notification to DS1

Option 2a: Explicit Re-assignment



Device Service 2

Core-Metadata

DB

POST /api/v2/device

{AddDeviceRequest}

Does device exist?

Yes, it exists (unique name check)

HTTP 409 -- Conflict

{AddDeviceResponse}

GET /api/v2/device/biometric123

Load the device record

{Device}

*** Device model wraps current addressable ***

Device Service 1

POST /api/v2/device/reassign

{ReassignDeviceRequest}

PUT /api/v2/device

{UpdateDeviceRequest}

Re-assign to new device service

OK

HTTP 200 -- OK

{UpdateDeviceResponse}

HTTP 200 -- OK

{ReassignDeviceResponse}

*** Re-assignment through Device Service 1 in attempt to provide more atomic workflow. Core-Metadata is kept in sync and Device Service 1 cleans its device cache upon receipt of 200 OK***

Option 2a: Pros/Cons

- Pros

See Option 2 “pros” previous slide

Mitigation of orphaned devices by ensuring reassigned device is cleared from original device service before being re-assigned

Further delegation of how to interpret a conflict (409) status to the Device Service

- Cons

Interaction between DeviceService and Core-Metadata is a bit more complex due to explicit contract

Development overhead to introduce DS to DS communication, expands requisite testing