AWS re:Invent

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IOT305-R2

Architect your IoT workloads to operate reliably

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Agenda

- Why plan for IoT disaster recovery (DR)?
  - What is your RPO (recovery point objective)?
  - What is your RTO (recovery time objective)?
- When do you plan DR?
- How do you plan DR?
- DR for IoT
- Whiteboarding: It’s your session – ask your questions

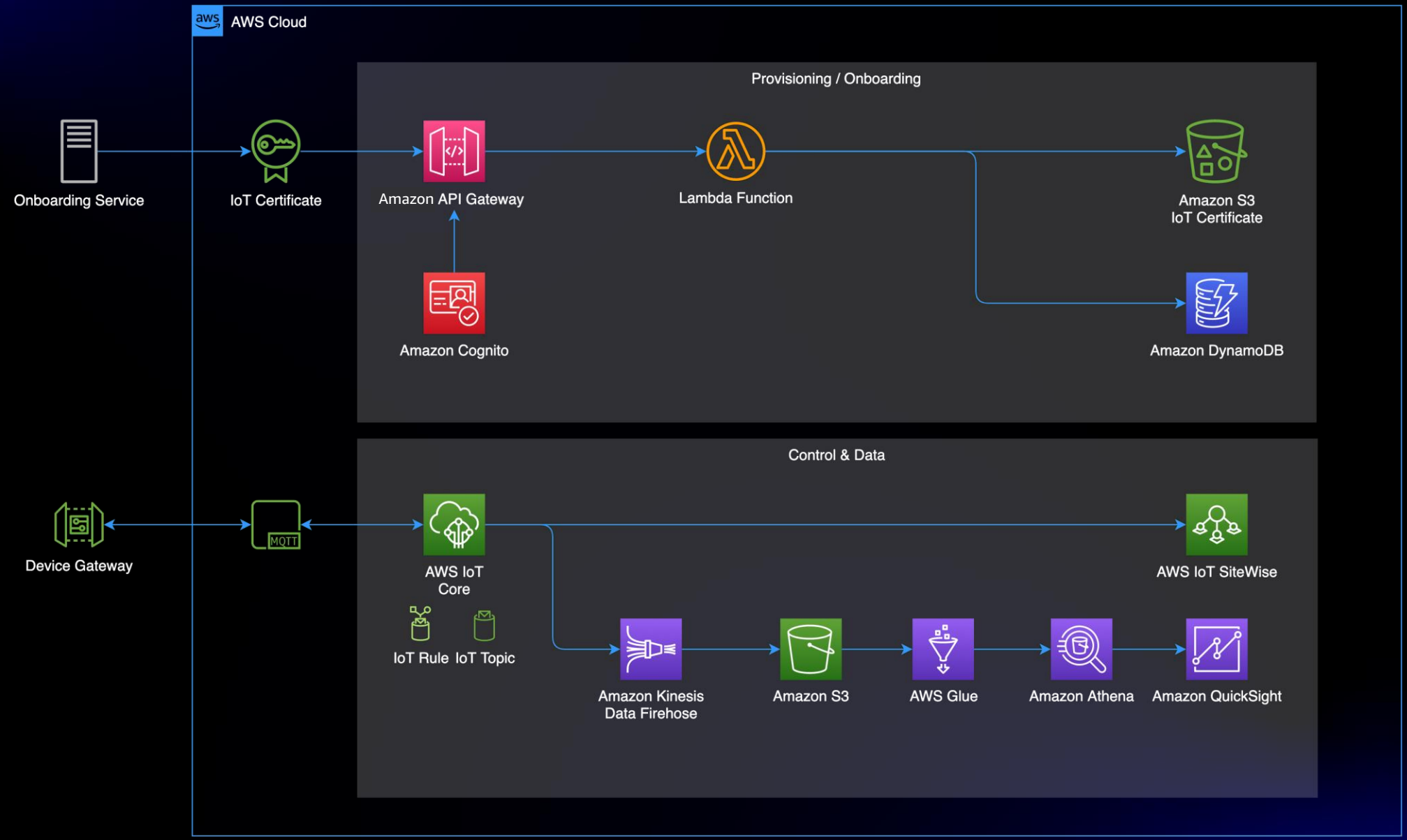
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Disaster recovery



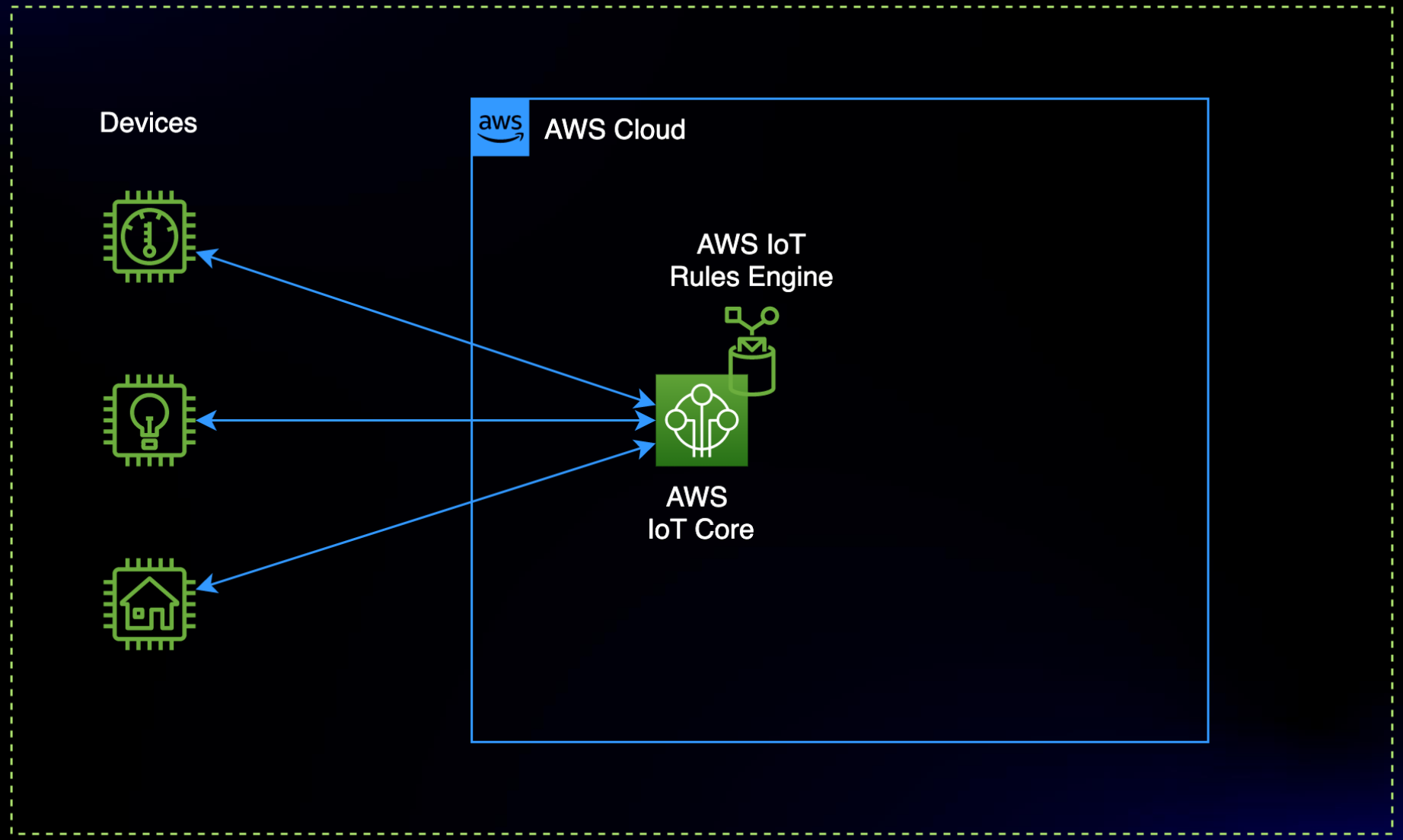
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Disaster recovery



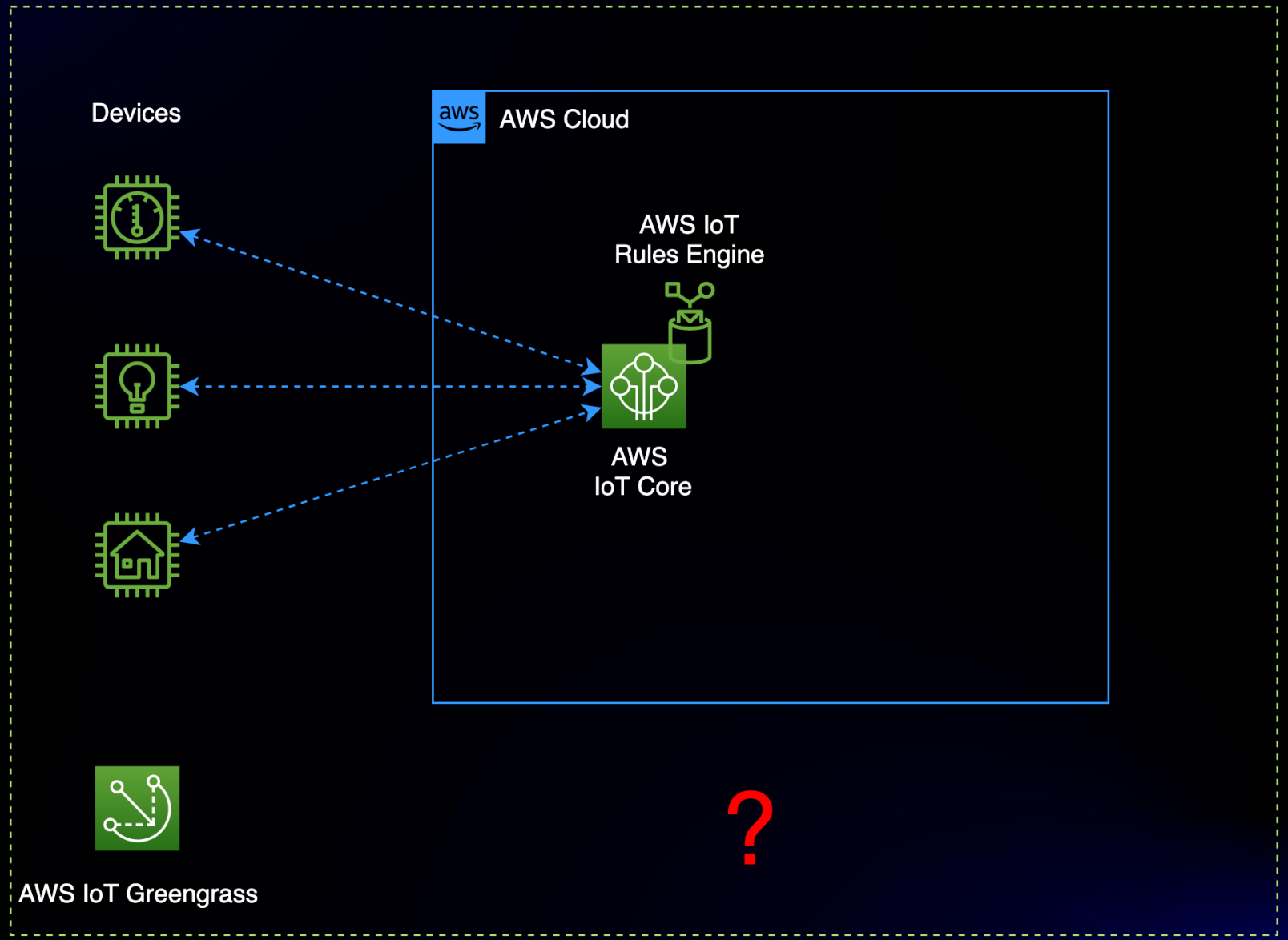
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Device connection



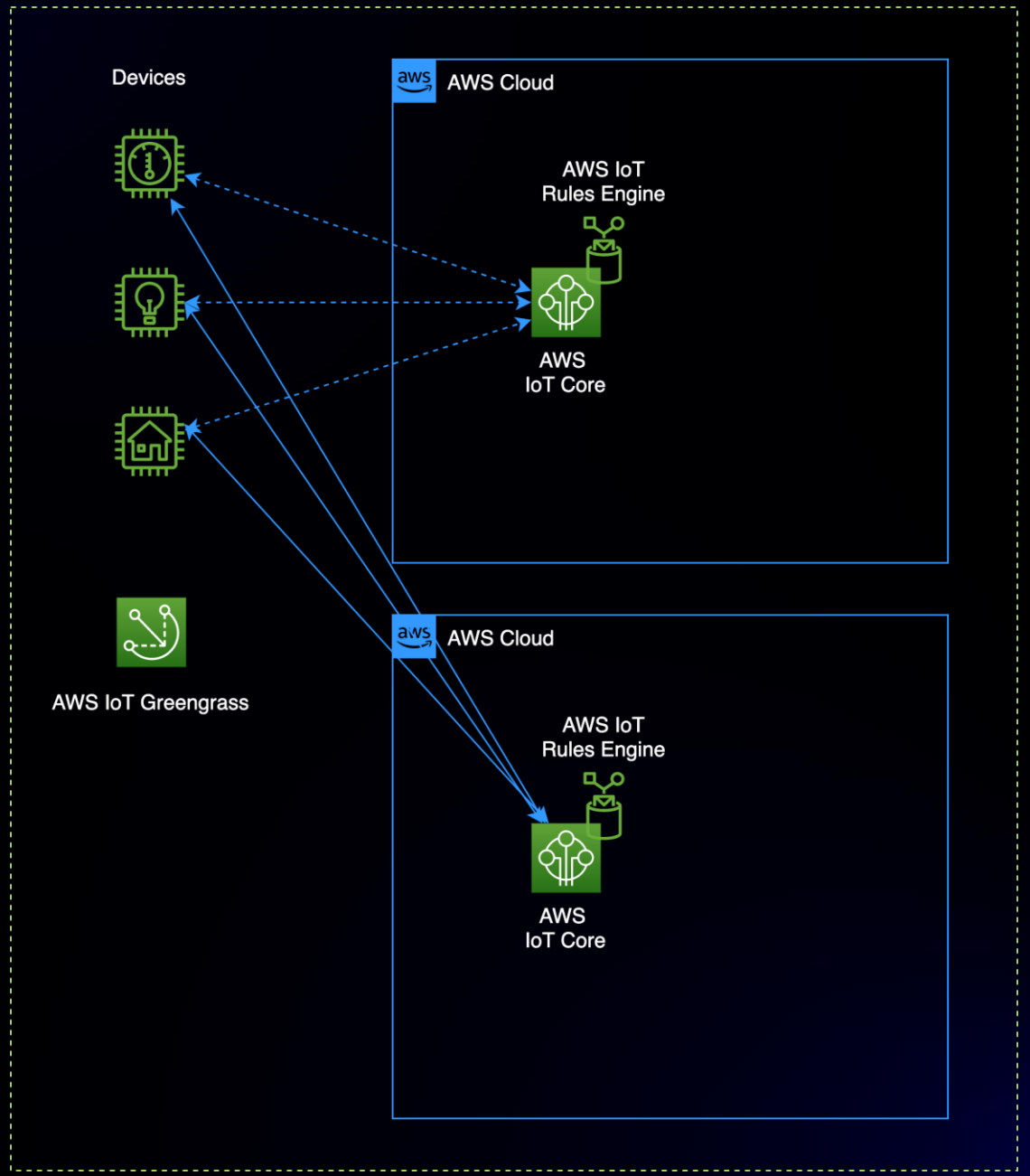
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Intermittent connection



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Cloud connection



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IoT disaster recovery (DR)

- Uplink only?
- Uplink and downlink?
- Active Passive
- Active Active
- TCO?

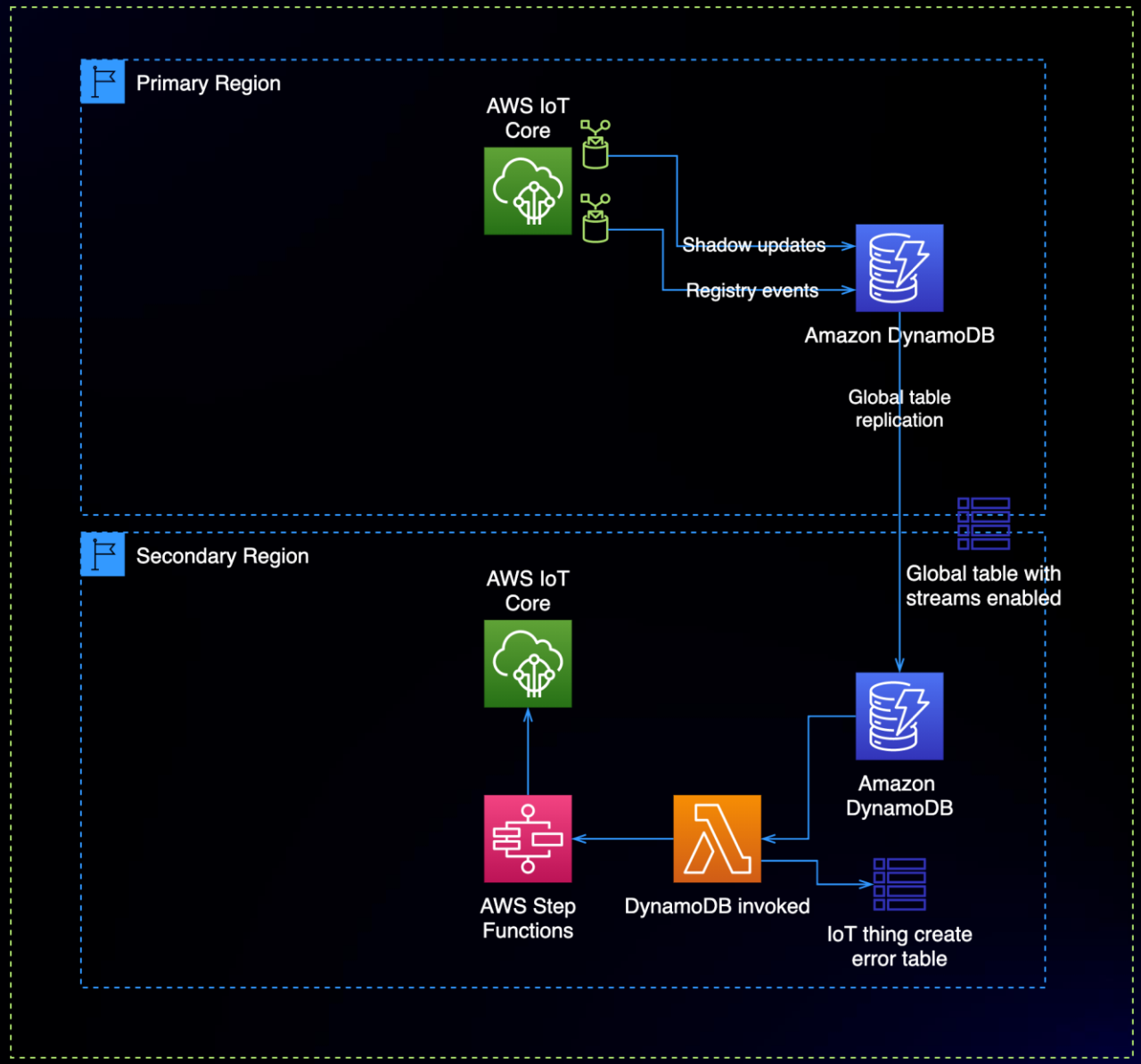
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Resources needed

- Thing types/groups
- Things with associated certificates and policies
- Device shadows
- DDB, global tables
- And others

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How can we automate?



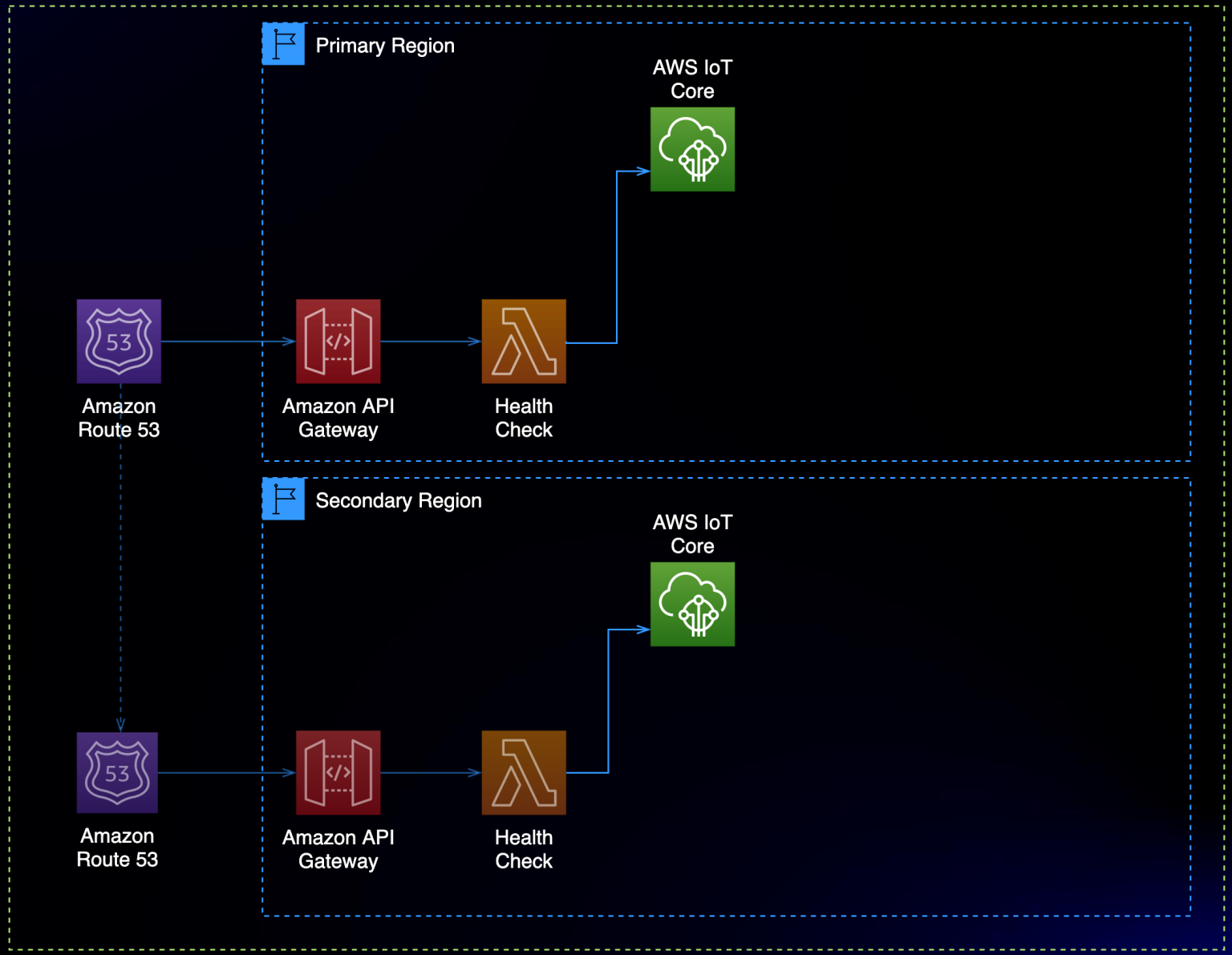
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Device connection

- Change to new endpoint (secondary region)

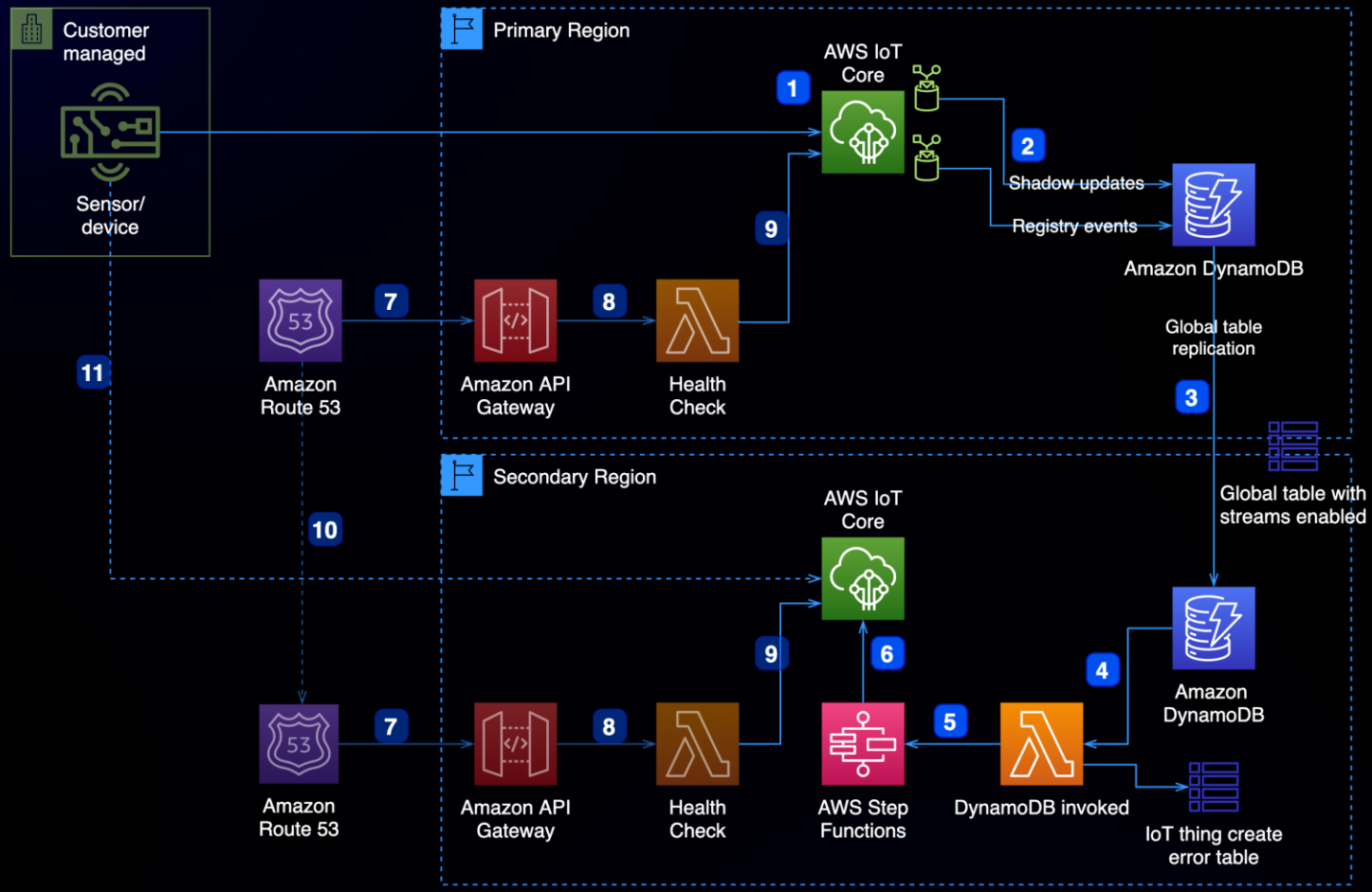
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How can we automate?



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Example



Replication flow

1. Customer provisions sensor or device using JITR or create IoT thing.
   New or updated IoT thing or device shadow created or changed in primary Region.
2. IoT things creation/update events are traced by registry events and AWS IoT Core rules forward changes to DynamoDB table.
3. Amazon DynamoDB global table with streams enabled replicates entries to secondary Region.
4. Any update of the global table triggers a Lambda function which invokes a AWS Step Function workflow with the following possible choices in event-types:
   - IoT thing CRUD
   - Device shadow sync
   - IoT ThingType CRUD
   - IoT ThingGroup CRUD
5. The AWS Step Function workflow registers/creates or updates things in the secondary Region AWS IoT Core.

Failover flow

7. Amazon Route 53 health checks are configured and conducted every 30 seconds. The health check target is a API-Gateway GET-Resource endpoint which invokes a Lambda function.
8. API Gateway invokes a Lambda function which
9. opens a MQTT-connection to IoT-Core to test the nominal behavior of publish or subscribe.
10. DNS failover step:
    - optionally create a CNAME based on traffic policy
    - based on health check response the CNAME will resolve to the IoT endpoint of a healthy Region.
11. IoT device will connect to IoT endpoint of healthy Region.

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Have we done this?

- Yes, a solution:
  - https://aws.amazon.com/solutions/implementations/disaster-recovery-for-aws-iot/
- Let us walk through it

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Thank you!

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