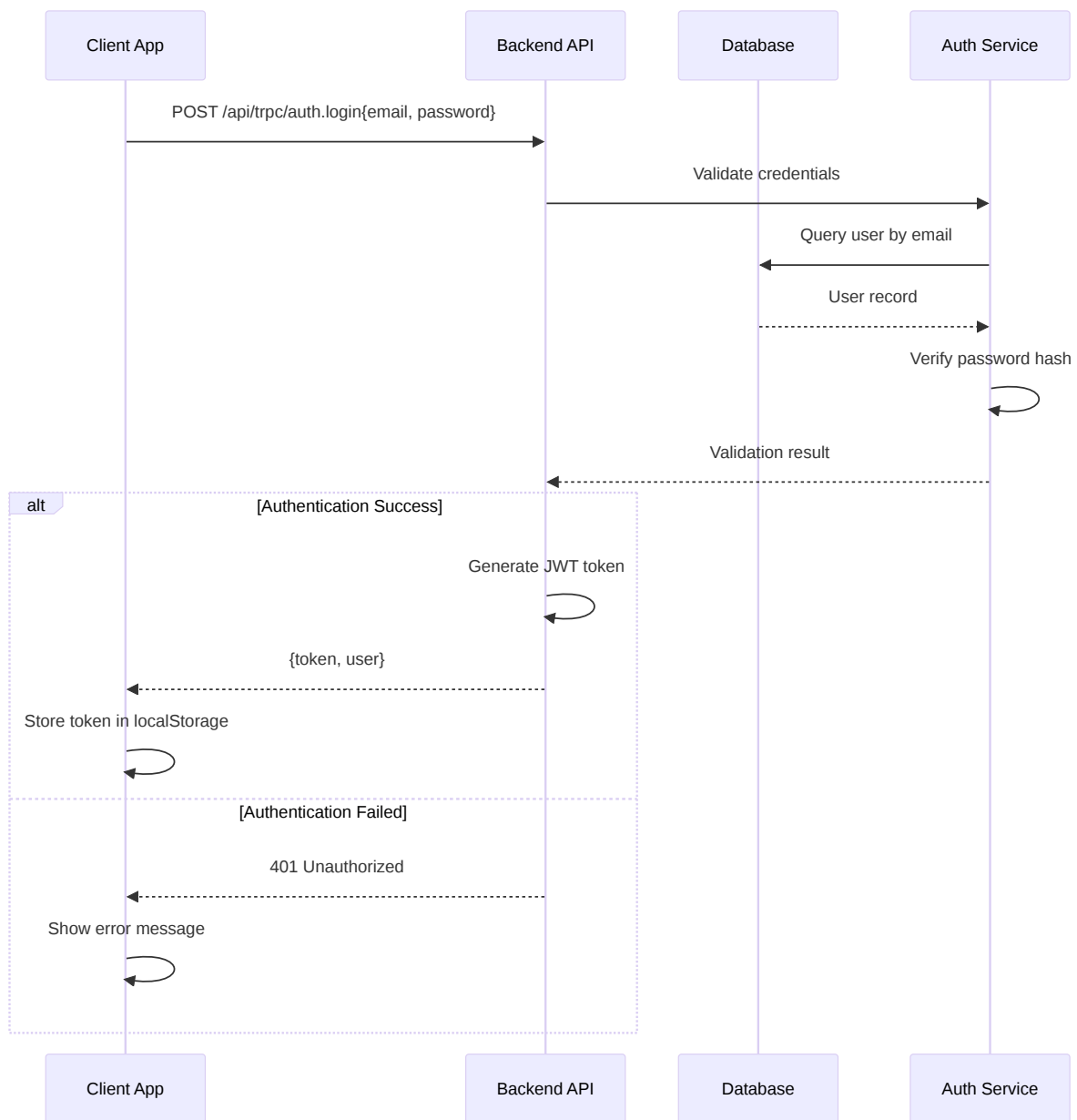
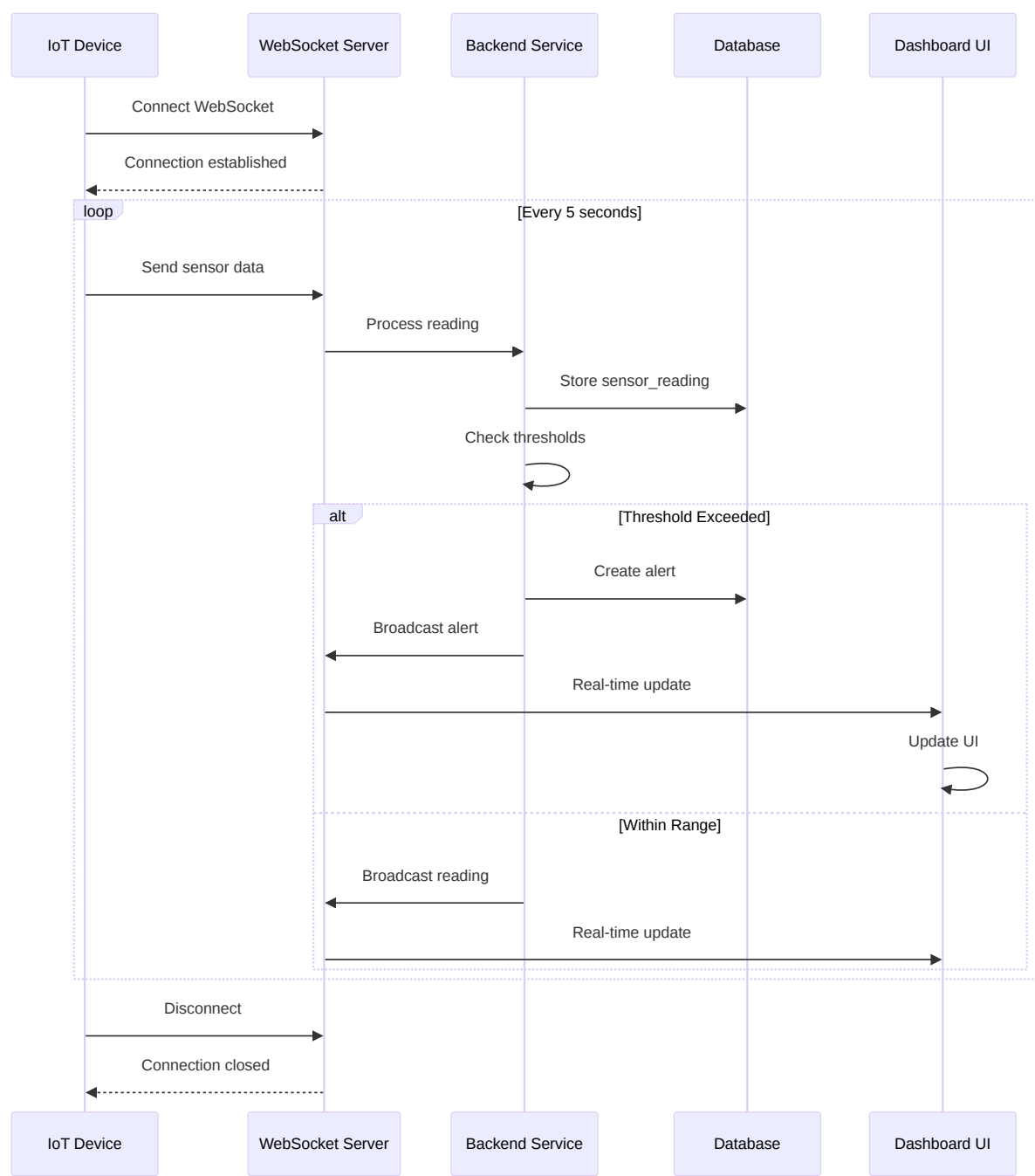


# Smart Factory IoT - API Flows & Sequences

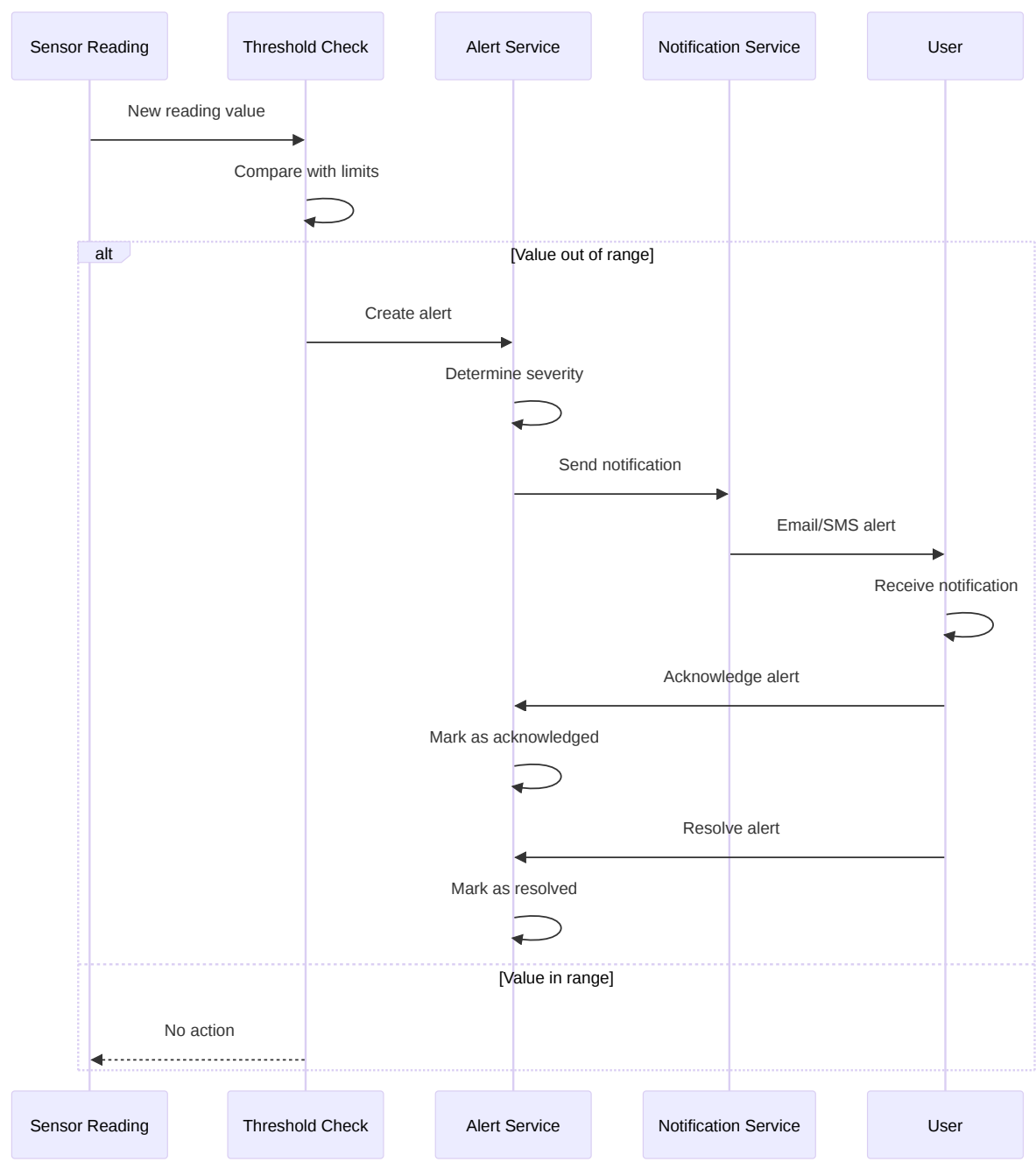
## Authentication Flow



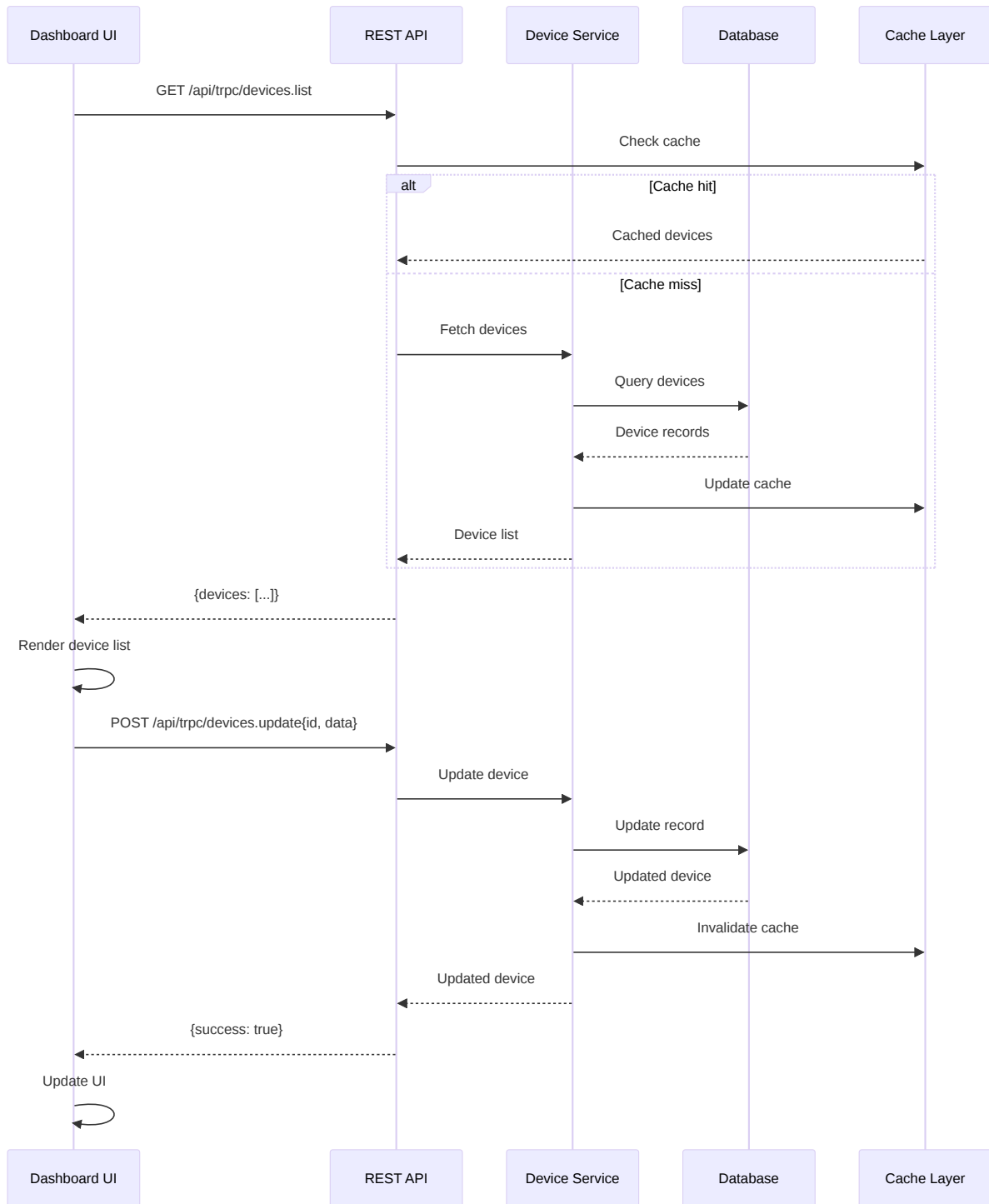
# Real-time Device Monitoring Flow



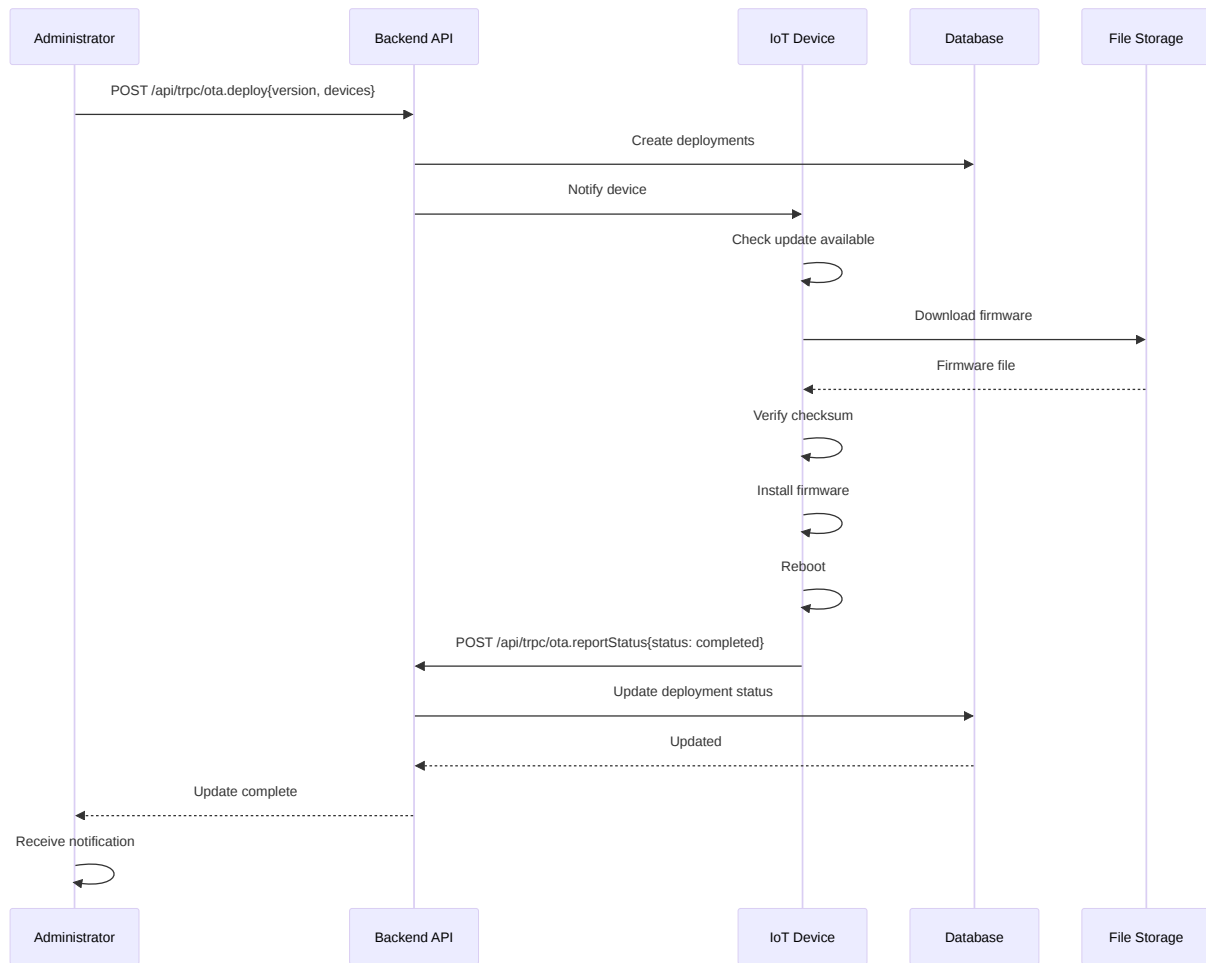
# Alert Management Flow



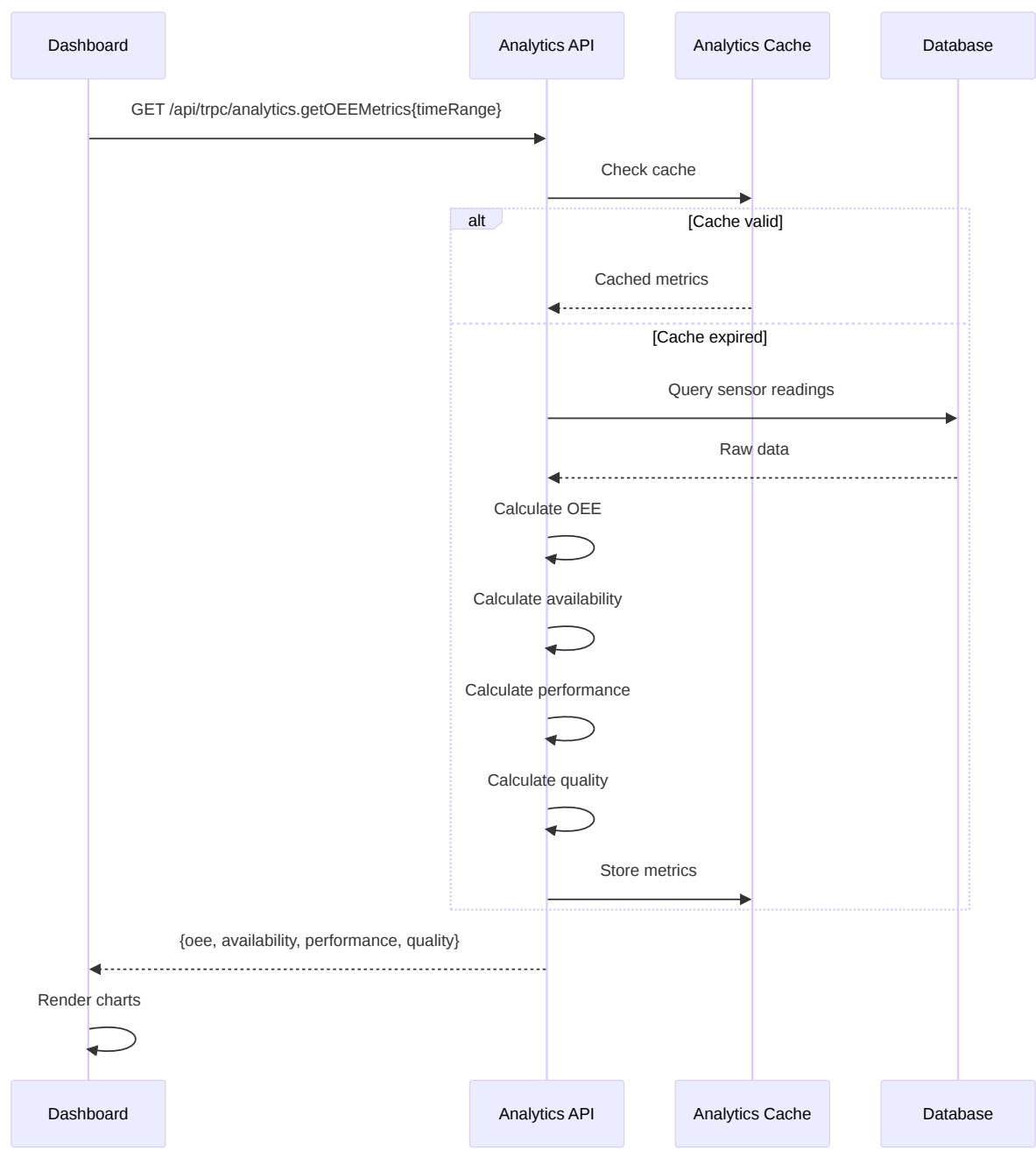
# Device Management Flow



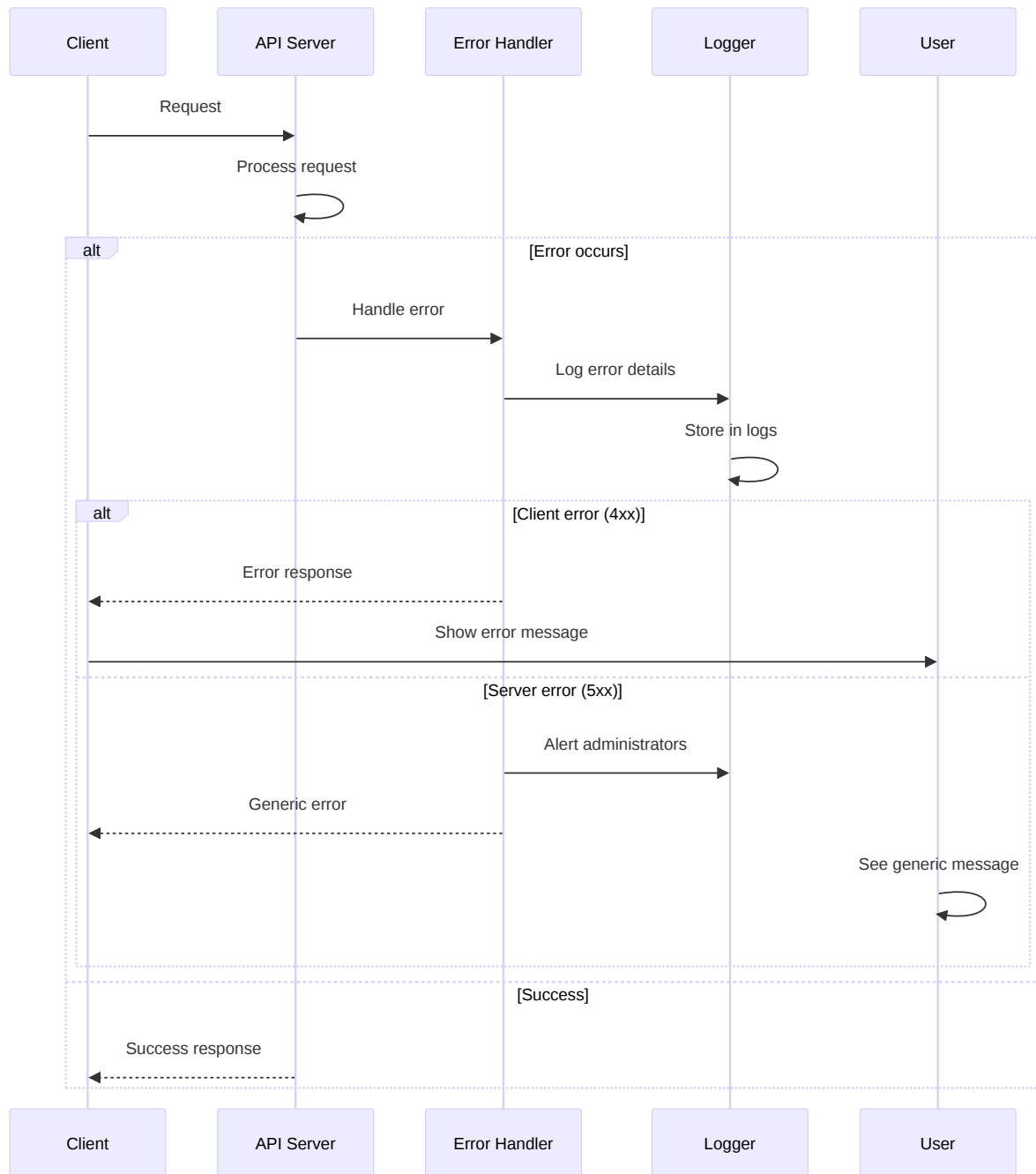
# OTA Update Flow



# Analytics & Reporting Flow



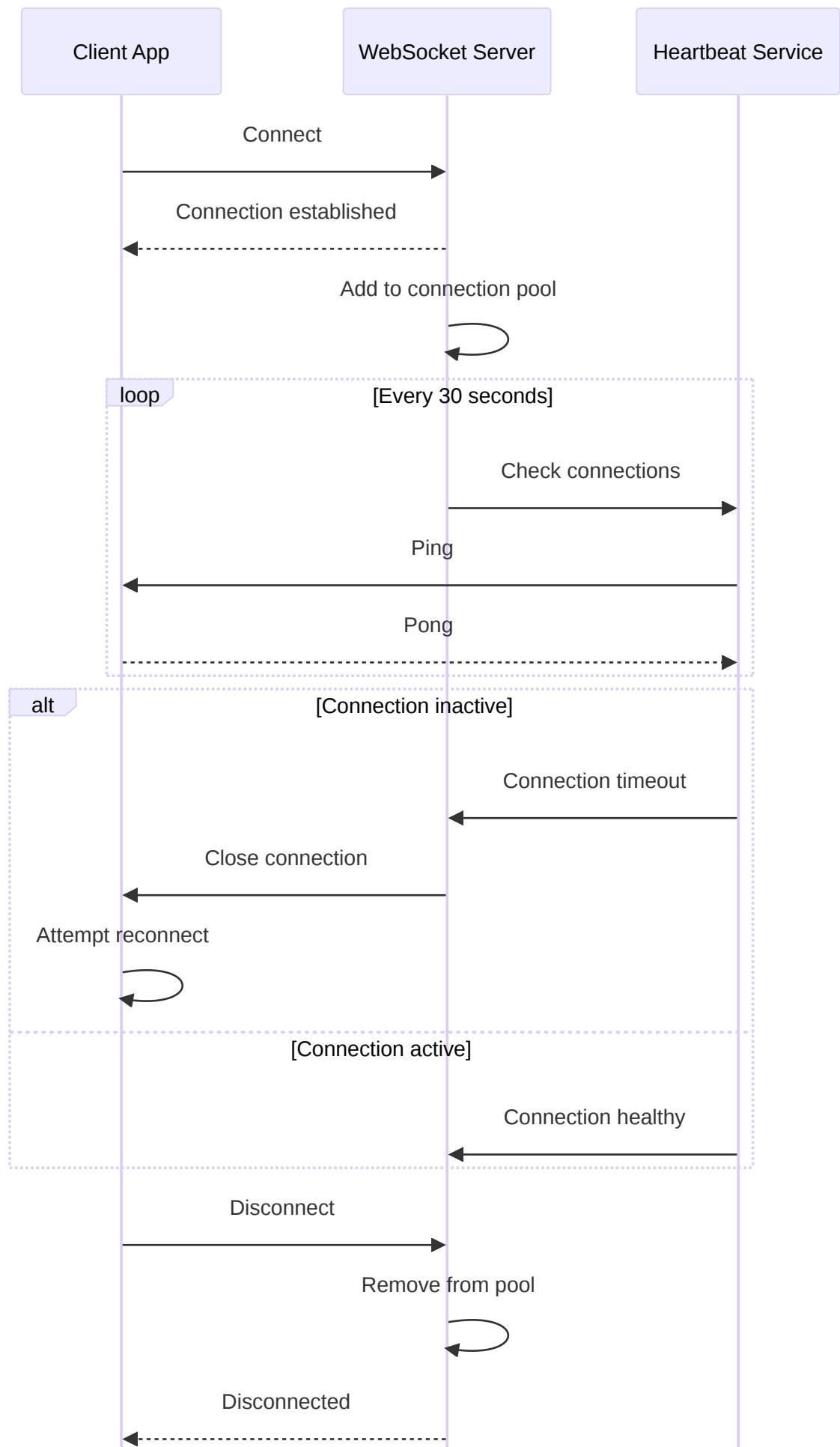
# Error Handling Flow



# WebSocket Connection Management

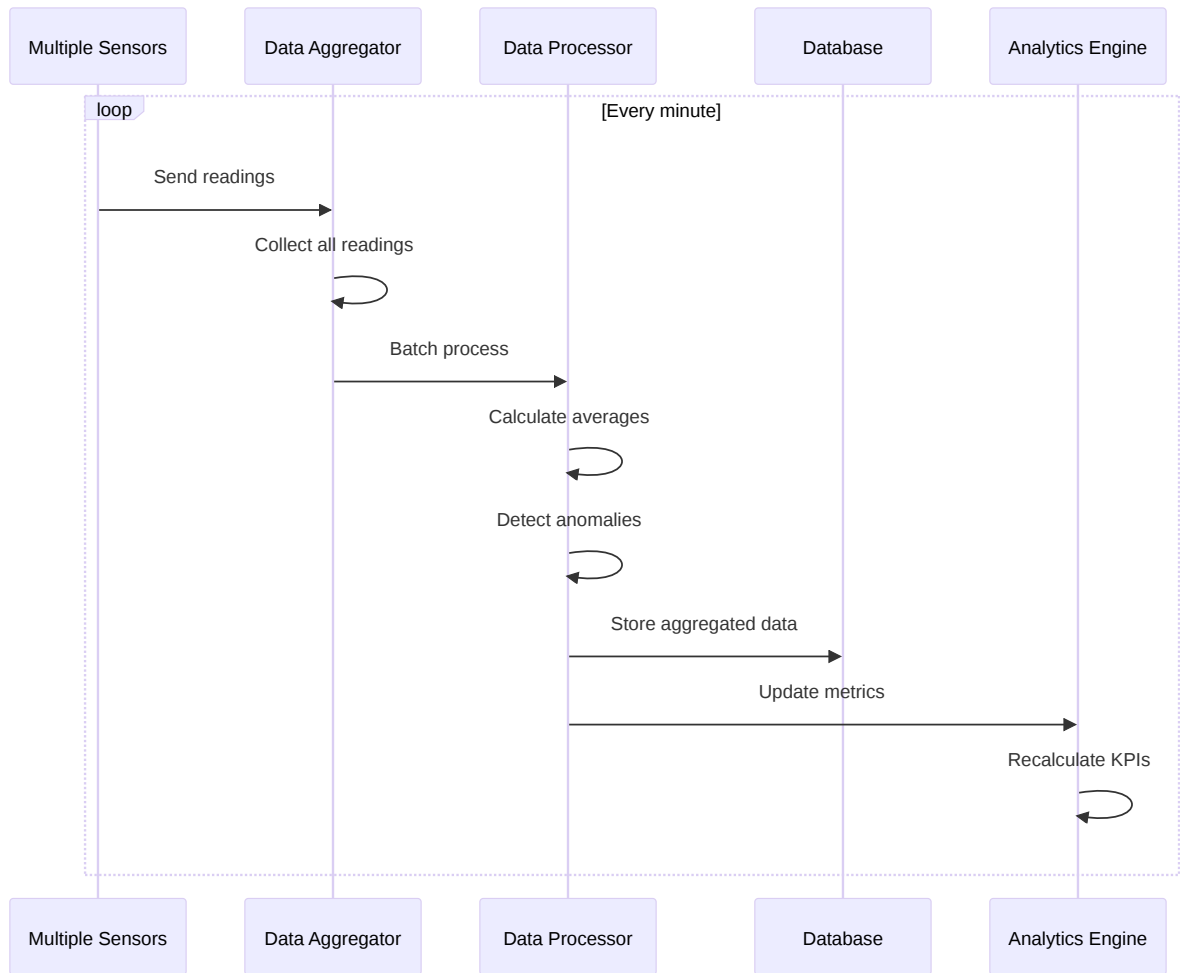
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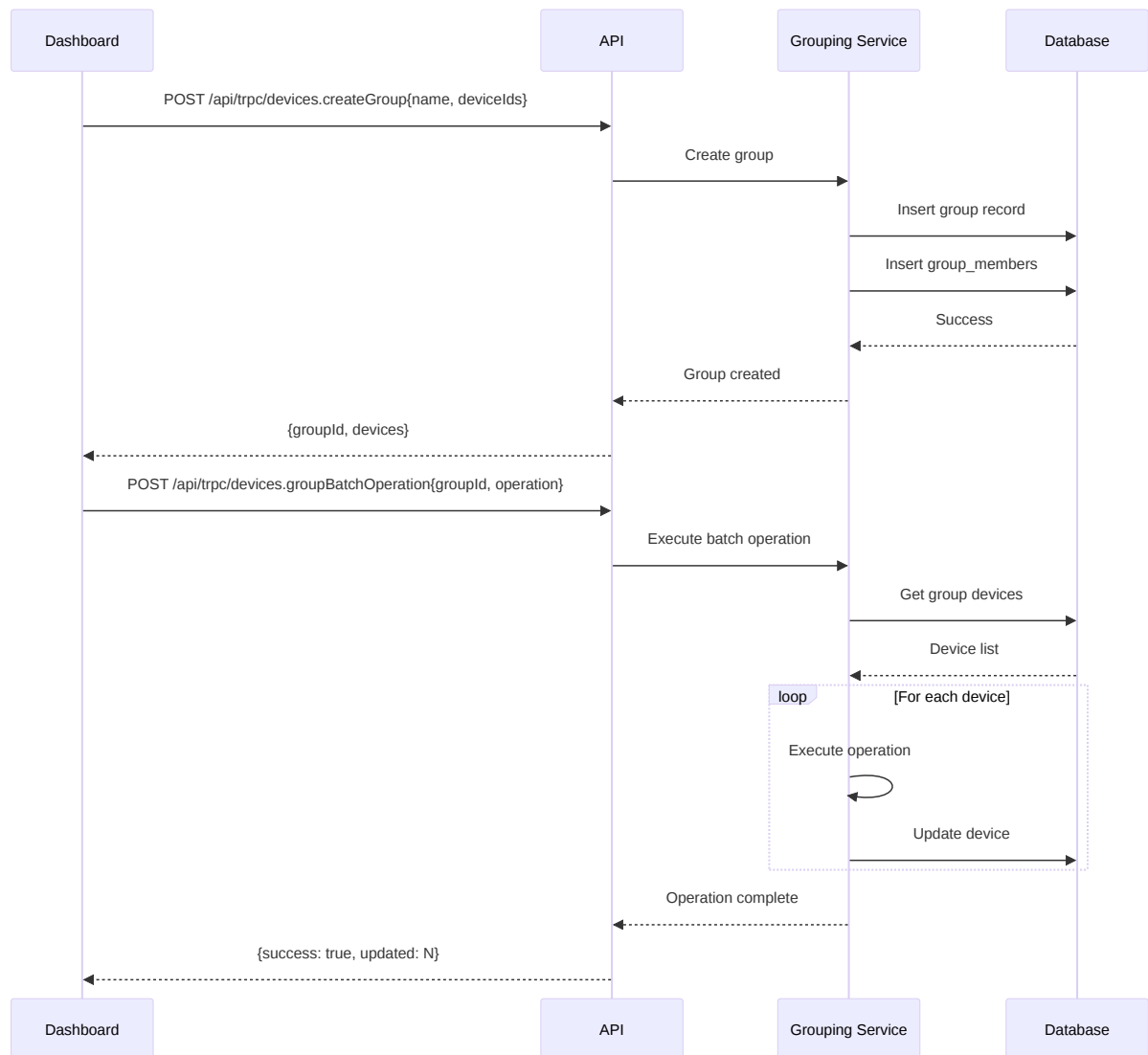




# Data Aggregation Flow



# Multi-Device Grouping Flow



# API Response Format

---

## Success Response

```
{
  "result": {
    "data": {
      "id": 1,
      "name": "Device 1",
      "status": "online"
    }
  }
}
```

## Error Response

```
{
  "error": {
    "code": "UNAUTHORIZED",
    "message": "Invalid credentials",
    "data": {
      "code": "UNAUTHORIZED"
    }
  }
}
```

## Rate Limiting

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- **API Endpoints:** 100 requests per minute per user
- **WebSocket:** 1000 messages per minute per connection
- **File Upload:** 10 MB per file, 100 MB per day

# Timeout Configuration

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Operation	Timeout
REST API Call	30 seconds
WebSocket Connection	60 seconds
Database Query	10 seconds
File Upload	5 minutes
Device Firmware Download	30 minutes

# API Versioning

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- Current Version: v1
- Endpoint Pattern: `/api/trpc/[router].[procedure]`
- Backward Compatibility: Maintained for 2 major versions
- Deprecation Notice: 6 months before removal