1️⃣ API Overview

Base URL

https://hospital-domain/api/v1

Auth

- **JWT** for staff users

- **mTLS** or **device tokens** for hardware devices

- **Role-based access control (RBAC)**

Response format

```
{
 "success": true,
 "data": { ... },
 "error": null
}
```

2️⃣ Authentication APIs

POST /auth/login

Authenticate staff user.

Body

```
{
 "username": "nurse1",
 "password": "******"
}
```

Response

```
{
 "token": "jwt-token",
 "expires_in": 3600
}
```

3️⃣ Mother & Infant Management

POST /mothers

Register a mother.

Body

```
{
  "hospital_mrn": "MRN12345",
  "first_name": "Sara",
  "last_name": "Ali",
  "national_id": "1234567890",
  "phone": "0500000000"
}
```

POST /infants

Register an infant.

Body

```
{
  "hospital_infant_no": "INF-2024-001",
  "gender": "FEMALE",
  "date_of_birth": "2024-01-01T10:30:00Z",
  "mother_id": "uuid"
}
```

GET /infants/{infantId}

Retrieve infant details.

4️⃣ Tag Assignment & Pairing

POST /tags/infant/assign

Assign infant tag.

Body

```
{
  "infant_id": "uuid",
  "tag_uid": "TAG123ABC"
}
```

POST /tags/mother/assign

Assign mother tag.

POST /pairings

Pair infant + mother + tags.

Body

```
{
  "infant_id": "uuid",
  "mother_id": "uuid",
  "infant_tag_uid": "TAG-INF-001",
  "mother_tag_uid": "TAG-MOM-001"
}
```

GET /pairings/{infantId}

Retrieve active pairing.

5️⃣ RTLS & Location APIs

GET /location/tag/{tagUid}

Returns current zone + last seen time.

Response

```
{
```

```
  "tag_uid": "TAG-INF-001",

  "zone_id": "uuid",

  "zone_name": "Nursery Room",

  "last_seen_at": "2024-01-01T12:00:00Z"

}
```

GET /location/infant/{infantId}

Returns infant's current location.

POST /rtls/readerEvent *(device → server)*

Reader sends tag sighting.

Body

```
{

  "reader_id": "uuid",

  "tag_uid": "TAG-INF-001",

  "rssi": -55,

  "timestamp": "2024-01-01T12:00:00Z"

}
```

6️⃣ Gate Movement Authorization

POST /gate/authorizeMovement

Gate terminal requests permission.

Body

```
{

  "infant_tag_uid": "TAG-INF-001",

  "mother_tag_uid": "TAG-MOM-001",

  "staff_id": "uuid",

  "gate_id": "uuid",
```

```
  "reason": "ROUTINE_TRANSFER"

}
```

Response

```
{

 "authorized": true,

 "from_zone": "Nursery",

 "to_zone": "NICU",

 "movement_id": "uuid"

}
```

GET /gate/movements

Filter movement logs.

Query params:

?infant_id=&mother_id=&staff_id=&from_date=&to_date=

7️⃣ Tamper & Security Events

POST /events/tamper *(device → server)*

Body

```
{

 "tag_uid": "TAG-INF-001",

 "device_id": "uuid",

 "timestamp": "2024-01-01T12:00:00Z"

}
```

GET /events

List events.

Query params:

?type=TAMPER&severity=CRITICAL&from_date=&to_date=

🔢 Alarm Control APIs

POST /alarms/raise

Raise alarm manually or from event.

Body

```
{

 "zone_id": "uuid",

 "event_id": "uuid"

}
```

POST /alarms/silence

Silence active alarm.

POST /alarms/reset

Reset alarm state.

GET /alarms/status

Returns all active alarms.

🔢 Biometric APIs

POST /biometric/enrollInfant

Enroll footprint template.

Body

```
{

 "infant_id": "uuid",

 "template_format": "ISO-FMR",

 "template_data": "base64-encoded",

 "quality_score": 92
```

}

POST /biometric/verifyInfant

Verify infant footprint.

Body

```json
{
  "infant_id": "uuid",
  "template_data": "base64-encoded"
}
```

POST /biometric/checkDuplicate

Check if footprint already exists.

🔟 Device Management APIs

POST /devices/register

Register hardware device.

Body

```json
{
  "device_type": "READER",
  "serial_number": "SN12345",
  "firmware_version": "1.0.0"
}
```

POST /devices/heartbeat

Device health ping.

Body

```json
{
  "device_id": "uuid",
```

```
  "status": "OK",

  "battery": 85,

  "temperature": 40

}
```

GET /devices

List all devices.

1️⃣1️⃣ Configuration APIs

GET /config/zones

Returns hospital topology.

POST /config/zones

Create new zone.

POST /config/gates

Create or update gate.

1️⃣2️⃣ Audit APIs

GET /audit

Query audit logs.

Query params:

?user_id=&action_type=&entity_type=&from_date=&to_date=

1️⃣3️⃣ WebSocket Events

/ws/alerts

Push notifications for:

- Tamper events

- Unauthorized movement

- Alarms

- Infant location changes

/ws/dashboard

Real-time dashboard updates.

1️⃣4️⃣ Error Response Format

```
{
 "success": false,
 "error": {
  "code": "INVALID_PAIRING",
  "message": "Mother tag does not match infant pairing."
 }
}
```