

Horizon IoT Company Inventory System Logic

1. Entities

- Box (Shipment Unit): Contains multiple IoT devices, identified by a Box Number or QR/Barcode, with status (available, in_progress, completed).
- Device (IoT Item): Each device has a unique IMEI / Serial Number / MAC address, belongs to one box, status can be available, issued, returned, or faulty.
- Client Company: The customer receiving the devices (e.g., telcos, utility providers, logistics companies).
- Issuance Record: Tracks which device was issued, to which company, by which Logistics Manager, and when.
- Return Record: Tracks which device was returned, by which company, when, and (optionally) why.

2. Lifecycle Flow

Inbound (Stock-In)

IoT devices arrive from supplier. Devices are grouped per box. Each device is registered in the system with IMEI/Serial. Each box is marked available.

- Example:
 - Box 001 → 10 smart meters.
 - Box 002 → 10 sensors.

Selling (Issuance to Client)

Issuance is done per device, but restricted per box order. Only the first box with available devices can be used until all its items are fully issued. Once a box is completed, the next box becomes available for issuance. The items issued are marked as issued and removed from the available items.

- Example:
 - Company A receives 5 devices from Box 001.
 - Company B receives the remaining 5 devices from Box 001.
 - Box 001 is now completed, and Box 002 becomes available.

Returns / Replacements

When a company returns an item, the status of the device changes to returned. The system records the company name, return date, and optionally the reason for return. Returns do not reopen a completed box; they are tracked individually.

3. IoT-Specific Logic Enhancements

- Each IoT device has IMEI/Serial/MAC for traceability.
- Issued devices are linked to which company deployed them (important for after-sales & warranty).
- Return/faulty tracking allows RMA (Return Merchandise Authorization).
- Boxes may represent shipments from manufacturers, so tracking ensures FIFO issue.

5. Business Rules

- Issuance is per device but enforced per box sequence (FIFO).
- A new box cannot be issued until all devices in the previous box are fully issued.
- Only Logistics Manager role can issue devices.
- Returned items are tracked individually with return date and company details.
- Traceability ensures each device can be tracked from supplier → company → return (if any).

6. Example Workflow for IoT Company

1. Supplier delivers 2 boxes of smart meters (Box 001 and Box 002).
2. Box 001 contains 10 devices (all available). Box 002 also contains 10 devices (not yet open).
3. Company A receives 6 devices from Box 001.
4. Company B receives the remaining 4 devices from Box 001. Box 001 is now completed.
5. System unlocks Box 002 for issuance.
6. Later, Company A returns 2 devices. The system records the returned devices with IMEI, company name, and return date.