



Final Recommended Service Set (MVP)

If you're building **v1 / MVP**, start with:

1. Auth Service
2. Tenant Service
3. User Service
4. Branch Service
5. Product Service
6. Inventory Service
7. Supplier Service
8. Purchase Service
9. Sales Service
10. Audit Log Service

Core Services (MUST HAVE)

These services are required for a **real inventory system**.

1 Auth Service

Purpose: Who can access the system

Responsibilities

- Login / logout
- JWT token management
- Password hashing
- Role & permission checks

Why important

- Inventory = money
- Every action must be traceable

2 Tenant Service

Purpose: Multi-company / multi-business support

Responsibilities

- Create & manage tenants (companies)
- Subscription / plan info (later)
- Tenant isolation logic

Key rule

- Every request is executed **inside a tenant context**

3 User Service

Purpose: Manage system users

Responsibilities

- Create staff users
- Assign roles (admin, storekeeper, manager)
- Activate / deactivate users

Relations

- Users ↔ Tenants
 - Users ↔ Branches
-

4 Branch Service

Purpose: Physical locations / warehouses

Responsibilities

- Create branches
- Assign users to branches

- Branch-level permissions

5 Product Service

Purpose: Product catalog

Responsibilities

- Product CRUD
- SKU management
- Categories
- Product attributes (JSONB)

Notes

- No stock logic here
- Pure catalog service

6 Inventory Service (MOST IMPORTANT)

Purpose: Stock truth

Responsibilities

- Stock IN
- Stock OUT
- Transfers between branches
- Stock adjustments
- Stock validation (no negative stock)
- Atomic transactions

Golden rule

Inventory Service is the **single source of truth** for stock

7 Supplier Service

Purpose: Manage vendors

Responsibilities

- Supplier CRUD
 - Contact details
 - Supplier history
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8 Purchase Service

Purpose: Incoming stock

Responsibilities

- Purchase orders
- Receive goods
- Update inventory

- Purchase cost tracking

Flow

Purchase → Receive → Inventory IN

9 Sales Service

Purpose: Outgoing stock

Responsibilities

- Sales creation
- Invoice generation
- Inventory OUT
- Price & discount handling

Flow

Sale → Inventory OUT → Log transaction

Control & Safety Services (VERY IMPORTANT)

Permission / Role Service

Purpose: Control who can do what

Responsibilities

- Role definitions
- Permission checks per action
- Policy enforcement

Example

- Only managers can adjust stock

- Only admins can delete products

11 Audit Log Service

Purpose: History & accountability

Responsibilities

- Log every stock change
- Log critical actions
- Immutable records

Example

```
{ "action": "stock_out", "user": 4, "product": 9 }
```

Supporting Services (STRONGLY RECOMMENDED)

12 Report Service

Purpose: Business insights

Responsibilities

- Stock valuation
 - Fast / slow moving items
 - Branch comparison
 - Export (PDF, Excel)
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13 Notification Service

Purpose: Alerts

Responsibilities

- Low stock alerts
 - Email / SMS notifications
 - System warnings
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Search Service

Purpose: Fast product & inventory search

Options

- PostgreSQL full-text
 - ElasticSearch (later)
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Optional / Advanced Services

15 Cache Service (Redis)

Purpose

- Speed up dashboards
 - Prevent race conditions
 - Lock stock updates
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16 Event / Analytics Service

Purpose

- Historical analysis
- AI predictions
- Long-term trends

DB

- MongoDB or Data Warehouse
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AI Service (Future)

Purpose

- Demand forecasting
 - Smart reorder suggestions
 - Natural language queries
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How Services Work Together (Example)

Stock OUT Flow

API → Auth Service

→ Permission Service

→ Inventory Service

→ Stock validation

→ Update stock

→ Audit Log Service

→ Notification Service (if low)