Project Summary & Plan of Action: Cloud-Based Multi-Branch Bakery ERP in VB.NET
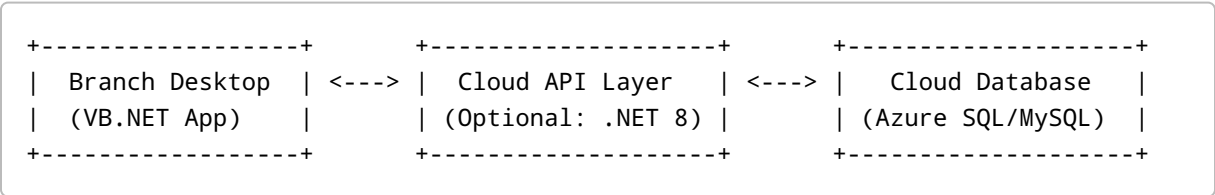
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1. Project Overview

> • **Application Type:** Full-stack desktop application in **VB.NET**
> • **Key Modules:**
> • Warehousing / Stock Room
> • Manufacturing
> • Retail (POS)
> • Accounting
> • **Multi-branch Support:** Yes
> • **Backend:** Cloud-based (no local backend)

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2. Cloud Backend Recommendation

Option	Pros	Cons	Estimated Cost (July 2025)
Azure SQL Database	Seamless Visual Studio integration, scalable, secure	Monthly cost applies	\~R90–R150/month (Basic Tier)
PlanetScale (MySQL)	Zero maintenance, serverless, free tier	Free tier limits, newer tech	Free to \~R180/month
Amazon RDS / DigitalOcean	Scalable, predictable costs	Slightly more setup	\~R280–R550/month

Recommendation: Start with **Azure SQL Database (Basic Tier)** for smooth integration with Visual Studio and .NET.

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3. Suggested Architecture

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|  Branch Desktop  | <---> |   Cloud API Layer   | <---> |   Cloud Database   |
|   (VB.NET App)   |        | (Optional: .NET 8) |        | (Azure SQL/MySQL)  |
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> • Option A: Direct connection to Cloud DB (faster to build)
> • Option B: Connect via API (better security and future scalability)

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4. Modular Build Approach (Recommended)

Build the system in the following modular order:

1. **Warehousing / Stock Room Module:**

2. Manage raw materials, inventory, and stock levels

3. Generate **Purchase Orders (POs)** for suppliers or Manufacturing

4. **Manufacturing Module:**

5. Track production, batch management, and work-in-progress

6. Generate **Transfer Orders** for Retail (finished goods)

7. **Retail (POS) Module:**

8. Sales, invoicing, stock decrement from Manufacturing

9. Cash management and shift closure

10. **Accounting Module:**

11. Capture all financial transactions from other modules

12. Generate financial reports, manage journals, perform reconciliations

Key Interactions:

- Warehousing → Manufacturing (Stock Requests/POs)
- Manufacturing → Retail (Goods Transfer)
- Retail → Accounting (Sales & Revenue)
- All → Accounting (Journals & Ledgers)

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5. Accounting Module Design

Key Features:

- **General Ledger:** Chart of accounts, double-entry journal system
- **Stock Management:** FIFO, LIFO, weighted average, real-time updates
- **Accounts Payable & Receivable:** Invoices, payments, aging reports
- **Bank Reconciliation:** Import bank statements (CSV), reconcile transactions
- **Financial Reporting:** Trial Balance, Income Statement, Balance Sheet
- **Tax / VAT Compliance:** Optional but recommended

Best Practices:

- Enforce **double-entry** integrity
- Prevent editing of **posted journals** (use adjustments)
- Implement **financial period locking**
- Support **branch-level segregation** and **consolidated reporting**

Recommended Tools & Estimated Costs:

Tool	Purpose	Estimated Cost (ZAR)
Crystal Reports (Runtime)	Financial & operational reporting	Free (runtime) / R6,000+ (full license)
FastReport.NET	Alternative reporting tool	\~R3,500 one-time
Power BI (Pro)	Advanced analytics & dashboards	\~R180/user/month
Pastel Partner/OEM	External accounting system integration	\~R5,000+ (depending on version)
Pastel SDK/API License	Real-time integration (optional)	\~R8,000+ one-time + annual fee

6. Pastel Accounting Integration

Method	How it Works	Tools Required
CSV/Excel	Export transactions, import into Pastel	Simple, low-cost
ODBC	Read/write directly to Pastel DB	Pastel installed + ODBC drivers
Pastel SDK/API	Real-time automated integration	SDK license (extra cost)

Recommendation: Start with **CSV-based export/import** for lowest cost and fastest deployment.

7. Cost Summary

- **Azure SQL Database (Basic Tier):** \~R90–R150/month
- **Visual Studio:** Free (Community Edition) or licensed
- **Optional Azure Web API Hosting:** Starting \~R90/month (if used)
- **Accounting Tools:** From **Free** (basic reporting) to **R5,000+** (Pastel Integration)

8. Plan of Action

Phase	Task	Deliverable
Phase 1	Set up **Azure SQL Database** & design database schema	Cloud database ready
Phase 2	Build **Warehousing / Stock Module**	Purchase Order generation, stock management
Phase 3	Build **Manufacturing Module**	Production tracking, transfer to retail
Phase 4	Build **Retail (POS) Module**	Sales, invoicing, daily reports
Phase 5	Build **Accounting Module** with integration to Pastel (start with CSV export)	Financials, ledgers, reports
Phase 6	Implement **Security, Role Management, and Reporting**	User access controls & reports
Phase 7	Testing, Deployment, and Training	Live system with documentation

End of Summary & Action Plan