VYPNEX CommerceOS

End-to-End Business Operating System & Architectural Workflow

VYPNEX CommerceOS is an integrated enterprise B2B platform designed for Manufacturers, Distributors, Wholesalers, Dealers, and Retailers. It eliminates duplicate data entry across interconnected supply chains through a centralized Authoritative Calculation Engine, Double-Entry Ledgers, Masked Logistics, and Speech-to-Text Voice Billing.

1. Platform Architecture & Tech Stack [CORE STACK]

- **Backend Framework:** PHP 8.2+ with Strict PSR-4 Autoloading, Clean MVC Modular Controllers, and Request Middleware.
- **Database Engine:** MySQL 8.0+ / MariaDB with PDO Prepared Statements, Foreign Key Cascades, and Strict Isolation.
- **Calculation Engine:** Authoritative mathematical calculation engine in PHP and JavaScript with zero floating-point drift.
- **Security & Isolation:** Multi-Tenant Business Workspace isolation, CSRF Tokens, SHA-256 Auth, and Strict Role Matrix.

2. Multi-Portal Ecosystem & Access Breakdown [4 PORTALS]

Portal Name	Dedicated URL	Target Persona	Primary Capabilities
Super Admin	https://vypnex.com/admin/login	Platform Owner	Business KYC, Pricing Plans, Roles Matrix, Audit Logs
Business Portal	https://vypnex.com/business/login	Manufacturer / Brand	Master Catalog, Voice Billing, Inventory, Ledgers
Customer / Partner	https://vypnex.com/customer/login	Distributor / Dealer / Buyer	Tier Margins, Purchase Bills, Supplier Ledger
Affiliate Growth	https://vypnex.com/affiliate/login	Growth Partner	Referral Links, Onboardings, Commission Payouts

3. Phase 1: Business Identity & Verification [PHASE 1]

- **Global VYP ID:** Each business is assigned a unique identifier upon registration (e.g. VYP-MFR-10492, VYP-DST-98211).
- **GSTIN & KYC Verification:** Admin validates GSTIN, PAN, and Trade Certificate before unlocking higher credit limits.
- **Primary Warehouse:** Automatic allocation of primary dispatch location with stock binning and multi-godown tracking.

Operational Workflows & Core Engines

B2B Connected Network & Authoritative Calculations

4. Phase 2: Connected Business Relationships [PHASE 2]

Instead of disconnected spreadsheets, businesses link directly using VYP Global IDs. When a Manufacturer connects with a Distributor, both workspaces synchronize catalogues and ledger entries seamlessly.

- **Partnership Request:** Manufacturer sends an invitation specifying credit days (e.g. 30 Days) and discount margin % (e.g. 15%).
- **Catalogue Publishing:** Manufacturer selects items to publish to the partner's catalogue with customized pricing tiers.
- **Real-Time Pricing Sync:** Partner sees items with their contracted margins, allowing instant re-ordering.

5. Phase 3: Authoritative Calculation Engine [CALCULATION RULE]

All monetary, tax, and discount computations run through the authoritative CalculationEngine, ensuring that invoices, quotations, inventory valuations, and ledgers match to the exact paisa.

Calculation Step	Formula / Rule	Example (Product MRP: 100, Qty: 50, GST: 18%)
1. Subtotal	Item Rate * Quantity	Rs. 100 * 50 = Rs. 5,000.00
2. Trade Discount	Subtotal * (Discount % / 100)	Rs. 5,000 * 10% = Rs. 500.00
3. Taxable Amount	Subtotal - Trade Discount	Rs. 5,000 - Rs. 500 = Rs. 4,500.00
4. GST Distribution	CGST + SGST (Intra) OR IGST (Inter)	Intra-State: CGST Rs. 405 (9%) + SGST Rs. 405 (9%)
5. Grand Total	Taxable + Total Tax + Roundoff	Rs. 4,500 + Rs. 810 = Rs. 5,310.00
6. Words In Rupees	Authoritative Indian Rupee Converter	Five Thousand Three Hundred and Ten Rupees Only

6. Phase 4: Voice-Powered Natural Language Billing [VOICE NLP]

- **Dual Language Parser:** Supports speech-to-text in Hindi, English, and Hinglish via browser Web Speech API.
- **NLP Entity Matching:** Extracts Customer Name, Product SKUs, Quantities, and Discounts automatically.
- **Instant Cart Injection:** Automatically populates the invoice grid and updates totals in real-time under 200ms.

Logistics, Ledgers & Security

Double-Entry Accounting & Document Protection

7. Phase 5: Document Security & Transporter Masking [MASKING ENGINE]

To prevent price leakage during transport and protect distributor commercial margins, VYPNEX automatically generates two distinct copies for every finalized invoice:

- **Buyer Copy (Full Detail):** Contains complete financial breakdowns, unit rates, GST tax splits, and Bank/UPI Payment QR code.
- **Transporter Copy (Masked):** Replaces financial unit prices and total values with [***], while keeping HSN, packaging units, and serial numbers visible for logistics compliance.
- **Secure Public Sharing:** Shared via encrypted token URLs (https://vypnex.com/document/share/{token}) without requiring login.

8. Phase 6: Double-Entry Financial Ledgers & Aging [FINANCIAL ENGINE]

- **Automated Debit Entry:** Finalizing an invoice immediately writes a DEBIT transaction to the Customer Ledger.
- **Automated Credit Entry:** Recording a bank/UPI/cash payment writes a CREDIT entry and recalculates running balance.
- **Aging Analysis Matrix:** Categorizes pending receivables into 0-30 Days, 31-60 Days, 61-90 Days, and 90+ Days buckets.
- **Automated Payment Reminders:** Generates 1-click WhatsApp and Email payment reminder alerts with direct invoice links.

9. Complete Transaction Lifecycle Summary [FULL LIFECYCLE]

Stage	Trigger Action	System Impact & Data Flow
1. Registration	Sign Up on vypnex.com	Creates Global VYP ID, Primary Warehouse, 30-Day Trial
2. Relationship	Send Partner Request	Binds supplier terms, margin discounts & payment terms
3. Voice / Web Bill	Create Invoice	Runs CalculationEngine, computes GST, reserves stock
4. Finalization	Finalize Invoice	Deducts Inventory, debits Customer Ledger, generates PDF/QR
5. Dispatch	Create Delivery Challan	Assigns Transporter, generates Masked Transporter Copy & POD
6. Settlement	Receive Payment	Credits Customer Ledger, updates Aging summary, logs audit

VYPNEX CommerceOS provides complete end-to-end transparency, mathematical authority, and zero data redundancy across modern Indian B2B supply chains.