BevDirector Enterprise Suite — Complete Master User Manual (v193)

The definitive operating guide for Beverage Directors, General Managers, Sommeliers, and Multi-Unit Hospitality Groups. Covers step-by-step workflows, role-based security governance, the 14-engine modular architecture, the self-learning Internal Beverage Intelligence Database & 69-Recipe Classic Cocktail Vault, 22-category Sommelier & Spirits classification, 5-Category CFO GL accounting, hardware and cloud POS integrations, and hospitality math formulas across all 6 Enterprise Hubs.

Production: bevdirector.com | **6 Enterprise Hubs + 14 Modular Engines** | **22-Category Sommelier & Spirits Palette** | **100% Offline Basement PWA Ready** | **Multi-Tenant Cloud & PBKDF2 PIN Security**

1. System Architecture & Core Data Flow

BevDirector connects your **Master Price Book**, **Drink Lab Specifications**, **Physical Floor Inventory**, **POS Theoretical Depletions**, and **Multi-Vendor Purchasing** into a single bi-directional cascade engine powered by **14 specialized modular runtime scripts**:

STAGE 1 • PRICE BOOK	STAGE 2 • DRINK LAB	STAGE 3 • FLOOR & POS	STAGE 4 • AUDIT & POS
Master SKUs & Provi Sync	**Specs, Sandbox & [PREP]**	**Count + 3-Pass Depletion**	**AvT, GL & Dock Check-In**
3-tier price hierarchy (Locked Contract → Provi Live Catalog → Last Invoice/OCR) & multi-vendor SKU profiles cascade costs across every recipe.	Recursive costing for cocktails, nested `[PREP]` syrups/cordials, 11-Rule Palate Balance, Service R&D Sandbox & `1L–19L` Cambros.	3D Speed Count, 8-Language Voice, Barcode, Live Zone Merge & BLE Scale counts meet Toast Cloud API / 24/7 POS Webhooks & Cambro credits.	Liquid-only AvT variance audit, QBO/R365/Xero GL journal exports, Manual PO Cart & auto PO-to-Invoice discrepancy matching.

Modular Engine Architecture (`public/js/`): `bd-math.js` (Core Math & Period COGS Ledger) • `bd-templates.js` (90s Turnkey Templates & Demo Seeder) • `bd-export.js` (CSV, 4-Tab Excel & PDF Exports) • `bd-pos.js` (3-Pass POS Matcher & Toast Gateway) • `bd-period.js` (Period Close, Immutable Vault & Undo Roll) • `bd-intelligence-db.js` (650+ SKU Intelligence DB & 22-Category Sommelier Engine) • `bd-rd-depletion.js` (Drink Lab, R&D Sandbox, 11-Rule Palate Analyzer & Bulk POS Spec Generator) • `bd-purchasing.js` (Price Book, Multi-Vendor SKU Profiles, PO Splitter, Custom POs & Deposits Ledger) • `bd-commissary-reports.js` (11 Consolidated Reports, Multi-Unit Commissary, Transfer Audit Vault, Scale Tare, Wine/Keg/Coffee Pricer & R&D/FOH Labs) • `bd-enterprise-ops.js` (Live Multi-Counter Zone Merge, CFO GL Journal Exporter, Sommelier Cellar Bins & Coravin Radar, Live Guest QR Menu, Web Bluetooth Scale, Fintech EDI-850, Rep Portal, 24/7 POS Webhook Queue & Manual PO Cart + Invoice Discrepancy Matcher) • `bd-classics.js` (69 Classic Cocktail Specs) • `bd-provi.js` (34-State Provi Catalog & Direct Order Hub) • `engine.js` & `app.js` (3D Bottle Physics, AI Vision OCR, 8-Language Voice Counter, OpenAPI 3.1/MCP Gateway & Mode Governance).

Bi-Directional Cost Cascading: Updating a bottle cost in the **Master Price Book**, **Drink Lab**, **Provi Live Sync**, or **AI Invoice Scanner** automatically updates every linked cocktail recipe, nested `[PREP]` house syrup/cordial, Walk-In Cambro batch valuation, and 4-Quadrant Menu Engineering Matrix item.

2. Getting Started, 90-Second Turnkey Onboarding & Cloud Sync

2.1 Clean Blank Workspace vs. Flagship Showcase Demo

By default, BevDirector boots into a clean workspace so operators can immediately build or import their own bar program without deleting fake venue clutter.

- **To Explore With Realistic Sample Data (`Load Flagship Demo`):** Click **Quick-Start Setup** → **Load Flagship Demo** in **Hub 1 (Command Center)** (or launch `?demo=true` from the landing page). Loads signature & classic cocktails, nested `[PREP]` syrups/cordials, 18+ Master Price Book SKUs with realistic wholesale price-creep alerts, POS PMix sales rows, and sample Purchase Orders.
- **To Wipe the Current Slot (`Wipe`):** Open **Tools** → **Wipe** (or **Wipe to Blank Slate** in Settings) and type the confirmation word in the safety modal to reset your active venue slot.

2.2 90-Second Turnkey Industry Template Picker

Located at the top of **Hub 1 (Command Center)** (and accessible anytime via **Switcher & Templates**), you can load an engineered industry template in one click and swap 5 bottle prices to go live:

1. **Craft Cocktail Lounge:** Pre-loaded with house syrups & cordials (`[PREP]`), clear king cubes/spears (`$0.35/pc`), `4L` walk-in cambros, and split-case spirits.
2. **High-Volume Nightclub / Sports Bar:** Pre-loaded with `1.0L` speed-rail wells, `1/2 BBL` draft kegs with PSI/temp telemetry, and 24-pack tallboys & seltzers.
3. **Wine Bar & Bistro:** Pre-loaded with BTG/BTB graduated markup tiers, Coravin Argon preservation timers, and physical cellar bin tracking (`Bin 101–112`).
4. **Specialty Coffee & Cafe:** Pre-loaded with `18g` espresso doses, oat/almond milk oz pours, and house syrup pumps.
5. **Taproom & Gastropub:** Pre-loaded with `1/2 BBL` & `1/6 BBL` Sixtel keg depletions, `16 oz` pints, crowlers, and 4-packs.
6. **Luxury Hotel / Resort:** Multi-outlet setup spanning Main Bar, Rooftop Lounge, Lobby Cafe, and Central Commissary Cellar.

2.3 Quick-Start Dual CSV / Excel Importer (`Quick-Start Setup`)

1. Click **Quick-Start Setup** in **Hub 1 (Command Center)**.
2. Enter your **Venue / Program Name**.
3. **Slot 1 — POS PMix / Recipe File (`.xlsx`, `.xls`, `.csv`, `.tsv`):** Drop a POS Product Mix export (Toast, Square, Clover, Lightspeed, Aloha) or recipe sheet.
4. **Slot 2 — Inventory / Price Sheet (`.xlsx`, `.xls`, `.csv`, `.tsv`):** Drop any distributor invoice export, BevSpot/R365 export, or inventory count sheet.
5. Click **Generate Program from Spreadsheets**: non-beverage rows are filtered out, every SKU is auto-classified into one of the **22 Semantic Spirit & Sommelier Categories** with inferred container sizes and distributors, and standardized **System POS Depletion Specs & PLUs** are generated automatically.

2.4 Managing Multiple Venues, Outlets & Cloud Sync

- **Active Venue Switcher (`ACTIVE VENUE` Dropdown in Hub 1):** Switch between saved bar programs or seasonal menus. Use **+ New** to create a fresh venue slot, **Rename** to update the venue title across all reports, or **Delete** to remove a slot.
- **Multi-Outlet Property Switcher (Hub 3 Top Bar):** Switch between physical outlets within a property (e.g., *Main Bar, Rooftop Lounge, Central Commissary*) and roll up multi-location COGS.
- **Real-Time Multi-Device Cloud Sync:** Click the user badge in the top-right header to sign in via **Google OAuth** or **Verified Email & Password**. Once authenticated with a verified email, changes save locally to `localStorage` and sync in real time to **Cloud Firestore** (with reCAPTCHA Enterprise App Check enforcement) and **Firebase Realtime Database**.

3. Operational Modes, Team Roster & PIN Governance

At the top of the header bar is the 3-button Operational Mode & Security switcher (`Director` | `Service` | `Team & Codes`):

3.1 Director Mode vs. Service Mode

Feature Area	Director Mode (Executive / GM)	Service Mode (Closing Bartender / Floor)
Financial & Accounting UI	Full access to COGS %, Menu Engineering Matrix, Accounting GL Exports, and Purchase Orders.	Strips out executive accounting clutter so floor staff focus on speed and execution.
Physical Floor Counting	Full visibility into Start Counts, Purchases, Theoretical Usage, and Sitting Asset Value (`$`).	**Auto-engages Blind Count Mode**—hides theoreticals, starts, and dollar values to prevent "pencil-whipping" counts.
Drink Lab & Recipe R&D	Edits live menu recipes, system POS depletion specs, and `[PREP]` batches directly. Reviews bartender sandbox creations via **R&D Sandbox (N)** (`openDirectorSandboxReviewModal`) and promotes approved builds to the live menu in one click (`promoteSandboxRecipeToLiveMenu`).	**Auto-isolates Drink Lab into the Service Mode R&D Sandbox** (`bd-rd-depletion.js`). Bartenders can click **Clone Live Menu Drink to Test** (`openCloneMenuToSandboxModal`) and build test specs using real Price Book bottle costs without altering the live menu or POS depletions.
Mode Switching & Permissions Guard	Can switch freely into Service Mode and customize granular Service Mode permissions via `openModePermissionsModal` (toggle auto-Blind Count, R&D Sandbox isolation, dollar-value visibility, and PIN unlock enforcement).	Returning from `Service Mode` to `Director Mode` requires a verified **Manager PIN** (`4–6 digits` via `openManagerPinUnlockModal`) when PIN protection is enabled.

3.2 Team & Codes (Verified-Email Team Onboarding & Roles)

- **Verified-Email Workspace Membership:** Click **Team & Codes** to add staff members by their verified work email address and assign their role:
  - **Beverage Director / Owner:** Full administrative control, Master PIN management, team roster management, period close/undo, and billing.
  - **Bar Manager / Lead:** Can authorize floor count unlocks, receive deliveries, and switch to Director Mode using their personal Lead PIN or Master PIN.
  - **Closing Bartender / Staff:** Defaulted to Service Mode for floor counting, morning prep pulls, and Spec Bible lookup.
- **Server-Validated Master PIN (`4–6 Digits`) vs. Personal Roster PINs:** The Master PIN is hashed with PBKDF2 + a server-side pepper and verified via `/api/v1/pin/verify` with brute-force cooldown protection. Only the Master PIN can change the Master PIN, and only the workspace Owner can trigger an email PIN reset (`Forgot PIN? Email Reset`). Every PIN event is logged with masked digits in the **Security Audit Log**.

4. Global Header Bar, Omni-Search & Utility Tools

- **Quick Jump (`Ctrl + K` / `Cmd + K`):** Opens the **Global Omni-Search Modal** from anywhere in the app. Type any cocktail name, spirit brand, category, or distributor to jump straight to its editor.
- **Gemini AI:** Launches the **Gemini 3 AI Copilot** for menu R&D, COGS auditing, FOH Table Talk generation, and interactive app help.
- **Imperial (`oz`) ↔ Metric (`mL`) Toggle:** Instant 1-click switch of the entire application between **Imperial (`oz` / `fl oz` / `gal` / `lb`)** and **Metric (`mL` / `cL` / `L` / `g`)**.
- **Tools ▾ Dropdown:**
  - **Switch Imperial ↔ Metric**
  - **Demo Option: ON / OFF:** Show or hide the Showcase Demo loader in your workspace.
  - **Turnkey Picker: ON / OFF:** Show or hide the 90-Second Turnkey Onboarding bar in Command Center.
  - **Public API & AI (MCP) Hub:** Open the OpenAPI 3.1 REST & Model Context Protocol (MCP) connector hub.
  - `oz ⇔ mL` **Converter:** Quick hospitality volume & bottle-fraction calculator.
  - **Guide & Help:** Opens the searchable in-app User Guide cards, PDF/HTML manual links, and Gemini Help assistant.
  - **Feedback:** Submit bug reports or feature requests.
  - **Tips: ON / OFF:** Toggle contextual hover explanations across all buttons, badges, and columns.
  - **Menu Specs Roll-Up:** Export your complete cocktail menu roll-up with single-serve pour costs and `4L` / `8L` batch costs.
  - **Print / Settings / Wipe / Reset.**

5. Hub 1: Executive Command Center & Consolidated Reporting

5.1 Interactive KPI Cards & Executive Widgets

- **4 Clickable Executive KPI Cards:**
  1. **Active Venue Program:** Displays active cocktail count; click to view the Full Menu Library Roll-Up Table.
  2. **Blended Menu COGS %:** Sales-weighted menu pour cost percentage vs. target (default `18.0%`); click to inspect the **4-Quadrant Menu Engineering Matrix**.
  3. **Total Period Revenue:** Projected or actual PMix revenue (`$`); click to open the **Blended Program P-Mix Model**.
  4. **Master Price Book SKUs:** Total tracked SKUs and active price-creep count; click to open the **Master Price Book & Price-Creep Auditor**.
- **3 Stylized Executive Dashboard Widgets:**
  1. **POS Live Depletions:** Real-time ring counters across *Cocktails, Wine BTG, Coffee (`g`), and Draft Pints*, with a 1-click jump to **AvT Theoretical Depletions**.
  2. **At-A-Glance Risk Radar:** Live hazard counters for `$0 Cost` (uncosted SKUs), `Below Par` (stockout threats), `Price Spikes` (distributor cost creep), and `Matrix Dogs` (low-margin, low-volume items). Click any counter box to filter directly to the offending items.
  3. **Flavor Balance & Portfolio:** Displays your menu's proportional palate balance normalized to the classic `2.0 : 0.75 : 0.75` **Golden Ratio** (*Spirit Eq. : Sour/Acid Eq. : Sweet/Mod Eq.*). Click **Program Balance Modal** to audit style diversity across your entire menu.

5.2 Consolidated Executive Reporting Center (`Consolidated Reports`)

Click **Consolidated Reports** in the Command Center action bar to open the **11-Report Executive Suite** with Location Filtering (`All Locations Comparative Rollup` or individual outlet), Period Filtering (`Current Period`, `Last 30 Days`, `QTD`, `YTD`), and 1-click **Print PDF**, **Export Excel (`.xlsx`)**, and **CSV**:

1. `1. P&L Rollup`: Executive revenue, COGS `$`, COGS `%`, gross profit, and variance vs. budget.
2. `2. COGS by Location`: Multi-outlet comparative breakdown of Beginning Inventory, Purchases, Transfers In/Out, Ending Inventory, Net COGS, and Pour Cost `%` per venue.
3. `3. COGS by Category`: Standardized 5-Category Hospitality Ledger (*Spirits & Fortified [GL 5110 / 1410, 18.0%], Wine & Champagne [GL 5120 / 1420, 18.0%], Beer [GL 5130 / 1430, 18.0%], N/A Bev [GL 5140 / 1440, 16.0%], and Pantry & Produce [GL 5150 / 1450, 15.0%]*).
4. `4. AvT & Pour Cost`: SKU-by-SKU Actual vs. Theoretical usage, variance in bottles/ounces, and wholesale dollar shrinkage.
5. `5. Menu Matrix & PMix`: Kasavana & Smith quadrant performance, unit contribution margins, and sales velocity.
6. `6. Vendor Spend & Creep`: Spend share by distributor and wholesale price-hike audit trail.
7. `7. Valuation & DOH`: Sitting shelf + walk-in cambro asset valuation and **Days on Hand (DOH)** velocity metrics.
8. `8. Spills, Comps & Waste`: Categorized waste ledger separating logged VIP comps, spilled drinks, and dock breakage from unexplained theft/shrink.
9. `9. CFO GL & Trial Bal`: Balanced double-entry General Ledger journal preview for QuickBooks Online (QBO), Restaurant365 (R365), and Xero (`Total Debits === Total Credits` across `GL 5110–5150`, `1410–1450`, `2010` Accounts Payable Clearing, and `5190` Shrinkage Variance).
10. `10. Transfers & Par`: Inter-bar and commissary transfer audit log plus below-par reorder exposure.
11. `11. Audit Comparisons` (`openAuditComparisonReport` in `bd-commissary-reports.js`): Side-by-side comparison across 3 unified sources—**Option 0: Live Current Inventory**, **Closed Accounting Periods**, and **Saved Audit Snapshots**—with 4-Tab Excel Workbook export (`1_Executive_Summary`, `2_SKU_AvT_Variance`, `3_Menu_Engineering_Matrix`, `4_Price_Creep_Audit`).

6. Hub 2: Drink Lab, Batching & Molecular R&D

Hub 2 (powered by `bd-rd-depletion.js` & `bd-commissary-reports.js`) combines cocktail costing, Service Mode R&D Sandbox isolation, 11-Rule molecular palate balance analysis, POS depletion spec mapping, pre-batch cambro scaling, and 4 scientific bar-lab calculators across **5 Sub-Tabs**.

6.1 Sub-Tab 1: Active Spec, Pour & Depletion Builder (`Active Spec, Pour & Depletion Builder`)

Understanding the 3 Recipe & System Scopes + R&D Sandbox

- `Menu Recipe (Drink Lab & Menu)`: FOH cocktails and signature serves. Appears in Drink Lab KPIs, the 4-Quadrant Menu Engineering Matrix, and the Cocktail Spec Bible.
- `System POS Depletion (POS Match Only)`: Standardized single-item pours (e.g., *Tito's Neat 2.0 oz, Tito's Shot 1.5 oz, House Pinot Noir BTG 5.0 oz, Draft IPA Pint 16.0 oz*). Used strictly by the POS Depletion engine to deduct liquid from inventory without skewing cocktail menu metrics. Click **Bulk POS Pours** (`openBulkPosSpecGeneratorModal`) in the Library bar to auto-generate System POS Depletion specs for all Spirits, Wine BTG/BTB (intelligently distinguishing fortified modifier wines like Vermouth/Lillet via `isFortifiedModifierWine`), Draft Pints, and Packaged Cans directly from your Master Price Book in one click!
- `[PREP] Sub-Recipe Batch (BOH)`: House-made syrups, cordials, shrubs, tinctures, and clarifications (or any recipe prefixed with `[PREP]`). When used as an ingredient inside a FOH cocktail, BevDirector recursively calculates its exact `$/oz` yield cost and cascades raw ingredient price changes through all nested levels.
- `Service Mode R&D Sandbox & Director Promotion (bd-rd-depletion.js)`: In **Service Mode**, Drink Lab automatically switches to an isolated R&D Sandbox where bartenders can click **Clone Live Menu Drink to Test** (`openCloneMenuToSandboxModal`) to experiment with real bottle costs. In **Director Mode**, click **R&D Sandbox (N)** (`openDirectorSandboxReviewModal`) to audit bartender submissions and click **Promote to Live Menu** (`promoteSandboxRecipeToLiveMenu`).
- `+ Classic & Modern Vault (69 Built-In Specs)`: Click **+ Classic & Modern Vault** in the Recipe Library bar to browse and import from **69 industry-standard classic & modern classic cocktail specifications** (`BEVERAGE_CLASSIC_COCKTAIL_DB`) organized across **8 Base Spirit Categories** (*Agave, Whiskey, Gin, Vodka, Rum, Brandy, Liqueur & Amaro, Wine & Spritz*). Importing specs automatically matches ingredients to your existing Master Price Book bottles, creates any missing house `[PREP]` sub-recipes (*Simple Syrup 1:1, Rich Demerara 2:1, Honey Syrup 3:1, Raspberry Syrup, Ginger Syrup*), and seeds missing SKUs into your Price Book.

Building a Spec, 11-Rule Palate Balance Analyzer & Scaling Pre-Batches

1. **Identity & Pricing Bar:** Set **Active Recipe / POS Item Name**, **POS Serve / Depletion Type** (15 presets from `Cocktail` to `Full Bottle BTB` and `Draft Pitcher`), **Recipe Scope**, **POS PLU / Item Code**, and **Menu Category**. Enter **Menu Selling Price (`$`)** or click **Auto** to snap the selling price to hit your Target COGS % (rounded to the nearest `$0.50`). Select **Target Batch Vessel** (`1.0 L`, `2.0 L`, `4.0 L`, `8.0 L`, or `19.0 L Corny Keg`).
2. **Ingredients Table & Batch Scaler:** Click **+ Add Ingredient** and type any spirit, modifier, or `[PREP]` sub-recipe. Choose from **40 International & Hospitality Container Formats** (`50 mL` miniatures to `50 L` Euro kegs, including `700 mL` EU/UK, `720 mL` & `1.8 L` Sake, `750 mL`, `1 L`, `1.75 L`, `118–296 mL` bitters dashers, `40 lb` citrus cases, `1–5 lb` coffee bags, and `6/12/24-pack` cases), Unit Cost (`$`), Spec Amount, and **19 Hospitality Units** (`oz`, `mL`, `cL`, `tsp/barspoon`, `tbsp`, `dash`, `drop`, `pump`, `g`, `Piece/Unit`, `full btl`, `5oz/6oz BTG`, `2oz Neat/Rocks`, `1.5oz Shot`, `16oz Pint`, `12oz Can`, `16oz Tallboy`, `60oz Pitcher`). Check `In Batch?` for shelf-stable spirits going into the Cambro; uncheck for fresh citrus, bubbles, or garnishes added *a la minute*. Use **Pull Dist Costs**, **Gemini Spec Audit**, **Cambro Labels**, and **Export Recipe Spec**.
3. **Secondary Service Specs & 11-Rule Molecular Palate Balance Strip (`analyzeCocktailBalance`):** Configure Target COGS %, Spillage Buffer % (default `2.0%`), Execution Method (`8s` Freezer-Door/Draft up to `42s` Scratch Multi-Touch), Glassware, **+ Craft Ice**, Garnish, and **AI Write Notes**. The **Flavor Balance Strip** evaluates every ingredient across **11 Molecular Palate Rules** connected to `BEVERAGE_INTELLIGENCE_DB` Brix (`°Bx`) and Titratable Acidity (`%`) (*1. Aromatic Bitters/Tinctures/Saline, 2. Zero-Proof Botanicals, 3. Distilled Base Spirits, 4. Bitter Aperitivi & Amari [20% Spirit / 50% Sweet / 30% Bitter], 5. Vermouth & Fortified Wines, 6. Sweet Liqueurs & Triple Sec, 7. High-Acid Citrus >=1.8% acid, 8. Tart-Sweet Mixes, 9. Pure Sweeteners & Syrups >=45°Bx, 10. Fruit Juices/Purees, 11. Sparkling/Lengtheners*), normalizing the drink to the `2.0 : 0.75 : 0.75` Golden Ratio and surfacing real-time hazard badges (`getActiveDrinkHazards`).

6.2 Sub-Tab 2: Freezer-Door ABV, Dilution & Viscosity Calculator (`Freezer ABV & Dilution`)

Load any library cocktail spec, select your **Dilution Target Profile** (`0%` pre-diluted, `22%` stirred/freezer-door, `33%` shaken citrus, or `15%` large rock), and enter your **Commercial Freezer Temp (`°F`)**. Outputs Undiluted ABV %, Exact Water Dilution to Add (`oz`), Final Diluted ABV % (ideal freezer window: `24%–28%`), and Estimated Freezing Point (`°F`) so freezer Martinis and Negronis pour silky without slushing.

6.3 Sub-Tab 3: Precision Syrup Brix & Juice Acid-Adjustment Lab (`Syrup Brix & Acid Lab`)

- **A. Precision Syrup Brix Calculator:** Select a preset (`1:1 Simple 50.0°Bx`, `2:1 Rich Demerara 66.0°Bx`, `Agave Blend 65.0°Bx`, `Honey 3:1 62.0°Bx`, `House Orgeat 55.0°Bx`, or `Custom`) and enter Target Final Volume (`mL`) and Target Sugar (`°Brix`). Accounts for `0.62 mL/g` sucrose displacement to output exact **Sugar Weight (`g`)** and **Water Weight (`g`)**.
- **B. Juice Acid-Adjustment Calculator:** Select your starting liquid (*Pineapple ~0.8% acid, Orange ~0.9%, Grapefruit ~1.8%, Pomegranate ~1.4%, Watermelon ~0.2%, or Tea/Water 0.0%*) and target profile (**Fresh Lime `6.0%` — `2:1 Citric:Malic`** or **Fresh Lemon `6.0%` — `100% Citric`**) to get exact gram weights of **Citric Acid Powder (`g`)** and **Malic Acid Powder (`g`)**.

6.4 Sub-Tab 4: Milk-Wash / Agar / Centrifuge Clarification Yield Lab (`Milk Clarification`)

Tracks Unclarified Batch Volume (`mL`), Clarifying Agent Added (`mL`), Total Raw Cost (`$`), and Final Strained Yield Volume (`mL`) to compute Total Straining Yield %, True Clarified Cost / Oz (`$`), and True Pour Cost / Cocktail (`$`), with 1-click **Update Wholesale Cost in Master Price Book**.

6.5 Sub-Tab 5: Draft Keg PSI, Line Balancing & Maintenance Log (`Draft Keg PSI & Lines`)

- **Draft Line & Keg Balancing Hub:** Supports Lagers, Craft IPAs, Nitro Stouts (`75/25 N2/CO2`), Force-Carbonated Cocktails, and Still Draft Cocktails (`100% N2`). Computes Required Regulator Pressure (`PSI`), Ideal `3/16"` Barrier Line Length (`ft`), `19L` Corny Keg yield, and **Check Carbonation Foam Risk**.
- **Draft Line Cleaning & Preventive Maintenance Log:** Tracks mandatory 14-day draft line cleaning cycles (alternating **Caustic wash** for organics and **Acid wash** for mineral/beer stone) with technician sign-off and overdue alerts.

7. Hub 3: Physical Inventory, Speed Count & AvT Shrinkage Audit

Hub 3 (powered by `engine.js`, `bd-enterprise-ops.js`, `bd-commissary-reports.js`, and `app.js`) consolidates floor counting, AI invoice scanning, variance auditing, walk-in cambro valuation, Bluetooth scale weighing, deposit tracking, commissary transfers, and POS depletion into **7 Sub-Tabs**.

7.1 Sub-Tab 1: Floor Bottle Count (`Floor Bottle Count`)

- **Audit Lifecycle Bar & Manager Audit Edit Mode:** Use **Start Audit** (`openStartAuditModal` — locks `Start Count` & `Purchases (+)` so all floor counts go strictly into `Current Inventory`), **Close Audit**, **Edit Audit (PIN)** (`openEditAuditSelectorModal` / `openPreviousAuditForManagerEdit` — unlocks a closed period or historical snapshot with a Manager PIN so you can edit `Start Count` or `Purchases (+)` across the table and 3D Bottle Calculator), **Compare**, and **Category COGS**.
- **Protection & Sorting Controls:** Toggle **Count Lock** (Anti-Fat-Finger PIN protection) and **Blind Count Mode** (hides theoreticals, starts, and sitting values). Sort by **Category** or **Physical Rail Layout**, and filter by **Storage Area / Zone**.
- **4 Ultra-Fast Floor Counting Methods:**
  1. **3D Touch Bottle Calculator & Speed Count (`Speed Count`):** Drag vertically on the SVG liquid bottle silhouette (or tilt your mobile device) for `0.1` tenths, tap `Empty` / `¼` / `½` / `¾` / `Full`, toggle **Bottles vs. Case Mode** (`_bcEntryModeV151`), enter full units on the keypad, and tap **Apply & Next** → to walk sequentially through your shelf order.
  2. **Module 1 — Hands-Free Voice Inventory Counter (`Voice Count` / `openVoiceCountModal` in `app.js`):** Speak naturally (e.g., "*Fortaleza Blanco 4 point 5*", "*Campari plus 2*", "*Tito's 1 case and 3 bottles*") across **8-Language Polyglot Voice Recognition** (English, Spanish, French, Italian, Portuguese, German, Japanese, Mandarin via `normalizeMultilangSpokenNumbers`) with **5 Gemini Neural TTS / Web Speech Personas**, Hospitality UPC quick-scan presets, and 1-tap session undo.
  3. **Camera & Laser UPC Barcode Scanner (`Barcode`):** Scan bottle or case UPCs via phone camera or USB/Bluetooth laser scanner with instant UPC learning.
  4. **Module 2 — Simultaneous Multi-User Zone Counting & Atomic SKU Merge (`Audits & Tools ▾ → Live Zone Merge` / `openMultiCounterMergeModal` in `bd-enterprise-ops.js`):** Multiple bartenders claim different physical zones and count simultaneously; atomic SKU count packets (`broadcastAtomicSkuCount` / `applyIncomingAtomicSkuCount`) merge in real time without overwriting co-counters.
- **Submitting Counts & Period Close:** Click **Submit Count** to open the **Sunday Close Dollar-Leak Debrief Card** (`openPostCountDebriefModal` in `app.js`), surfacing Total Sitting Asset Value, Unexplained Dollar Shrinkage, Pour Accuracy %, and Top Margin-Leak Bottles. Use **Dead Stock Radar**, **Auto-Tune Pars**, **History Vault** (`openAuditHistoryVaultModal`), and **Close & Archive Period** (backed by **Undo Last Period Roll** in Settings).

7.2 Sub-Tab 2: Actual vs. Theoretical (AvT) Shrinkage Audit & CFO GL Exporter (`AvT Shrinkage Audit`)

> **Industry-Standard AvT Basis:** In BevDirector, **Menu Pour Cost** (in Drink Lab) includes your configured **Spillage Buffer %** and garnish cost so your menu prices protect your margin. **AvT Theoretical Usage** is strictly **liquid-only (no spill buffer)**, so real over-pouring, spillage, and unrecorded comps accurately surface as AvT variance.

Includes 6 KPIs (Actual Usage `$`, Theoretical Usage `$`, Net Variance `$` & `%`, Pour Accuracy `%`, Top 3 Margin-Leak SKUs, and Sitting Asset `$`), the **Spill / Comp Log**, **Export 14-Day AvT Audit PDF**, and **Module 3 — CFO Accounting GL Mapper & Journal Exporter** (`openAccountingGlModal` in `bd-enterprise-ops.js` — maps custom GL codes across all 5 Hospitality Categories plus `GL 2010` AP Clearing and `GL 5190` Shrinkage Variance, guaranteeing `Total Debits === Total Credits` for **QuickBooks Online, Restaurant365, and Xero** CSV import).

7.3 Sub-Tab 3: Walk-In Pre-Batch Cambro Credit (`Walk-In Cambro Credit`)

Enter **Liters Counted On Hand** for each pre-batched cocktail or `[PREP]` blend in the walk-in cooler. BevDirector calculates **Sitting Asset Credit (`$`)** and reverse-calculates the exact **Bottle Equivalents (`+btls`)** of every constituent spirit inside those batches—crediting them automatically to both AvT Audit and the Multi-Vendor PO Splitter.

7.4 Sub-Tab 4: Opaque Bottle Scale Tare & Module 5 Web Bluetooth (`Opaque Bottle Tare`)

Pair directly with a Web Bluetooth GATT (`0x181D` / `0x2A9D`) smart gram scale via **Pair Bluetooth Scale** (`connectWebBluetoothScale` in `bd-enterprise-ops.js`) or enter scale weight manually. Choose from **18 Built-In Opaque & Heavy Bottle Presets** (*Clase Azul Ceramic 780g, Don Julio 1942 890g, Fortaleza Hand-Blown 585g, Hendrick's 1L 560g, Mr. Black/Kahlua, Carpano Antica, Chartreuse, Disaronno, Japanese Sake*, etc.) plus **70+ Brand Tare Profiles** in the **Internal Beverage Intelligence Database** (`lookupBottleTareAndUpc`) and **17 Scale Container Capacities** (`50 mL` to `3000 mL`) to convert gram weights to exact Tenths (`0.0–1.0`) and Fluid Ounces using ABV & Brix specific gravity—and automatically save confirmed scale tares (`Rank 4: confirmed_scale`) back to your workspace intelligence DB.

7.5 Sub-Tab 5: Distributor Deposits, Keg Returns & Credit Memo Ledger (`Deposits & Credits Ledger`)

Tracks **Bottle Deposits**, **Keg Returns**, **Not On Truck**, **Broken / Damaged**, **Misshipments**, and **Credit Memos** (`Pending` vs. `Reconciled`). Click **Statement Audit Sheet** (`openDistributorReconciliationStatementModal` in `bd-purchasing.js`) to generate a formal Distributor Reconciliation Statement with 1-click **Copy Rep Dispute Email**.

7.6 Sub-Tab 6: Multi-Unit Commissary, Stock Transfers & Transfer Audit Vault (`Commissary & Transfers`)

Supports both Single-Venue **Inter-Bar Mode** (moving stock between wells and liquor rooms) and Multi-Unit **Central Commissary Mode** (weighted-average wholesale cost transfers across venues/outlets, unlocked on **Pro** and **Group** plans). Includes 1-click **Restock Destination to Par** (`restockLocationToPar`) and the searchable **Full Audit Vault** (`openTransferHistoryVaultModal` in `bd-commissary-reports.js`).

7.7 Sub-Tab 7: Real-Time POS Depletion Hub & Module 6 24/7 Cloud Webhook Queue (`POS Depletion`)

Uses a **3-Pass Matching Engine**: Pass 1 (Exact PLU or Saved Alias Rule) → Pass 2 (Normalized Recipe/Sub-Recipe/SKU + Pour Modifier Extraction like *Neat 2oz, Rocks 2oz, Shot 1.5oz, Double 3oz, BTG 5oz/6oz, Bottle BTB, Pint 16oz*) → Pass 3 (Fuzzy Similarity + **POS Mapping Review Queue**). Click **24/7 Cloud POS Webhook Queue** (`openCloudWebhookQueueModal` in `bd-enterprise-ops.js`) to inspect real-time closed-check webhooks from Toast, Square, Clover, and Lightspeed or fire a simulated test ring.

8. Hub 4: Purchasing, Master Price Book, PO Splitter & Provi Sync

8.1 Sub-Tab 1: Master Price Book, Multi-Vendor SKU Profiles & Creep Auditor (`Master Price Book & Creep Auditor`)

- **3-Tier Price Resolution Hierarchy:** `Tier 1: Director Lock (Contract / Locked Price — Emerald Green)` → `Tier 2: Provi / Live Wholesale Sync (Cyan)` → `Tier 3: Last Invoice / Manual Cost`. Click the lock icon on any SKU to enforce contract pricing.
- **Multi-Vendor Profiles per Master SKU & 4-Step Invoice Pack Matcher (`ensureSkuVendorProfiles` in `bd-purchasing.js`):** Every Master SKU can store multiple distributor profiles (e.g., *Southern Glazer's 12pk case* vs. *MS Walker 6pk case* vs. *Secondary Purveyor*) with distinct vendor item codes, pack multipliers, bottle/case costs, and split-case fees. Incoming invoices automatically match via **1) Exact Vendor Item Code**, **2) Distributor Name**, **3) Pack Multiplier Hint (`6pk` vs. `12pk`)**, or **4) Primary Preferred Vendor**—converting delivered cases into canonical Master Price Book bottles without creating duplicate SKU rows.
- **Local / Bespoke / Farm-to-Bar SKU Builder (`openAddLocalBespokeSkuModal`):** Dedicated quick-add modal with 5 hospitality presets (*Local Farm Produce/Citrus, Artisanal Roastery Coffee, Local Microbrewery/Keg, Small-Batch Distiller/Winery, Custom BOH Supply*) that auto-configures storage zones, container formats, and GL buckets.
- **Bulk Portfolio Ingestion & Self-Learning SKU Intelligence:** Upload distributor catalogs (`.csv`, `.xlsx`) from Southern Glazer's, RNDC, Breakthru, Empire, Johnson Brothers, Winebow, etc. Every added or edited SKU automatically queries and trains the **Internal Beverage Intelligence Database** (`resolveBeverageMetadata` & `ingestConfirmedBeverageIntelligence`)—auto-assigning its semantic category, default storage zone across all **11 Canonical Storage Zones** (`Well 1`, `Well 2`, `Backbar`, `Liquor Room`, `Wine Cellar`, `Beer Room`, `Bar Fridge`, `Walk-In`, `Bar Freezer`, `Bar Storage`, `Dry Storage`), empty tare weight (`g`), specific gravity, functional role, and **5-Category CFO GL Bucket** (`Spirits & Fortified 5110`, `Wine & Champagne 5120`, `Beer 5130`, `N/A Bev 5140`, `Pantry & Produce 5150`) while rejecting non-beverage glassware rows.
- **Price Book Tools ▾:** **Auto-Categorize SKUs**, **Scale Weekend Pars** (`openBatchScaleWeekendParsModal`), **Module 4 — Sommelier Cellar Bins & Coravin Oxidation Radar** (`openSommelierCellarModal` in `bd-enterprise-ops.js` — strict wine-only filter via `isTrueWineCellarSku` tracking Physical Bin #, Vintage, Appellation, Service Closure, and live Coravin Argon vs. Cork Pull oxidation timers), and **Prune 0-Drink SKUs**.

8.2 Sub-Tab 2: Multi-Vendor PO Splitter, Manual Order Cart & Auto Invoice Matcher (`Multi-Vendor PO Splitter`)

- **Smart Split-Case Optimization & Active Vendor Switcher:** Compares Effective On-Hand (Shelf + optional Walk-In Cambro Credit) against Weekday or **Weekend Rush Pars**. Switch any SKU's active distributor profile inline (`switchSkuActivePoVendorProfile`) and follow the `Round to N Cs — Saves $XX.XX` badge whenever completing a case beats paying loose-bottle split-case fees.
- **Module 11 — Manual Order Cart, Quick-Catalog Drawer & Auto PO-to-Invoice Discrepancy Matcher (`bd-enterprise-ops.js`):** Click **Load Par Shortages** or open the **Quick-Catalog Drawer** (`togglePoQuickCatalogDrawer`) to add novel products on the fly, then click **Confirm & Checkout by Vendor** → (`openPoCartCheckoutModal`). Confirmed vendor POs are stored in `programSettings.dispatchedPos` and automatically pre-populate **Manual Invoice Receiving** (`openManualInvoiceReceivingModal` / `checkMirVendorPoDiscrepancy`) during dock check-in to flag shorted cases or unapproved price spikes!
- **Module 6 & 1-Tap Dispatch Channels:** **Copy Sunday Order (Rep Text)** (`openSundayOrderTextModal` — warm hospitality correspondence formatted in `Cases + Loose Btls` with inline Rep Directory editing for SMS/iMessage/WhatsApp), **Send Order to Provi**, **Email Order to Rep**, **Distributor Rep Delivery Portal** (`openRepDeliveryPortalModal`), and **Export Fintech / EDI 850** (`exportFintechEdiPoCSV`).

8.3 Sub-Tab 3: Purchase Orders, Custom PO Builder & Delivery Log (`Purchase Orders & Delivery Log`)

Tracks `New / Draft`, `Pending In-Transit`, and `Received & Reconciled` POs. Draft custom multi-line orders via + **Create Custom PO** (`openCreateCustomPoModal`), convert all shortages in one click via **Auto-Generate POs from Par Deficits** (`autoGeneratePosFromParDeficits`), or click **Receive Truck Delivery & Dock Exceptions** (`openReceivePoModal`) to reconcile incoming deliveries line-by-line (flagging `Intact`, `Not on Truck`, `Broken / Damaged`, or `Misshipment`)—stocking only intact units while auto-calculating **Net Payable (`$`)** vs. **Credit Claim Due (`$`)** and logging claims to the Deposits & Credits Ledger.

8.4 Sub-Tab 4: Post-Off & Case-Break Deal Analyzer (`Post-Off & Case-Break Deal Analyzer`)

Evaluates volume drops using Front-Line Cost, Deal Cost, Split-Case Fee avoided, Case Pack, Required Case Drop, and Weekly Velocity to output Cash Tied Up, Total Savings, Weeks on Hand, Annualized Cash-on-Cash ROI %, and a buy/trap verdict badge.

8.5 Sub-Tab 5: Provi Live Catalog & Price Sync (Provi Live Catalog & Price Sync)

Accessible both as an inline subtab in Hub 4 (#sub-provi-catalog) and as a pop-up modal (**Provi Live Pricing** in Command Center and Master Price Book). The Provi Wholesale Hub connects your Master Price Book and Multi-Vendor PO Splitter to regional distributor catalogs with zero password or login friction:

- **Passwordless Regional Market & State Liquor License Bar (#proviMarketSel + #proviLicenseNumInp):**
  - **34 US Wholesale Markets + National Index (PROVI_MARKET_MULTIPLIERS):** Defaults to MA **— Boston / Massachusetts** (*MS Walker • Martignetti • Horizon Bev • Ruby Wines • Burke Dist.*) and supports MA , NY , FL , CA , IL , TX , NV , CO , GA , TN , LA , PA , DC , WA , OR , AZ , NC , SC , NJ , CT , RI , ME , NH , VT , MI , MN , OH , MO , WI , IN , MD , VA , KY , HI , and National .
  - **State Liquor License Number (#proviLicenseNumInp , e.g., MA-0116):** Syncs to programSettings.liquorLicenseNumber and automatically stamps Lic # <number> onto outbound Provi Direct Order dispatches and distributor rep manifests.
  - **Automatic Regional Distributor & SKU Code Mapping (resolveProviMarketDistributor):** Switching your market automatically updates regional distributor names, distributor item codes (e.g., MSW- MS Walker, MRTG- Martignetti, HRZ- Horizon Bev, RUBY- Ruby Wines, BRK- Burke Dist. in MA / RI ; PST- Pine State / NAP- Nappi in ME / NH ; ASG- Allan S. Goodman / BRS- Brescome Barton in CT ; ALD- Allied Beverage / FED- Fedway in NJ ; plus SGWS- , RNDC- , BTG- , EMP- , MBD-), and regional wholesale price multipliers across all unlocked Tier 2: Provi SKUs in your Master Price Book.
- **165+ Verified Wholesale SKUs, Venue Price Book Seeding & Live /api/gemini Catalog Lookup:**
  - **Pre-Loaded Wholesale Catalog (PROVI_WHOLESALE_CATALOG):** Ships with **165+ real commercial wholesale SKUs** across *Tequila & Mezcal*, *Bourbon / Rye / American Whiskey*, *Scotch / Irish / Japanese / Canadian Whisky*, *Vodka*, *Gin*, *Rum*, *Liqueurs / Amari / Cordials*, *Wine & Champagne*, *Draft & Packaged Beer / Hard Seltzers*, and *Mixers / Bitters / Zero-Proof*—each with authentic distributor item codes, container sizes, case pack counts, Front-Line wholesale prices, Case-Break deal prices, allocation badges (Allocated Release , In Stock), and deal tiers (3-Case Break , 5-Case Well Break).
  - **Automatic Venue Price Book Seeding (ensurePriceBookInProviCatalog):** Automatically merges any custom non-prep bottle from your venue's Master Price Book into the Provi catalog view so every venue bottle is represented.
  - **Non-Destructive Search + Live /api/gemini Wholesale Catalog Lookup (queryProviCatalogWithAI):** Typing in #proviSearchInp filters local matches instantaneously using non-destructive DOM updates (preserving mobile keyboard/IME focus without re-rendering the input). When a query has no local matches (auto-triggered after a 550ms debounce for queries >= 3 characters) or when you press Enter / click **Search** / click **Live Network Lookup**, BevDirector queries /api/gemini (gemini-3-flash-preview) scoped to your active state market and its authorized distributors. Enforces a **strict anti-hallucination guardrail**—never fabricating fake brands or echoing gibberish queries, returning only 1–4 verified real-world commercial bottlings sold in the US wholesale market and prepending newly discovered SKUs directly into your active catalog.
  - **External Provi.com Launch (Provi.com):** Copies your current search query to the clipboard and opens https://www.provi.com/ in a new browser tab.
- **3-Tier Price Book Resolution ("Provi Pulls, Manual Rules"), Filters & Bulk Sync Toolbar:**
  - **Category & Sync Mode Filters:** Filter by **Category** (All Categories , Spirits , Wine & Champagne , Draft & Packaged Beer , Mixers & Bitters) and **Sync Mode** (All Catalog , Matched to Book , Director-Locked , Case-Break Deals).
  - **2×2 Bulk Action Toolbar:**
    - **Sync Front-Line (syncAllMatchedProviPrices(false)):** Updates all matched unlocked SKUs to regional Front-Line pricing while strictly protecting Tier 1: Director Lock SKUs (storing proviLiveReferenceCost for reference without overwriting locked contract prices) and cascading updated costs across Drink Lab, Menu Matrix, and AvT.
    - **Apply Case Deals (syncAllMatchedProviPrices(true)):** Applies multi-case break pricing across all unlocked matched SKUs and cascades savings across all recipes.
    - **Import CSV (importProviOrderCsvFile):** Imports a Provi Order CSV into the Master Price Book while respecting Director Lock protections.
    - **Export Below-Par (exportBelowParForProvi):** Exports all below-par shortages (with distributor, item code, container size, case pack, order cases, unit cost, and resolution tier) to Provi_QuickOrder_Export_YYYY-MM-DD.csv .
  - **Responsive Desktop 7-Column Table (> 768px) & Mobile Zero-Overflow Card List (<= 768px):** Compares **Book Cost** vs. **Front-Line** vs. **Case Deal** (with per-case dollar savings and discrepancy badges such as Provi +$X.XX vs Book or Provi -$X.XX Lower). Each row/card provides 5 actions: / (Toggle Tier 1 Director Lock), Sync / + Add (Sync single Front-Line cost or add new SKU to Price Book), $<deal> (Apply Case-Break Deal cost), Order (Open 1-Case Provi Direct Order for that SKU), and (Add 1 or 3 cases to the Multi-Vendor PO Splitter cart).
- **Provi Direct Order Dispatch (Send Order / #proviDirectOrderModal):**
  - Aggregates items from a single SKU (Order), your active Multi-Vendor PO Cart, or Below-Par shortages (collectProviDirectOrderItems).
  - Groups order lines by regional distributor, attaches each distributor rep's name and account number from the Vendor Rep Directory plus your **State Liquor License # (Lic #<number>)**, and generates a friendly hospitality rep note.
  - Clicking **Transmit Order Straight to Provi** (or **Transmit & Open app.provi.com**) logs pending PROVI-XXXXXX Purchase Orders into **Hub 4 → Purchase Orders & Delivery Log** (recordDispatchedPoItems) for 1-click Dock Invoice Receiving and copies the formatted dispatch manifest to your clipboard.

9. Hub 5: Pricing Calculator, 4-Quadrant Matrix & Wine/Draft/Coffee Pricer

- **Sub-Tab 1 —** Blended Program P-Mix & COGS **:** Model total period revenue and category shares across all beverage tiers with **Normalize to 100%**, **Pull Cocktail COGS % from Matrix**, **CFO Accounting GL Export**, and **Live Guest QR Menu** (generates a scannable table QR menu that automatically marks 0 -count bottles as *86'd / Sold Out*).
- **Sub-Tab 2 —** Menu Engineering Matrix **:** Kasavana & Smith 4-Quadrant Matrix plotting every drink against the 70% Average Popularity Hurdle and Weighted Average Contribution Margin Hurdle into **Stars**, **Plowhorses**, **Puzzles**, and **Dogs**.
- **Sub-Tab 3 —** Wine, BTG, Coravin, Draft Beer & Coffee Pricer **:**
  - **A. Single Bottle & BTG Wine Pricer:** Enforces 1 BTG glass ≈ wholesale bottle cost, with Luxury Cash-Cap Threshold & Flat Cash Markup above threshold.
  - **B. Customizable Graduated BTB Wine Pricing Tiers:** Progressive multiplier table across wholesale cost brackets.
  - **C. Luxury Coravin & Reserve Wine By-The-Ounce Pricer:** Exact pricing for 1 oz Taste, 2 oz Flight, 3 oz Half-Glass, and 5 oz Full Coravin Glass (including $0.65 Argon gas cost per pour).
  - **D. Draft Beer Keg & Specialty Coffee Pricer:** Supports 1/2 BBL , 1/4 BBL , 1/6 BBL Sixtel , and 50L Euro Keg with foam waste buffer %, plus 5 lb Espresso Bean Bag 18g double-shot costing.

10. Hub 6: Service, Morning Prep, Staff Training & Spec Bible

1. `Shift Prep Par Planner`: Applies day-of-week run-rate multipliers (`0.7x` Mon to `2.0x` Sat Peak) to compare Target Par (`L`) vs. On-Hand (`L`), generating Auto-Scaled Morning Batch Recipe Cards, **Pull Sheets**, and **Cambro Labels**.
2. `Station Layout & Rail Builder`: Order bottles left-to-right across physical bar stations (*Well 1, Service Bar Rail, Upstairs Speed Rack*); drives **Sort by Physical Rail Layout** in Floor Inventory.
3. `Well Station Cheaters`: Laminated-ready well reference grids showing Pre-Batch Pour (`oz`), A La Minute additions, Method & Speed, Glass & Ice, and Garnish.
4. `Well Speed Simulator`: Models active bartenders and peak hour orders/hr to compute Weighted Avg Build Time, Max Well Capacity (`drinks/hr`), Utilization %, and Hours Saved per 1,000 Cocktails by Pre-Batching.
5. `Staff Spec Trainer`: Interactive Flip-Card Flashcards and randomized Multiple-Choice Spec Quiz.
6. `Allergen Matrix`: Recursively inspects cocktail ingredients and nested `[PREP]` sub-recipes for Dairy, Egg White, Tree Nuts & Coconut, Gluten/Beer, Wine/Sulfites, and Vegan Status.
7. `Banquet Planner`: Computes Total Servings, Cocktail Batch Liters, Wine Bottles, Beer Units, and Ice (`lbs`) from Guest Count and Event Duration.
8. `Cocktail Spec Bible`: Interactive and printable full-menu recipe cards (available both as an inline subtab in Hub 6 and as a pop-up modal in Drink Lab).

11. Global Settings, Toast Cloud Gateway & Open API / MCP Hub

- **Venue Profile, Financial Targets & Bar Operating Standards:** Configure Concept Type, Currency (`$`, `€`, `£`, `¥`, `MX$`), Target COGS %, Spillage Buffer %, Sales Tax %, Split-Case Fee `$`, Standard Spirit/Wine/Draft Pour Sizes, Imperial vs. Metric, Negative Inventory Guard, and Auto-Create System POS Specs & PLUs on Import.
- **Toast POS 1-Click Cloud API Gateway:** Connects via `/api/v1/toast/status` and `/api/v1/toast/pmix`. Automatically catches up on up to 3 missed days of closed Toast orders from the last 7 days when the app opens (pulling yesterday's sales after `06:00` local time), plus manual handshake and live pull triggers.
- **Public REST API (OpenAPI 3.1) & Native AI (MCP) Connectors:** Provision server-validated API tokens (`bd_live_...`), download the OpenAPI 3.1 JSON schema, test live REST endpoints (`/api/v1/metrics`, `/api/v1/inventory`, `/api/v1/recipes`, `/api/v1/pos/deplete`), and copy the Model Context Protocol (`MCP`) configuration to query your live bar program in **Claude Desktop, ChatGPT, or Gemini**.

12. Internal Beverage Intelligence Database & 22-Category Semantic Color System

12.1 Internal Beverage Intelligence Database (`BEVERAGE_INTELLIGENCE_DB`), Classic Cocktail Vault & Self-Learning SKU Engine

BevDirector includes a built-in, offline-first **Internal Beverage Intelligence Database** (`BEVERAGE_INTELLIGENCE_DB` / `SPIRITS_INTELLIGENCE_DB`), a **69-Recipe Classic & Modern Classic Cocktail Intelligence Vault** (`BEVERAGE_CLASSIC_COCKTAIL_DB`), and a self-learning workspace dictionary (`learnedSpiritsDb`). Every spirit, wine, beer, produce, and prep item is strictly resolved and stored as a **1-to-1 Individual SKU** (never merged into multi-product rows). Whenever a product is typed into the Drink Lab, scanned via AI Invoice OCR, weighed on a Bluetooth scale, or imported from a POS/distributor spreadsheet, `resolveBeverageMetadata()` and `lookupSpiritsIntelligence()` evaluate a **3-Tier Resolution Hierarchy**:

1. **Tier 1 — Self-Learning Confirmed Workspace Database (`learnedSpiritsDb` & 5-Level Confidence Hierarchy):** Prioritizes operator-verified individual SKU profiles persisted in `bevdirector_learned_spirits_db` and governed by source confidence rank: `confirmed_director (Rank 5)` → `confirmed_scale (Rank 4)` → `confirmed_invoice (Rank 3)` → `confirmed_import (Rank 2)` → `confirmed_recipe / confirmed_audit (Rank 1)`. Higher-rank edits never get overwritten by lower-rank background imports. Automatically rejects non-beverage glassware (`isGlasswareItem`: *Coupe, Nick & Nora, Rocks, Highball, Flute, Decanter*) and cascades learned updates across the Master Price Book, Recipe Library, and POS Depletion Specs via `propagateBeverageIntelligenceToAllMovingParts()`.
2. **Tier 2 — 70+ Individual Brand, Varietal & Fresh Produce Override Profiles (`SPECIFIC_BEVERAGE_OVERRIDES`):** Dedicated 1-to-1 regex profiles for iconic spirits, heavy/opaque bottles, vermouths, amari, syrups, and fresh produce—each pre-loaded with exact `ABV %`, `Sugar (°Brix)`, `Specific Gravity (SG)`, `Titratable Acidity %` (Citric / Malic / Tartaric acid breakdown), `Empty Glass/Ceramic Tare (g)`, `Full Bottle Weight (g)`, `UPC Barcode`, `Case Size`, `Shelf Life (Days)`, and `Fresh Produce Extraction Yield %` (e.g., *Fortaleza Blanco 750mL: `585g` tare / `1297g` full / NOM 1493*; *Clase Azul Reposado 750mL: `780g` ceramic decanter tare / `1492g` full*; *Don Julio 1942 750mL: `890g` tall glass tare / `1602g` full*; *Hendrick's Gin 1L: `560g` apothecary tare*; *Campari 1L: `24% ABV / 24°Bx / 1.085 SG`*; *Green Chartreuse 750mL: `55% ABV / 25°Bx / 0.996 SG`*; *Fresh Lime Juice: `6.0% acid (2:1 Citric:Malic), 7.5°Bx, 45% yield (~0.85 oz/lime)`*; *Fresh Lemon Juice: `6.0% pure Citric, 42% yield (~1.35 oz/lemon)`*).
3. **Tier 3 — 650+ Curated Keyword & Functional Profile Engine (`BEVERAGE_INTELLIGENCE_DB` & `deriveBeverageFunctionalProfile`):** Token and phrase matching across 650+ spirits, wine appellations/varietals, draft beer styles, modifiers, and BOH prep items that automatically derives:
   - **11 Canonical Physical Storage Zones (`defaultStorageArea` / `inferSkuStorageZone`):** Auto-routes SKUs into `Well 1`, `Well 2`, `Backbar`, `Liquor Room`, `Wine Cellar`, `Beer Room`, `Bar Fridge`, `Walk-In`, `Bar Freezer`, `Bar Storage`, or `Dry Storage`.
   - **Physicochemical & Draft Telemetry:** Calculates molecular `Specific Gravity` (`SG = 1.000 − 0.00211×ABV + 0.0040×Brix`) for gram-to-ounce scale conversions, plus `Draft Line Dynamics` (`Temp °F`, `CO2 Volumes`, `Gas Blend` [`100% CO2`, `75/25 Beer Gas`, `100% N2`], `Target PSI`, and `Carbonation Foam Risk`).
   - **5 Standardized CFO General Ledger (GL) Accounting Categories:** Automatically maps every SKU to its double-entry COGS Expense and Inventory Asset GL codes:
     1. **Spirits & Fortified:** COGS `GL 5110` / Asset `GL 1410` • Target COGS `18.0%` (*Agave, Whiskey, Gin, Vodka, Rum, Brandy/Cognac, Liqueur & Amaro, Dessert/Digestif*)
     2. **Wine & Champagne:** COGS `GL 5120` / Asset `GL 1420` • Target COGS `18.0%` (*Red, White, Champagne & Sparkling, Rosé, Orange Wine, Fortified & Vermouth*)
     3. **Beer:** COGS `GL 5130` / Asset `GL 1430` • Target COGS `18.0%` (*Draft Kegs, Craft Beer, Cider, Hard Seltzer*)
     4. **N/A Bev:** COGS `GL 5140` / Asset `GL 1440` • Target COGS `16.0%` (*N/A Bev Zero-Proof Spirits, Water & Soft Drinks, Coffee & Tea, Craft Ice*)
     5. **Pantry & Produce:** COGS `GL 5150` / Asset `GL 1450` • Target COGS `15.0%` (*Pantry & Produce [Fresh Citrus, Herbs, Berries, Cherries, Olives, Salts] and Syrups, Purees & Prep [`[PREP]` Batches]*)
   - **69-Recipe Classic & Modern Classic Cocktail Intelligence Vault (`BEVERAGE_CLASSIC_COCKTAIL_DB`):** Built-in reference library of 69 canonical cocktail specs organized across **8 Base Spirit Categories** (*Agave, Whiskey, Gin, Vodka, Rum, Brandy, Liqueur & Amaro, Wine & Spritz*) with exact proportions, glassware, ice, method, garnish, and 1-click import into Drink Lab.

12.2 The 22 Semantic Spirit & Sommelier Categories (`UNIFIED_SPIRIT_PALETTE`)

Every SKU, ingredient row, floor count card, and filter pill in BevDirector is automatically classified into one of **22 Semantic Spirit & Sommelier Categories** (`UNIFIED_SPIRIT_PALETTE` & `refineWineAndFortifiedColorClass`) with dedicated dual-mode hex palettes for Obsidian Dark screens and high-contrast Light/PDF printing:

Category Pill & Palette Name	CSS Class	Dark / Print Hex	Auto-Detected Brand & Varietal Examples
Agave — Jade Emerald	`cat-agave`	`#34d399` / `#047857`	Fortaleza, Espolòn, Casamigos, Don Julio, Clase Azul, Del Maguey, Sotol
Whiskey — Bourbon Gold	`cat-whiskey`	`#fbbf24` / `#b45309`	Buffalo Trace, Rittenhouse Rye, Woodford, Macallan, Hibiki, Jameson
Gin — Botanical Chartreuse	`cat-gin`	`#a3e635` / `#3f6212`	Hendrick's, Tanqueray, Beefeater, Roku, Monkey 47, Plymouth, Genever
Vodka — Glacial Sky-Blue	`cat-vodka`	`#38bdf8` / `#0284c7`	Tito's, Grey Goose, Ketel One, Belvedere, Chopin, Absolut, Haku
Rum — Spiced Tangerine	`cat-rum`	`#fb923c` / `#c2410c`	Planteray, Smith & Cross, Appleton, Bacardí, Cachaça, Rhum Agricole
Brandy / Cognac — Rose-Copper	`cat-brandy`	`#fda4af` / `#9f1239`	Hennessy, Pierre Ferrand, Rémy Martin, Laird's Applejack, Calvados, Pisco
Liqueur / Amaro — Electric Orchid	`cat-liqueur`	`#e879f9` / `#86198f`	Campari, Aperol, Chartreuse, Fernet-Branca, Nonino, Cointreau, St-Germain, Angostura Bitters
Fortified & Vermouth — Tawny Mulberry	`cat-fortified`	`#d946ef` / `#701a75`	Carpano Antica, Dolin, Cocchi, Lillet, Lustau Sherry, Taylor Fladgate Port
Red Wine — Bordeaux Ruby	`cat-wine-red`	`#f43f5e` / `#be123c`	Cabernet Sauvignon, Pinot Noir, Merlot, Syrah, Malbec, Barolo, Rioja
White Wine — Sauvignon Straw-Gold	`cat-wine-white`	`#bef264` / `#4d7c0f`	Sauvignon Blanc, Chardonnay, Sancerre, Chablis, Pinot Grigio, Riesling
Champagne & Sparkling — Brut Gold	`cat-wine-sparkling`	`#fde047` / `#a16207`	Champagne, Prosecco, Cava, Crémant, Brut, Franciacorta, Veuve Clicquot
Rosé Wine — Provence Blush	`cat-wine-rose`	`#f9a8d4` / `#be185d`	Côtes de Provence Rosé, Whispering Angel, Miraval, Minuty, Rosato, Tavel
Orange Wine — Terracotta Amber	`cat-wine-orange`	`#fb923c` / `#c2410c`	Orange Wine, Skin-Contact, Amber Wine, Ramato, Ribolla Gialla, Radikon
Beer — Hopped Amber	`cat-beer`	`#facc15` / `#a16207`	Draft Kegs (`1/2 BBL` , `Sixtel`), Craft IPA, Pilsner, Stout, Cider, Seltzer
Coffee & Tea — Roasted Bronze	`cat-coffee`	`#f59e0b` / `#92400e`	5lb Espresso Bean Bags, Cold Brew Concentrate, Ceremonial Matcha, Chai
Dessert / Digestif — Flamingo Pink	`cat-dessert`	`#f472b6` / `#9d174d`	Baileys, Kahlúa, Mr. Black, Borghetti, RumChata, Amarula, Frangelico
Syrups, Purees & Prep — Royal Amethyst	`cat-prep`	`#c084fc` / `#6b21a8`	`[PREP]` House Syrups, Rich Demerara, Orgeat, Fruit Purees, Cordials, Shrubs, Clarifications
Pantry & Produce — Blood-Orange Coral	`cat-citrus`	`#ff6b4a` / `#c2410c`	Fresh Lime & Lemon Juice, Grapefruit, Yuzu, Fresh Mint & Herbs, Cucumbers, Berries, Amarena Cherries, Olives, Rim Salts & Spices
Water & Soft Drinks — Periwinkle Indigo	`cat-mixer`	`#818cf8` / `#3730a3`	Fever-Tree Tonic & Ginger Beer, Club Soda, Topo Chico, San Pellegrino, Red Bull, Soft Drinks
N/A Bev — Aqua Mint	`cat-zeroproof`	`#2dd4bf` / `#0f766e`	Seedlip, Lyre's, Ghia, Pathfinder, Ritual Zero Proof, Phony Negroni
Craft Ice — Arctic Cyan	`cat-ice`	`#22d3ee` / `#0e7490`	2-Inch Clear King Cubes, Collins Spears, Crystal Spheres, Pebble Ice
Beverage — Sky Blue	`cat-generic`	`#7dd3fc` / `#0369a1`	Custom or uncategorized beverage items (manual override in SKU Editor)

📐 13. Hospitality Math Reference & Core Formulas

1. Cost Per Fluid Ounce ($/oz)

```
Cost/oz = Container Cost ($) ÷ Container Volume (fl oz)
```

2. Spillage-Adjusted Menu Pour Cost ($)

```
Menu Pour Cost = Raw Liquid Cost × (1 + Spillage% / 100) + Garnish/Ice ($)
```

3. Pour Cost / COGS Percentage (%)

```
COGS % = (Menu Pour Cost ($) ÷ Menu Selling Price ($)) × 100
```

4. Target COGS Auto-Snap Menu Price ($)

```
Target Price = Round_0.50(Menu Pour Cost ÷ (Target COGS % / 100))
```

5. Net Actual Usage (With Walk-In Cambro Credit)

```
Actual Btls = Start + Purchases − (Shelf Ending + Walk-In Cambro Credit Btls)
```

6. AvT Shrinkage Variance ($)

```
Shrink ($) = (Actual Btls − [POS Liquid Theo Btls + Spill/Comp Btls]) × Unit Cost
```

7. Pour Accuracy Percentage (%)

```
Pour Accuracy % = (Theoretical Usage Cost ($) ÷ Actual Usage Cost ($)) × 100
```

8. Specific Gravity & Scale Tare Tenths

```
SG = 1.000 − (0.00211 × ABV%) + (0.00386 × Brix)
Tenths = (Gross g − Empty Tare g) ÷ (Capacity mL × SG)
```

9. Proportional Palate Balance (Golden Ratio)

```
Spirit Eq = oz / 2.0 • Acid Eq = oz / 0.75 • Sweet Eq = oz / 0.75
```

10. Draft Line Regulator Pressure (PSI)

```
PSI = P_eq(Temp °F, CO2 Vols) + (Vertical Rise ft × 0.5) + (Line ft × Resistance)
```

☆ 14. Subscription Tiers, Offline PWA Operation & FAQ

14.1 Subscription Tiers (14-Day Free Trial + Zero-Data-Entry Concierge Guarantee)

All plans include a **14-Day Free Trial**, a **20% Annual Billing Discount**, and our **Zero-Data-Entry Guarantee** (Free `$299–$499` 24-Hour White-Glove Menu & Distributor Invoice Setup waived on Annual plans, plus instant access to the Free Drink Lab Sandbox):

- **Starter Bar — Single-Unit Essentials (`$99/mo` Billed Annually at `$1,188/yr` [Save `$240/yr` + Free `$299` White-Glove Setup] • `$119/mo` Monthly — `1 Venue Max`, Up to 5 Team Logins):** Ideal for independent neighborhood bars and cocktail lounges replacing broken spreadsheets. Includes **1 Single Venue** & up to 5 staff logins, **Imperial (`oz`) ↔ Metric (`mL/g`)** & **40 International Container Formats** (`700mL` EU/UK, `720mL` Sake, `750mL`, `1L`, kegs, cases), Interactive 3D Tenth-Bottle Visual Slider & Bluetooth Scale Tare, Cocktail Costing Lab & Prep / Cambro Batch Scaling, Master Price Book, Par PO Splitter, Mobile Offline Floor Count, and the built-in **Internal Beverage Intelligence Database**.
- **Beverage Director Pro — Full AI, POS, Voice & MCP Suite (`$249/mo` Billed Annually at `$2,988/yr` [Save `$600/yr`, `~$83/venue` + Free `$499` White-Glove Setup] • `$299/mo` Monthly — `Up to 3 Venues Included`, Unlimited Staff — *Most Popular*):** Everything in Starter plus **Up to 3 Venues Included** & Unlimited Staff, **Gemini AI Vision Invoice OCR** & Wholesale Price-Hike Auditor, **24/7 Cloud POS Webhooks** (Toast, Square, Clover) & AvT Shrinkage Audit, **8-Language Polyglot Voice Count** (with 5 Neural Personas) & Live Multi-Device Zone Merge, **Native AI (MCP) Connector** for Claude Desktop & ChatGPT, **Sommelier Cellar Bins**, Coravin Oxidation Radar & Auto-86 Live Guest QR Menu, **CFO Accounting GL Export** (QuickBooks Online, Xero, Restaurant365) & Fintech EDI-850, and Inter-Bar / Commissary Transfers across up to 3 venues.
- **Hospitality Group — Commissary, BI & Open API Enterprise (`$499/mo` Billed Annually at `$5,988/yr` [Save `$1,200/yr`, `~$99/venue`] • `$599/mo` Monthly — `Up to 5 Venues Included`, `+$79/mo` Annual / `+$99/mo` Monthly Extra Venue Supplement per additional venue beyond 5):** Everything in Pro plus **Up to 5 Venues Included** (with scalable Extra Venue Supplements for `6+` venues), **Publicly Documented OpenAPI 3.1 REST Gateway** & BI Webhooks (Snowflake, BigQuery, PowerBI, Looker), **Multi-Venue Portfolio AI (MCP) Server** for Claude & ChatGPT, **Custom Central Commissary & Multi-Location Weighted-Average Cost Transfers**, **Consolidated 11-Report Portfolio Rollups & Immutable Period Vault**, and **Free Multi-Property White-Glove Setup & Dedicated Concierge**.

14.2 Offline Basement PWA Operation & Installation

- **100% Offline Floor Counting:** Backed by an offline-first Service Worker (`sw.js`). Once opened on your phone or tablet, the 3D Touch Bottle Calculator, Hands-Free Voice Counter, Bluetooth Scale Tare converter, and Tesseract.js OCR engine work with **zero Wi-Fi or cell signal** in basement liquor rooms. Counts save immediately to `localStorage` and sync to Firebase Cloud automatically when connectivity returns.
- **Install on iOS (Safari):** Tap **Share** → **Add to Home Screen**.
- **Install on Android (Chrome):** Tap the browser menu → **Install App / Add to Home Screen**.

14.3 Frequently Asked Questions (FAQ)

- **Why did a spirit bottle's shortage decrease in the PO Splitter even though its shelf count didn't change?** Because **Include Walk-In Cambro Credit** is checked in **PO Options & Exports** ▾. Any pre-batched cocktail liters logged in **Hub 3** → **Walk-In Cambro Credit** automatically credit the raw spirit bottles inside those batches so you never over-order liquor already batched in the cooler.
- **Why is my AvT Theoretical Usage slightly lower than my Menu Pour Cost multiplied by drinks sold?** By design! **Menu Pour Cost** includes your `2.0%` Spillage Buffer and garnish cost to protect your menu pricing, whereas **AvT Theoretical Usage** is strictly liquid-only so real over-pouring and spillage show up clearly in your AvT variance column.
- **What if I accidentally clicked `Close & Archive Period` before finishing my invoice entries?** Go to **Tools** ▾ → **Settings** → **Program Snapshots, Backups & Recovery** and click **Undo Last Period Roll** to restore your pre-close Start Counts, Purchases, and POS sales.