**✅ Finalized Architecture Summary**

**🧼 Frontend App (Offline-First Web App)**

* **Runs locally** in the browser, works 100% offline using **IndexedDB**
* Handles:
  + ✅ **Product data**: Add/edit/delete services and pricing
  + ✅ **Clock-in/out timestamps**: Stored per employee
* Includes a **“Sync to Server”** button that:
  + Uploads local **products** and **timestamps** to Google Sheets
  + **Downloads the current employee list** from Google Sheets and updates the local IndexedDB
  + Ensures dropdowns in the UI reflect the latest employee list from the server

✅ **Employee list in the frontend is always pulled from Google Sheets on sync**

**🛠️ Admin Page (Online-Only, Hosted on cPanel)**

* Hosted separately on a web server (e.g., **cPanel**)
* Connects directly to **Google Sheets**
* Handles full **employee CRUD**:
  + ✅ **Create** new employees (e.g., adds new sheet tab per employee)
  + ✅ **Update** employee info (contact, name, etc.)
  + ✅ **Delete** or mark employees as resigned (optionally removes or flags tab)
* Google Sheets serves as the **single source of truth** for all employee data
* No offline capabilities required for the admin page

✅ Frontend always reflects employee updates made via the admin page on next sync

**🔁 Data Flow Summary**

| **Feature** | **Managed By** | **Stored Locally** | **Synced to Google Sheets** |
| --- | --- | --- | --- |
| Products | Frontend | ✅ IndexedDB | ✅ On sync |
| Clock-in Times | Frontend | ✅ IndexedDB | ✅ On sync |
| Employees | Admin Page | ❌ (not local) | ✅ Yes (via Sheets CRUD) |
| 🔄 ****Sync to Server Button (Frontend Flow)****  1. ✅ Check internet connection 2. ✅ Upload:    * Local **product data**    * Local **clock-in timestamps** 3. ✅ Fetch latest **employee list** from Google Sheets 4. ✅ Update **employee dropdown** in local IndexedDB with latest names 5. ✅ Optionally mark synced entries as synced: true  ✅ Why This Architecture Works  | **Benefit** | **Why It’s Effective** | | --- | --- | | 💾 Works offline | Employees can still clock in, update products | | 🔁 Clear data ownership | Admin owns employee data; frontend owns operations | | ☁️ Centralized cloud sync | Google Sheets as the unified cloud source | | 🔐 Role separation | Staff handles daily tasks; admin handles HR data | | 🧠 Easy to audit and export | All synced data lives in human-readable spreadsheets | |  |  |  |