

System Requirements Grouping

The requirements are categorized into six main modules, reflecting the multi-layered architecture of your platform (Super Admin, ISP Tenant, Network Integration, and End-Client).

1. Platform Administration & Business Logic (Super Admin/SaaS Core)

This group defines the core multi-tenant platform structure, the highest level of access, and the business model for managing ISPs.

- **Super User Account:** Make a **Super User Account** with control over every aspect for managing ISPs (Platform Admin).
- **Sub-Admin Management:** Super admin can create other accounts with different roles (**Role-Based Access Control - RBAC**) to help manage the ISPs.
- **ISP Tiered Pricing Model:**
 - **24-hour free trial** for new ISPs.
 - **Tier 1 (<Ksh 10k/month):** Ksh 500 registration + Ksh 500/month (Hotspot OR PPPoE/Static features only).
 - **Tier 2 (>=Ksh 10k/month):** Ksh 1,500/month (All features available).
- **ISP Registration Payment:** ISPs have an option to pay with **bank, M-Pesa, PayPal** when registering.
- **Strict Tenant Isolation:** Implement logical separation at the database, network, and application levels. Each tenant's data must be completely **segregated**.
- **Centralized Multi-Tenant Orchestration:** Build a single control plane to manage provisioning, monitoring, and billing for all tenants.
- **Multi-Tenant Admin Console:** A central console for the Super Admin to manage all ISP tenants.
- **Reliability & Security:** Ensure high availability (target **99.9%+ uptime**) and robust security practices.

2. Access, Portals & Customization

This group focuses on the different administrative and client-facing interfaces and branding capabilities.

- **ISP Login Panel:** Make an **ISP login panel** to access their dashboard for user/account management.
- **Tech Accounts & Panel:** ISPs can create and assign roles to **Tech Accounts**. They have a login page to create users and choose PPPoE/Static packages.
- **Client Access (Captive Portal):** Input where clients enter their **phone number** (purchase) or **voucher number** to check validity and use.
- **Interface Customization/White Labeling:** ISPs can **customize their interface** (colors, logo) for their portals (ISP, Hotspot, Technician).
- **Customer Portal for Self-Service:** Include a **customer portal** for end-clients to manage their service.

- **Reseller Management Module:** Build a dedicated reseller management module with hierarchy support, commission tracking, and **branded portals**.
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3. Billing, Finance & Automation

This module covers all financial, payment, and automated billing processes for both the ISP tenants and the end-clients.

- **Hotspot Client Payment:** The **Wi-Fi billing system strictly remains M-Pesa** for client bundle purchases/renewals.
 - **Automated Billing Engine:** Configurable cycles, proration, recurring/invoice generation, **dunning** (failed payment) workflows.
 - **Core Automation:** Build core automation for **invoice generation, payment matching, and reminders**.
 - **Automated Service Suspension:** Automate service suspension/reactivation based on payment status.
 - **Usage-Based Metering & Billing:** System must track resource consumption (bandwidth, subscriptions) per tenant in real-time, feeding into a flexible rating engine.
 - **Design for Localization:** Support configurable billing cycles and proration.
 - **Reseller Commission Tracking:** The reseller management module must support **commission tracking**.
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4. Network & Service Management (Operational)

These are the features required for active network control, user session management, and quality of service (QoS).

- **Bandwidth Management (QoS):** ISPs can do **bandwidth management per voucher/account**.
 - **PPPoE/Static Billing Cycle:** These users should have **monthly billings** and run until they expire (long-term).
 - **Hotspot Session Management:** Clients logged out automatically after **15 minutes of inactive use** (can reuse voucher).
 - **Hotspot Voucher Device Limit:** Vouchers must specify how many devices can be used; reject attempts exceeding the limit.
 - **Network Integration:** API-based integration with **RADIUS** for automated access control and basic support for **TR-069** device management.
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5. Reporting, Analytics & Monitoring

This group covers all data collection, reporting, and real-time operational insights for both the platform and the ISP.

- **Real-Time Monitoring:** Program should have **real-time network monitoring and usage** for both Super Admin and ISPs (on clients as a whole and individually).

- **Analytics & Reporting (Client):** ISP can view usage history and have a **detailed report** on every client to make informed decisions.
- **Customer Reports:** System should have customer reports on **sales, user activity, and network performance.**
- **Real-Time Data Analytics (Platform):** Real-time data analytics on revenue (**MRR/ARR**), **churn**, or customer usage patterns (for Super Admin).

6. Value-Added & Communication Features

These are supplementary features designed to enhance customer acquisition, retention, and support.

- **SMS Communication (Premium Feature):** ISPs are able to **SMS their clients** (all, single, grouped contacts). This feature is subscription-based for the **Tier 2/Premium** (Ksh 1,500) ISPs.
- **Referral Program:** System should have a **referral program** with voucher rewards (ISPs can create/manage).
- **Guest Passes/Trial Periods:** ISPs can set **one-time guest passes/trial periods** (configurable duration) to allow service testing.
- **Support Chat (ISP \$\leftrightarrow\$ Super Admin):** ISPs can **chat with the super admin** and get support.
- **Support Chat (Client \$\leftrightarrow\$ ISP):** Tenant clients can use their accounts to **chat with their ISP** and get support.
- **Native OSS/BSS Integrations:** Provide APIs or built-in modules for **key payment gateways and major accounting software.**