

Securaa High-Level Design (High Level Design)

1. Overview

Securaa is a modular cybersecurity platform designed for scalable, secure, and automated deployment across cloud and on-premise environments. The system is composed of multiple services, packaged for both Docker-based development and production-grade RPM/DEB installations.

2. Architecture

2.1. Core Components

- **Core Services:** Main backend logic, APIs, and business rules (Go-based, in `securaa/` and `executedb/`).
- **UI:** React-based frontend, built and served as a static site or via Docker.
- **ML Services:** Machine learning modules for analytics and automation.
- **Arbiter:** Specialized service for orchestration or arbitration tasks.
- **Database:** MongoDB (Dockerized for dev, native for prod).
- **Logging:** Fluentd for log aggregation and forwarding.

2.2. Supporting Components

- **Scripts:** Automation for build, deployment, and cloud provisioning (`scripts/`, `core_scripts/`, `deployment_scripts/`).
- **Packaging:** RPM/DEB build system for RedHat and Debian-based deployments (`pkg/`).
- **Cloud Automation:** AWS EC2 provisioning and remote install via shell scripts.

3. Deployment Topologies

3.1. Local Development

- **Docker Compose:** All services (MongoDB, Fluentd, Core, UI, ML) run as containers.
- **Config:** `appliance/docker-compose.yml`, `appliance/local/config.json`.

3.2. Production

- **RedHat/CentOS:** RPM packages for core, UI, ML, Arbiter, and dependencies.
- **Debian/Ubuntu:** DEB packages for all components.
- **Cloud:** Automated EC2 launch and install via scripts.

4. Build & Release Flow

1. **Source Checkout:** Git-based, multi-repo support.
2. **Build:** Scripts for Go services, React UI, ML modules.
3. **Package:** Makefiles and spec files for RPM/DEB creation.
4. **Deploy:** Install scripts for each OS, Docker Compose for dev.
5. **Post-Install:** Systemd service enablement, config, and cleanup.

5. Security & Compliance

- **AVX Check:** Ensures hardware compatibility for MongoDB 7.0.
 - **SELinux Handling:** Temporarily disabled during install for Docker.
 - **SSH/SCP:** Secure remote operations for cloud installs.
 - **Environment Variables:** Managed via `.env` files.
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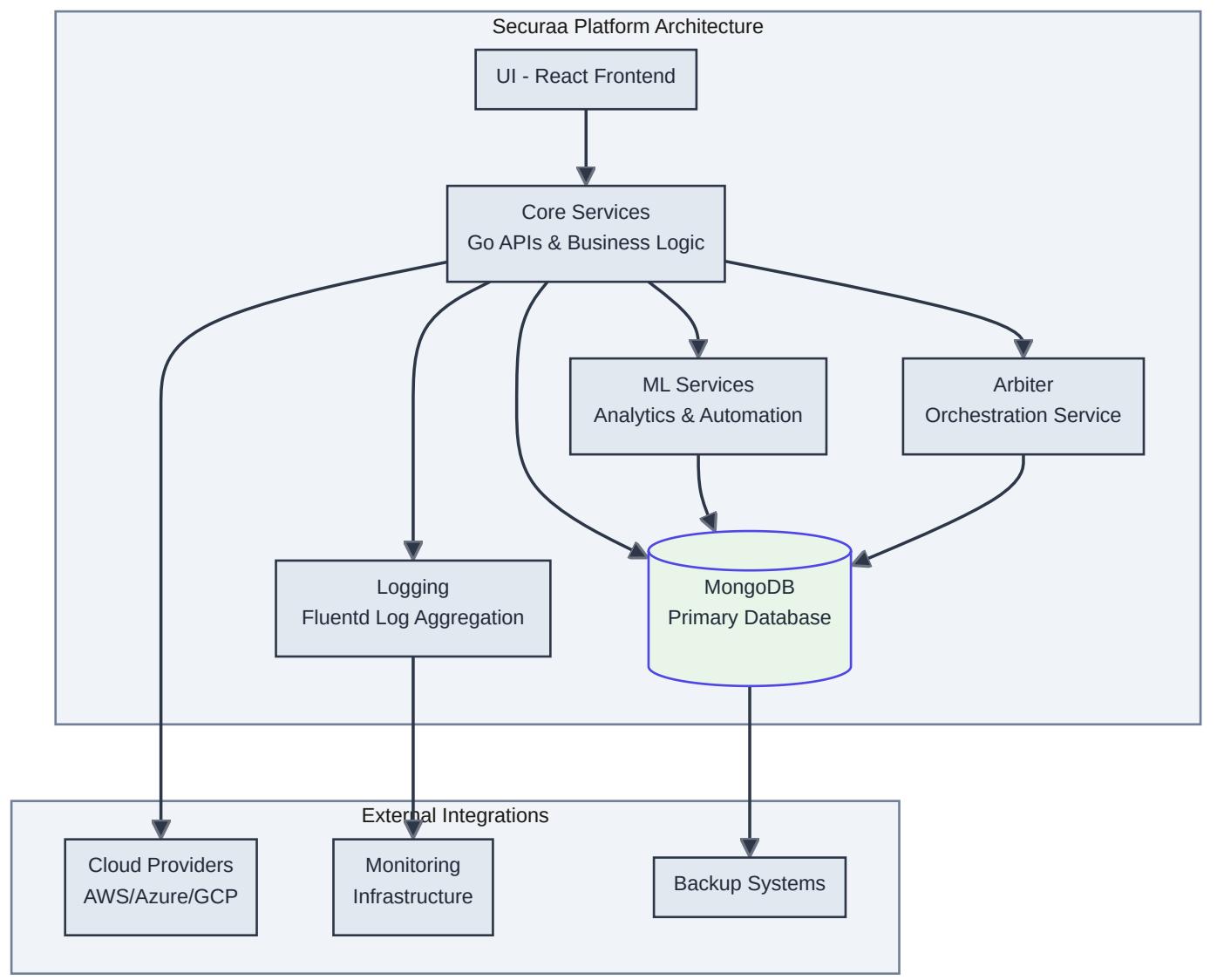
6. Extensibility

- **Modular Packaging:** Each service can be built, packaged, and deployed independently.
 - **Scripted Automation:** Easy to extend for new services or cloud providers.
 - **Configurable:** All major parameters are externalized in config files.
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7. Key Directories

- `appliance/` : Docker Compose, local config, and scripts.
 - `core_scripts/`, `deployment_scripts/`, `scripts/` : Automation and deployment logic.
 - `pkg/` : Packaging, specs, and control files.
 - `securaa/`, `executedb/` : Go source code for core services.
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8. System Architecture Diagram



9. References

- See deployment document for detailed install and build steps.
- All scripts and configs are in the root and respective subfolders.