Contents

RADIANT Architecture v4.17.0

Overview

RADIANT is a multi-tenant AWS SaaS platform for AI model access and orchestration. It consists of:

1. **Swift Deployer App** - macOS GUI for infrastructure deployment
2. **AWS Infrastructure** - CDK-based cloud infrastructure
3. **Admin Dashboard** - Next.js admin UI (Phase 3)

Technology Stack

Layer	Technology
Swift App	SwiftUI, macOS 13.0+, Swift 5.9+, GRDB
Infrastructure	AWS CDK (TypeScript), Aurora PostgreSQL, Lambda
Dashboard	Next.js 14, TypeScript, Tailwind CSS
AI Integration	106+ models, LiteLLM, SageMaker

Monorepo Structure

```
radiant/
  packages/
    shared/              # @radiant/shared - Types & constants
    infrastructure/      # @radiant/infrastructure - CDK stacks
  apps/
    swift-deployer/      # RadiantDeployer macOS app
  functions/             # Lambda functions (Phase 2)
  migrations/            # Database migrations (Phase 2)
  docs/                  # Specifications
```

Phase 1 Architecture

@radiant/shared Package

Single source of truth for all types and constants:

```
// Types
- app.types.ts          // ManagedApp, DeploymentStatus, etc.
- environment.types.ts  // Environment, TierConfig, etc.
- ai.types.ts           // AIProvider, AIModel, etc.
- admin.types.ts        // Administrator, Permissions
- billing.types.ts      // UsageEvent, Invoice, etc.
- compliance.types.ts   // PHI, AuditLog, etc.

// Constants
- version.ts            // RADIANT_VERSION = "4.17.0"
- tiers.ts              // Tier 1-5 configurations
- regions.ts            // AWS region configs
- providers.ts          // AI provider definitions
```

Swift Deployer App

```
RadiantDeployer/
   RadiantDeployerApp.swift  # @main entry point
   AppState.swift            # Global state management
   Models/
       ManagedApp.swift      # App configuration model
       Credentials.swift     # AWS credentials model
       Deployment.swift      # Deployment state/progress
   Services/
       CredentialService.swift  # Keychain credential storage
       CDKService.swift         # CDK command execution
       AWSService.swift         # AWS API interactions
   Views/
       MainView.swift        # NavigationSplitView container
       AppsView.swift        # Application grid
       DeployView.swift      # Deployment wizard
       ProvidersView.swift   # AI provider list
       ModelsView.swift      # AI model catalog
       SettingsView.swift    # Preferences
```

CDK Infrastructure Stacks

```
packages/infrastructure/
   bin/radiant.ts            # CDK app entry point
   lib/stacks/
       foundation-stack.ts   # KMS, SSM parameters
       networking-stack.ts   # VPC, subnets, endpoints
       security-stack.ts     # Security groups, WAF
```

Infrastructure Tiers

Tier	Name	VPC CIDR	AZs	NAT	Aurora ACU	Features
1	SEED	/20	2	1	0.5-2	Dev only
2	STARTUP	/18	2	1	1-8	WAF, GuardDuty
3	GROWTH	/17	3	2	2-16	Self-hosted models, HIPAA
4	SCALE	/16	3	3	4-64	Multi-region, Global DB
5	ENTERPRISE	/14	3	3	8-128	Full enterprise

Deployment Flow

```
Swift Deployer
   (macOS)

        1. Configure credentials
        2. Select app/tier/env
        3. Initiate deployment


 CDK Deploy
(via Process)

        4. Bootstrap AWS
        5. Synth stacks
        6. Deploy in order


 AWS Account
 (VPC, RDS,
  Lambda, etc)
```

Phase 1 Deliverables

- ☒ Monorepo structure (pnpm workspace)
- ☒ @radiant/shared package with all types
- ☒ @radiant/infrastructure base CDK stacks
- ☒ RadiantDeployer Swift app with full UI
- ☒ Credential management via Keychain
- ☒ CDK service for deployment execution
- ☒ Documentation

Future Phases

Phase	Sections	Description
2	3-7	AI stacks, Lambdas, Database
3	8-9	Admin Dashboard, Deployment Guide
4	10-17	Visual AI, Brain, Analytics
5	18-28	Think Tank, Collaboration
6	29-35	Registry, Time Machine
7	36-39	Neural Engine, Workflows
8	40-42	Isolation, i18n, Config
9	43-46	Billing System