**Admin Dashboard Design Document**

**Overview**

The Admin Dashboard serves as the central control panel for system administrators of the Airiam RAG Service. This comprehensive interface provides access to system-wide settings, tenant management, user administration, and monitoring capabilities. The Admin Dashboard is designed for users with administrative privileges and offers powerful tools for configuring and maintaining the entire RAG service.

This document outlines the functionality, design elements, and implementation details for the Admin Dashboard. It provides developers with a clear understanding of components, interactions, and expected user experience. Each UI element is described with its purpose, behavior, and technical implementation details.

The Admin Dashboard is a critical component for enterprise deployments, enabling proper governance, security configuration, and system optimization. As a restricted area, this interface is only accessible to users with administrative roles, ensuring secure system management.

**Dashboard Components and Functionality**

**1. Navigation and Layout**

**Admin Sidebar**

* **Section**: "Admin" section in main sidebar
* **Menu Items**:
  + Dashboard: Overview and system status
  + Users: User management interface
  + Tenants: Tenant management (multi-tenant systems)
  + Settings: System-wide configuration
  + Logs: System and audit logs
* **Visual Distinction**:
  + Special icon or color to indicate admin area
  + Warning/indicator for critical notifications

**Page Header**

* **Title**: Current section name ("Admin Dashboard", "User Management", etc.)
* **Breadcrumbs**: Navigation path (e.g., Admin > Users > [Username])
* **Actions**: Section-specific action buttons

**2. Admin Dashboard Overview**

**System Status Cards**

* **Layout**: Row of status cards showing critical metrics
* **Cards**:
  + Active Users: Count of currently active users
  + System Health: Status indicator (Healthy, Warning, Critical)
  + Storage Usage: Visual gauge of storage consumption
  + API Usage: Query volume and limits

**Recent Activity Widget**

* **Content**: Admin-level activity log
* **Entries**:
  + User creations/deletions
  + Tenant changes
  + Setting modifications
  + System errors or warnings
* **Filtering**: By type, user, or timestamp

**Quick Actions**

* **Layout**: Grid of action buttons
* **Actions**:
  + Add new user
  + Create new tenant
  + System backup
  + Generate reports
  + View audit logs

**3. Tenant Management (Multi-tenant Systems)**

**Tenant Listing**

* **Layout**: Table or card grid of tenants
* **Information Displayed**:
  + Tenant name and ID
  + Creation date
  + User count
  + Storage usage
  + Status (Active/Inactive)
* **Actions**:
  + View details
  + Edit settings
  + Manage users
  + Deactivate/Activate

**Tenant Creation Form**

* **Form Fields**:
  + Tenant name (required)
  + Domain (optional)
  + Admin email (for initial admin user)
  + Subscription tier
  + Usage limits
* **Advanced Settings**:
  + File storage limits
  + API rate limits
  + Feature toggles
  + Customization options

**Tenant Detail View**

* **Overview Tab**:
  + Usage statistics and trends
  + Active users count
  + Total document count
  + Storage consumption
* **Settings Tab**:
  + Theme and branding options
  + Authentication settings
  + Integration configurations
  + Default user settings
* **Users Tab**:
  + List of users in this tenant
  + Add/remove user capabilities
  + Role management

**4. System Settings**

**General Settings Panel**

* **System Configuration**:
  + System name and URL
  + Email configuration
  + Backup schedule
  + Maintenance mode toggle
* **Default Values**:
  + Default user roles
  + Default tenant settings
  + Storage allocations

**Security Settings Panel**

* **Authentication Settings**:
  + Password policies
  + MFA requirements
  + Session timeout settings
  + Login attempt limits
* **Access Control**:
  + IP restrictions
  + Role permission management
  + API key management

**Integration Settings Panel**

* **External Services**:
  + Email provider configuration
  + Storage provider settings
  + OAuth provider setup
  + Analytics integration
* **API Configuration**:
  + Endpoint documentation
  + Rate limiting settings
  + Webhook configurations

**5. Audit and Monitoring**

**System Logs Viewer**

* **Log Types**:
  + Error logs
  + Security logs
  + User activity
  + System events
* **Filtering Options**:
  + By log level (info, warning, error, critical)
  + By date range
  + By user or tenant
  + By action type
* **Export Capabilities**:
  + Download logs as CSV
  + Generate log reports
  + Archive old logs

**Performance Monitoring**

* **Resource Metrics**:
  + CPU and memory usage
  + Database performance
  + API response times
  + Queue status
* **Charts and Graphs**:
  + Historical usage trends
  + Peak usage periods
  + Error rate visualization
  + User activity patterns

**Health Checks**

* **Status Dashboard**:
  + Component status indicators
  + Service uptime statistics
  + Recent incidents
  + Scheduled maintenance
* **Alert Configuration**:
  + Threshold settings
  + Notification rules
  + Contact information
  + Escalation procedures

**Testing Procedures**

**1. Navigation and Layout Testing**

**Sidebar Navigation Testing**

1. **Access Control Test**:
   * Log in as admin user and verify admin section is visible
   * Log in as non-admin user and verify admin section is not accessible
2. **Navigation Flow Test**:
   * Click each admin menu item
   * Verify navigation to correct section
   * Verify breadcrumbs update appropriately
3. **Responsive Behavior Test**:
   * Test navigation on different screen sizes
   * Verify sidebar collapses/expands correctly on mobile devices

**2. Admin Dashboard Overview Testing**

**Status Cards Testing**

1. **Data Accuracy Test**:
   * Verify active user count matches actual active users
   * Verify storage usage reflects actual system usage
   * Test other metrics for accuracy
2. **Visual Indicator Test**:
   * Create conditions for warnings/alerts
   * Verify status indicators change appropriately
   * Test color coding and icon changes

**Recent Activity Testing**

1. **Log Entry Test**:
   * Perform various admin actions
   * Verify actions appear in the activity log
   * Verify timestamps and user attribution are correct
2. **Filtering Test**:
   * Apply various filters to the activity log
   * Verify only matching entries are displayed
   * Clear filters and verify all entries return

**Quick Actions Testing**

1. **Button Functionality Test**:
   * Click each quick action button
   * Verify appropriate action is initiated
   * Complete each action flow to verify full functionality

**3. Tenant Management Testing**

**Tenant Listing Testing**

1. **List Accuracy Test**:
   * Create multiple tenants
   * Verify all tenants appear in the listing
   * Verify tenant information is displayed correctly
2. **Action Button Test**:
   * Test view details, edit, and other action buttons
   * Verify correct navigation or modal display
   * Test activate/deactivate functionality

**Tenant Creation Testing**

1. **Form Validation Test**:
   * Submit form without required fields
   * Verify validation errors appear
   * Complete form and verify successful creation
2. **Limit Configuration Test**:
   * Set various resource limits
   * Create actions that would exceed limits
   * Verify limits are enforced correctly

**Tenant Detail Testing**

1. **Tab Navigation Test**:
   * Click each tab in tenant details
   * Verify correct content is displayed for each tab
   * Verify state is preserved when switching tabs
2. **Settings Modification Test**:
   * Change various tenant settings
   * Save changes and verify they take effect
   * Test settings impact on tenant functionality

**4. System Settings Testing**

**General Settings Testing**

1. **Configuration Changes Test**:
   * Modify system configuration settings
   * Save changes and verify they're applied
   * Test impact on system behavior
2. **Default Value Test**:
   * Modify default values
   * Create new resources (users, tenants)
   * Verify defaults are applied correctly

**Security Settings Testing**

1. **Password Policy Test**:
   * Configure various password requirements
   * Test user creation and password changes
   * Verify policies are enforced
2. **Access Control Test**:
   * Configure role permissions
   * Log in as different roles
   * Verify access is granted/restricted appropriately

**Integration Settings Testing**

1. **Service Configuration Test**:
   * Configure external service integrations
   * Test connectivity to each service
   * Verify integration functions correctly
2. **API Configuration Test**:
   * Modify API settings
   * Test API access with different settings
   * Verify rate limiting and other constraints

**5. Audit and Monitoring Testing**

**Logs Viewer Testing**

1. **Log Display Test**:
   * Generate various system events
   * Verify events appear in appropriate logs
   * Verify log details are accurate
2. **Filtering and Search Test**:
   * Apply various filters to logs
   * Search for specific log entries
   * Verify correct results are displayed
3. **Export Test**:
   * Export logs in different formats
   * Verify exported data is complete and accurate
   * Test different date ranges and filters

**Performance Monitoring Testing**

1. **Metrics Accuracy Test**:
   * Generate system load
   * Verify metrics reflect actual system performance
   * Test historical data display
2. **Chart Rendering Test**:
   * View different time periods
   * Verify charts render correctly
   * Test interactive features (zoom, tooltips)

**Health Check Testing**

1. **Status Indicator Test**:
   * Simulate component failures
   * Verify status dashboard reflects failures
   * Resolve issues and verify status updates
2. **Alert Testing**:
   * Configure alert thresholds
   * Create conditions that trigger alerts
   * Verify notifications are sent according to configuration