do same in detail research and update

Security & Residency
SSO, MFA, granular roles, data localization with compliance mapping

Here is a full-featured, research-backed user story and specification for **Security & Residency** in a compliance SaaS, covering SSO, MFA, granular roles, and data localization with compliance mapping. The approach ensures enterprise robustness, legal coverage for SMEs, and a future-proof global architecture.[1] [2] [3] [4] [5] [6] [7]

Security & Residency – Full-Fledged User Story & Research

Title

Enterprise-Grade Security and Data Residency for Multi-Jurisdiction Compliance

Description

As a compliance admin or IT security officer, I want enterprise-level security—SSO, MFA, fine-grained user/role permissions—and data residency mapping that matches current global privacy laws, so my company can safely use the platform in every market, withstand audits, and respond instantly to regulatory change.

360-Degree Functional Requirements

1. SSO (Single Sign-On) and Centralized Authentication

- Support SAML 2.0, OAuth2/OIDC for SSO with enterprise IdPs (Azure AD, Okta, Google Workspace, local LDAP).[1]
- One-click login for all users; automatic session timeout (customizable, min. 15 minutes).
- Seamless onboarding—user profiles auto-provisioned via SSO with role inheritance.

2. Multi-Factor Authentication (MFA)

- Required for all privileged/admin roles; optional/recommended for all others.
- Supports OTP via app (TOTP), SMS/email, and hardware keys.
- Enforced via conditional access policies (e.g., enforce MFA for high-risk actions, international login, password reset).[1]

3. Granular Role-Based and Attribute-Based Access Control (RBAC/ABAC)

- Predefined roles: analyst, admin, auditor, IT/integration, business user; support for custom role creation.
- Every permission is entity-level (view/edit/delete for partners, orders, rules, APIs, audit packs).
- Attribute-based: permission rules can factor in location, time, project/team, entity type, risk level, jurisdiction.[8] [1]
- Approval workflows for high-risk actions (e.g. override, rule edit, data export).

4. Data Encryption and Storage Security

- All data in transit: TLS 1.3 minimum.
- All data at rest: AES-256 encryption.
- Encryption key management supports cloud-native (KMS/HSM) and BYOK (bring-your-own-key) models.

5. Data Localization, Residency, and Compliance Mapping

- User/admin can select storage region (EU, US, Singapore, local) for each company, department, or entity.[7] [1]
- Mapping engine enforces data routing and localization per GDPR, LGPD, PIPL, HIPAA, U.S. EAR, and other national regulations.[5] [1]
- Automated discovery warns of potential residency violations (e.g., “Order 234 includes EU data but is stored in Singapore”); blocks or re-routes if required.
- Data minimization: only relevant fields stored; automated retention/expiration purges in compliance with law.

6. Threat Detection, Monitoring & Reporting

- Centralized log aggregation (ELK/SIEM support), proactive alerting on abnormal activity (e.g., logins from new geos, unusual batch download/export).
- Regular automated penetration testing and vulnerability scanning; results reviewed quarterly.
- In-app dashboards for recent security events, permission reviews, and residency mapping status.

7. Privacy and Subject Rights Automation

- Self-service privacy dashboard for DSRs (data subject requests—export, delete, restrict, correct).
- Automated tagging/mapping for business entities impacted by new or updated compliance regulations.

8. Audit and Compliance Readiness

- All security activities (logins, MFA events, permission grants, export/downloads, residency selections) are audit-logged and exportable.[3] [8]

- One-click regulator-ready packs: security policy, risk assessment records, change logs, and technical controls.

Acceptance Criteria

- 100% user authentication via SSO/OAuth2, with configurable MFA.
- No action outside explicit role/attr rules; all changes/rules/exports logged with before/after state and actor.[1]
- Data for a specific legal entity remains only in permitted region ("data never leaves region/country X"), enforced by both application and cloud controls.
- Automatic alerts/warnings for residency violations, unsuccessful login attempts, suspicious downloads.
- Easy self-service for user/role onboarding, permission review, policy update.

Distinctive Innovations

- Competing platforms typically offer RBAC or SSO but are weak on ABAC and true, self-service residency enforcement—especially for SME and multi-jurisdiction use.[4] [3] [5]
- Compliance mapping speeds up audit, reduces risk of violation fines: dynamically flags issues as laws/configs change.
- Self-service and transparency reduce IT overhead and legal uncertainty, delivering enterprise-level protection affordably.

Subtasks & QA

- Engineer identity management, authentication, SSO/MFA flows.
- Implement advanced RBAC/ABAC, approval workflows, audit loggers.
- Cloud config: automate data region/protection based on user/entity needs.
- Test with real-world SME/exporter scenarios: role drift, residency error, regulator audit, legal update.

With this architecture, your compliance platform achieves world-class security and privacy, ensuring readiness for every modern and emerging regulation.Here is a comprehensive, high-assurance requirements and user story for **Security & Residency** in a compliance SaaS platform, designed to enable SME global usage with minimal friction and maximal regulatory readiness.[2] [6] [3] [4] [5] [7] [8] [1]

Security & Residency – Full-Fledged User Story

Title

Enterprise-Grade Security Controls and Country-Based Data Residency

Description

As a compliance admin or IT/security officer, I want robust, self-service security (SSO, MFA, granular roles) and configurable, auditable data localization—so my company can meet the requirements of every global jurisdiction, minimize risk and friction, and pass regulatory audits with confidence.

Functional Requirements

1. SSO (Single Sign-On)

- Supports major IdPs (SAML, OAuth, OpenID Connect; Azure AD, Google, Okta).
- Self-service SSO onboarding: wizard-based, no escalations to vendor.
- SSO enables seamless role-based access inheritance and just-in-time provisioning (new users automatically added to correct groups).

2. Multi-Factor Authentication (MFA)

- Enforced for admin/sensitive permissions by default; user-configurable for all others (app, SMS, hardware token, recovery backup).
- Context-sensitive triggers: e.g., require MFA for rule edits, large data exports, or login from outside home country.

3. Granular Role & Attribute-Based Access Control (RBAC/ABAC)

- Entity-level RBAC: Every button, record, export, and integration can be permissioned.
- ABAC rules: Restrict data/actions by office/country, risk score, classification, user seniority, time of day, etc.
- Workflow-based approval: Custom escalation required for high-risk permission changes or critical rule edits.

4. Data Residency and Localization Controls

- Selectable storage region (e.g., EU, US, APAC) per organization, legal entity, or department.
- Dynamic compliance mapping engine: Ensures data never leaves allowed region for GDPR, PIPL, HIPAA, LGPD.
- Automated residency warnings: Blocks or alerts if a transaction, sync, or backup would violate localization rules.
- Configurable data retention and auto-purge matched to jurisdictional timelines.

5. Encryption and Data Security

- All data at rest: AES-256; all transit: TLS 1.3 or better.
- BYOK and KMS options for crypto-key management.
- Regular pen tests, vulnerability scans, and continuous security monitoring.[4] [1]

6. Privacy Rights Automation

- Automated self-service DSAR/DSR (data subject access/request) for export, deletion, correction.
- Audit export and admin tools to track and fulfill regulatory submissions on timeline.

7. Real-Time Security Monitoring

- Monitors all security- and residency-relevant events (failed login, permission change, region error, massive export).
- Central dashboard with real-time status, history, and alerts to both admin and compliance.[1]

Acceptance Criteria

- All user access goes through SSO (with backup for regulatory disaster/integration).
- No new user, data sync, or export outside role/region policy.
- Data storage/backup never leaves permitted region.
- All MFA, SSO, permission changes, and region assignments audit-logged.
- System notifies users and blocks region/data flow rule violations in real time.
- Privacy and audit requests fulfilled in under 48 hours, exportable in regulator-ready format.

Subtasks and QA

- Build SSO/MFA flows; test SSO edge cases (new users, role update, org split/merge).
- Implement role/attribute management and approval workflow logic.
- Engineer data-region mapping and geo-restriction engine.
- Build region-based encryption and retention/test purge flows.
- Scenario test: GDPR/China/Brazil audits, user/IT handoff for privacy and audit support.

Why This Is Advanced/Unique

- Combines self-service and fine control (not locked behind vendor support or hardwired roles).
- All region and entity mapping are live, not static—supporting “compliance as code.”
- Delivers global regulatory coverage with low friction, enabling SME and micro-multinational expansion.[2] [7] [8] [4] [1]

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