## Comprehensive Infrastructure Architecture Design for Finflow

## 1. Introduction

This document outlines a comprehensive infrastructure architecture design for Finflow, focusing on enhancing security and compliance to meet stringent financial industry standards. The existing Finflow infrastructure, while functional, requires significant upgrades to address potential vulnerabilities and regulatory requirements. This design aims to transform the infrastructure into a robust, secure, and compliant environment suitable for handling sensitive financial data.

# 2. Key Financial Cybersecurity Regulations and Their Implications

The financial sector is heavily regulated, and adherence to various cybersecurity and data protection standards is paramount. Non-compliance can lead to severe penalties, reputational damage, and loss of customer trust. The following regulations are particularly relevant to Finflow:

## 2.1. European General Data Protection Regulation (EU-GDPR)

The EU-GDPR is a landmark regulation by the European Union designed to protect the personal data of its citizens. It mandates strict rules for how personal data is collected, processed, stored, and protected. For Finflow, this means:

- **Data Minimization:** Only collect and process data that is absolutely necessary for the stated purpose.
- Lawfulness, Fairness, and Transparency: Data processing must be lawful, fair, and transparent to the data subject.

- **Purpose Limitation:** Data collected for one purpose cannot be used for another without explicit consent.
- **Storage Limitation:** Personal data should not be stored longer than necessary.
- Integrity and Confidentiality: Implement appropriate technical and organizational measures to ensure the security of personal data, including protection against unauthorized or unlawful processing and against accidental loss, destruction, or damage.
- **Accountability:** Finflow must be able to demonstrate compliance with GDPR principles.
- **Data Subject Rights:** Individuals have rights regarding their data, including access, rectification, erasure (right to be forgotten), restriction of processing, data portability, and objection.

## 2.2. United Kingdom General Data Protection Regulation (UK-GDPR)

The UK-GDPR is the UK's version of the EU-GDPR, retaining most of its principles but adapted for domestic law. Finflow must comply with UK-GDPR if it processes personal data of UK residents. The implications are largely similar to EU-GDPR.

## 2.3. Sarbanes-Oxley (SOX) Act of 2002

SOX is a U.S. federal law that mandates certain practices in financial record keeping and reporting for public companies. While primarily focused on financial reporting accuracy, SOX has significant implications for IT infrastructure due to its emphasis on internal controls. For Finflow, this translates to:

- Internal Controls: Establish and maintain internal controls over financial reporting to ensure accuracy and prevent fraud.
- **Data Integrity:** Ensure the integrity and reliability of financial data through robust IT controls.
- Access Control: Implement strict access controls to systems and data involved in financial processes.
- **Audit Trails:** Maintain comprehensive audit trails for all financial transactions and system access.
- **Segregation of Duties:** Separate duties to prevent a single individual from having too much control over a financial process.

## 2.4. Payment Card Industry Data Security Standard (PCI DSS)

PCI DSS is a set of security standards designed to ensure that all companies that process, store, or transmit credit card information maintain a secure environment. If Finflow handles payment card data, it must comply with PCI DSS, which includes requirements for:

- **Network Security:** Install and maintain a firewall configuration to protect cardholder data; do not use vendor-supplied defaults for system passwords and other security parameters.
- **Data Protection:** Protect stored cardholder data; encrypt transmission of cardholder data across open, public networks.
- **Vulnerability Management:** Protect all systems against malware and regularly update antivirus software or programs; develop and maintain secure systems and applications.
- Access Control: Restrict access to cardholder data by business need-to-know; assign a unique ID to each person with computer access; restrict physical access to cardholder data.
- **Monitoring and Testing:** Track and monitor all access to network resources and cardholder data; regularly test security systems and processes.
- Information Security Policy: Maintain an information security policy.

## 2.5. Bank Secrecy Act (BSA) / Anti-Money Laundering (AML)

The BSA requires financial institutions to assist U.S. government agencies in detecting and preventing money laundering. This involves:

- **Reporting:** Report suspicious activities and large cash transactions.
- **Record Keeping:** Maintain records of financial transactions.
- **Customer Due Diligence (CDD):** Implement robust CDD processes to verify customer identities and understand the nature of their activities.

## 2.6. Gramm-Leach-Bliley Act (GLBA)

GLBA is a U.S. federal law that requires financial institutions to explain their information-sharing practices to their customers and to safeguard sensitive data. Key

#### aspects include:

- **Financial Privacy Rule:** Governs the collection and disclosure of customers' personal financial information.
- **Safeguards Rule:** Requires financial institutions to implement security programs to protect customer information.
- **Pretexting Protection:** Protects consumers from individuals who obtain their personal financial information under false pretenses.

## 2.7. Payment Services Directive 2 (PSD2)

PSD2 is an EU directive that regulates payment services and payment service providers. It aims to increase competition, foster innovation, and enhance security in the payments market. Key security requirements include:

- **Strong Customer Authentication (SCA):** Mandates multi-factor authentication for electronic payments.
- **Secure Communication:** Requires secure communication channels between payment service providers and users.
- **Open Banking APIs:** Standardized and secure APIs for third-party providers to access customer account information (with consent).

## 2.8. Federal Financial Institutions Examination Council (FFIEC) Guidelines

FFIEC provides guidance to financial institutions on various topics, including cybersecurity. Their IT Examination Handbook offers a comprehensive framework for assessing and managing IT risks. This includes guidance on:

- **Information Security:** Establishing and maintaining an effective information security program.
- Business Continuity Planning: Ensuring resilience against disruptions.
- **Vendor Management:** Managing risks associated with third-party service providers.
- **Cybersecurity Assessment:** Conducting regular cybersecurity assessments.

## 2.9. Digital Operational Resilience Act (DORA)

DORA is an EU regulation that aims to strengthen the IT security of financial entities. It introduces comprehensive requirements for managing ICT (Information and Communication Technology) third-party risk, incident reporting, and digital operational resilience testing. For Finflow, this means:

- ICT Risk Management: Implement a robust framework for managing ICT risks.
- **Incident Reporting:** Establish clear procedures for reporting major ICT-related incidents.
- **Digital Operational Resilience Testing:** Conduct regular tests to assess and improve digital operational resilience.
- **Third-Party Risk Management:** Implement a comprehensive framework for managing ICT third-party risks.

# 3. Current Infrastructure Analysis and Gap Identification

The existing Finflow infrastructure, as observed from the cloned repository, utilizes Terraform for infrastructure as code, Ansible for configuration management, Docker for containerization, and Kubernetes for orchestration. While these technologies provide a solid foundation, several gaps exist concerning financial industry security and compliance standards.

## 3.1. Terraform Configuration (Finflow/infrastructure/terraform)

#### **Current State:**

- Uses AWS as the cloud provider.
- Configures S3 for Terraform state backend with encryption and DynamoDB for state locking.
- Defines modules for VPC, EKS, RDS, ECR, Bastion, and Route53.
- Integrates Kubernetes and Helm providers for EKS cluster management.

- Network Security: The current VPC and EKS configurations need explicit
  definition of network segmentation (public/private subnets), granular security
  group rules, and Network Access Control Lists (NACLs) to enforce strict
  inbound/outbound traffic policies. This is crucial for PCI DSS and FFIEC
  compliance.
  - Enhancement: Implement dedicated private subnets for sensitive resources (databases, application servers) and public subnets only for load balancers and bastion hosts. Define explicit ingress/egress rules for security groups based on the principle of least privilege. Utilize NACLs as a secondary layer of defense.
- IAM Roles and Policies: While EKS integration is present, a detailed review of IAM roles and policies is required to ensure least privilege access for all components and services. This is critical for SOX, GLBA, and GDPR compliance.
  - Enhancement: Create fine-grained IAM roles for each service and component (e.g., EKS nodes, application pods, databases, CI/CD pipelines) with only the necessary permissions. Implement IAM access analyzer to regularly review and refine policies.
- **Encryption:** While S3 state backend is encrypted, comprehensive encryption for data at rest and in transit across all services (databases, storage, inter-service communication) needs to be explicitly defined and enforced. This is vital for GDPR, PCI DSS, and GLBA.
  - Enhancement: Enforce EBS encryption for EC2 instances, RDS encryption for databases, S3 bucket encryption for all data storage. Implement TLS/SSL for all inter-service communication within Kubernetes and for external API endpoints.
- **Secrets Management:** There is no explicit mention of a secrets management solution. Storing sensitive information (API keys, database credentials) directly in Terraform variables or configuration files is a major security risk. This impacts all compliance standards.
  - Enhancement: Integrate AWS Secrets Manager or HashiCorp Vault for centralized secrets management. Terraform should retrieve secrets dynamically from these services rather than storing them directly.
- **Logging and Auditing:** While some monitoring configurations are present, explicit setup for centralized logging and auditing of all infrastructure activities

(API calls, configuration changes, access attempts) is missing in Terraform. This is essential for SOX, BSA, FFIEC, and DORA.

- Enhancement: Enable AWS CloudTrail for API call logging, CloudWatch Logs for system and application logs, and integrate them with a Security Information and Event Management (SIEM) system for centralized analysis and alerting.
- **Compliance as Code:** Incorporate compliance checks directly into Terraform code using tools like Open Policy Agent (OPA) or AWS Config rules to enforce security policies and regulatory requirements automatically. This supports all compliance standards.
  - Enhancement: Define OPA policies to prevent deployment of noncompliant resources (e.g., unencrypted S3 buckets, overly permissive security groups). Implement AWS Config rules for continuous compliance monitoring.

## 3.2. Docker Configurations (Finflow/infrastructure/docker)

#### **Current State:**

• Basic Dockerfiles for various services (accounting-service, analytics-service, apigateway, auth-service, credit-engine, frontend, payments-service).

- Image Security: Dockerfiles appear to use basic builds without explicit security hardening. This impacts all compliance standards, especially PCI DSS and FFIEC.
  - Enhancement: Implement multi-stage builds to reduce image size and attack surface. Use minimal base images (e.g., Alpine Linux). Run containers as non-root users. Scan Docker images for vulnerabilities using tools like Clair or AWS ECR image scanning.
- **Dependency Management:** No explicit mechanism for securing and managing application dependencies within Docker images.
  - **Enhancement:** Use dependency scanning tools during CI/CD to identify and remediate vulnerable libraries. Pin dependency versions to ensure reproducibility and prevent unexpected updates.

## 3.3. Kubernetes Configurations

(Finflow/infrastructure/kubernetes)

#### **Current State:**

- Deployment, Service, and Ingress configurations for various microservices.
- StatefulSet and Service configurations for databases and Kafka.

- **Network Policies:** No explicit Kubernetes Network Policies are defined to control communication between pods and namespaces. This is a critical security gap for network segmentation, impacting PCI DSS and FFIEC.
  - **Enhancement:** Implement granular Network Policies to restrict pod-to-pod communication based on least privilege. Define ingress and egress rules for each application.
- Pod Security Standards (PSS): No explicit enforcement of Pod Security
   Standards (or Pod Security Policies in older Kubernetes versions) to restrict pod
   capabilities and prevent privilege escalation. This impacts all compliance
   standards.
  - **Enhancement:** Configure Kubernetes to enforce Pod Security Standards (e.g., restricted or baseline profiles) to prevent privileged containers, hostPath mounts, and other risky configurations.
- Resource Limits and Quotas: While not directly a security control, defining
  resource limits and quotas helps prevent resource exhaustion attacks and
  ensures stability, which is part of operational resilience (DORA).
  - Enhancement: Define CPU and memory limits for all pods. Implement resource quotas for namespaces to prevent any single application from consuming excessive resources.
- **Secrets Management Integration:** Kubernetes secrets are often base64 encoded, not truly encrypted at rest. Integration with a robust secrets management solution is crucial. This impacts all compliance standards.
  - Enhancement: Use external secrets operators (e.g., AWS Secrets Manager CSI driver, HashiCorp Vault Agent Injector) to inject secrets into pods at runtime, rather than storing them as native Kubernetes secrets.

- Service Mesh: For advanced traffic management, security, and observability
  (e.g., mTLS between services), a service mesh like Istio or Linkerd could be
  beneficial. This enhances security for inter-service communication, relevant for
  PSD2 and DORA.
  - **Enhancement:** Consider implementing a service mesh for mTLS, traffic encryption, and fine-grained access control between microservices.

## 3.4. Ansible Playbooks (Finflow/infrastructure/ansible)

#### **Current State:**

- Roles for common, deployment, docker, kubernetes, and monitoring.
- Templates for backup scripts, deploy scripts, and monitoring configurations.

#### **Gaps and Proposed Enhancements:**

- **Secure Configuration Management:** Review and harden Ansible playbooks to ensure secure configuration of servers and applications. This impacts all compliance standards.
  - **Enhancement:** Implement Ansible Vault for encrypting sensitive data (e.g., API keys, passwords) within playbooks. Ensure playbooks enforce security best practices (e.g., disabling unnecessary services, secure file permissions, regular patching).
- **Idempotency and Error Handling:** Ensure playbooks are fully idempotent and include robust error handling to prevent partial deployments or misconfigurations.
  - **Enhancement:** Add checks and assertions to playbooks to verify desired state and handle failures gracefully.

## 3.5. Monitoring Configurations (Finflow/infrastructure/monitoring)

#### **Current State:**

• Configurations for Elasticsearch, Fluentd, Grafana, Kubernetes monitoring, and Prometheus.

- **Centralized Logging and SIEM Integration:** While Fluentd and Elasticsearch are present, explicit integration with a SIEM system for security event analysis and correlation is crucial for compliance (SOX, BSA, FFIEC, DORA).
  - Enhancement: Configure Fluentd to forward logs to a SIEM solution (e.g., Splunk, ELK Stack with security features, dedicated SIEM service).
     Implement dashboards and alerts for security-related events.
- **Security Monitoring and Alerting:** Enhance Prometheus and Grafana configurations to include specific security metrics and alerts (e.g., failed login attempts, unauthorized access attempts, unusual network traffic patterns). This is vital for all compliance standards.
  - Enhancement: Define custom Prometheus alerts for security anomalies.
     Create Grafana dashboards to visualize security posture and compliance metrics.
- Audit Logging: Ensure all relevant system and application audit logs are captured, stored securely, and are immutable. This is a core requirement for SOX, BSA, and DORA.
  - **Enhancement:** Configure all services to emit detailed audit logs. Ensure logs are sent to a centralized, tamper-proof logging system (e.g., S3 with WORM, dedicated log management service).

## 3.6. Scripts (Finflow/infrastructure/scripts)

#### **Current State:**

• backup.sh, deploy.sh, monitoring-setup.sh, setup.sh, validate.sh.

- **Security Hardening:** Review all scripts for potential vulnerabilities (e.g., hardcoded credentials, insecure commands). This impacts all compliance standards.
  - Enhancement: Remove hardcoded credentials. Use environment variables or secrets management for sensitive data. Implement error handling and logging within scripts. Ensure scripts follow the principle of least privilege when executed.
- **Automated Security Checks:** Integrate security checks and vulnerability scanning into deployment and validation scripts.

 Enhancement: Add steps to deploy.sh and validate.sh to perform security scans (e.g., static code analysis, image scanning) before and after deployment.

# **4. Proposed Comprehensive Infrastructure Architecture**

Based on the identified gaps and regulatory requirements, the proposed architecture will adopt a defense-in-depth strategy, integrating security and compliance at every layer of the infrastructure. The core principles guiding this architecture are:

- **Zero Trust:** Never trust, always verify. Implement strict authentication and authorization for all access attempts, regardless of origin.
- **Least Privilege:** Grant only the minimum necessary permissions to users, services, and components.
- **Defense in Depth:** Employ multiple layers of security controls to protect data and systems.
- **Automation:** Automate security and compliance checks, deployments, and incident responses.
- **Observability:** Implement comprehensive logging, monitoring, and alerting to detect and respond to security incidents and compliance deviations.
- **Data Protection:** Encrypt data at rest and in transit, and implement robust data backup and recovery mechanisms.
- **Resilience:** Design for high availability and disaster recovery to ensure continuous operation.

#### 4.1. Network Architecture

- VPC Segmentation: A well-defined Virtual Private Cloud (VPC) with isolated public and private subnets across multiple Availability Zones (AZs) for high availability.
  - Public Subnets: Only for public-facing resources like Application Load Balancers (ALBs) and Bastion hosts.

- Private Subnets: For all application servers (EKS nodes), databases (RDS), and internal services.
- **Security Groups:** Granular security groups for each component (ALB, EKS nodes, RDS, Bastion) with strict ingress and egress rules, allowing only necessary traffic.
- **Network Access Control Lists (NACLs):** Stateless packet filtering at the subnet level, acting as a secondary defense layer to security groups.
- AWS PrivateLink/VPC Endpoints: For secure and private communication with AWS services (e.g., S3, Secrets Manager, CloudWatch) without traversing the public internet.
- **Web Application Firewall (WAF):** AWS WAF integrated with ALBs to protect against common web exploits (e.g., SQL injection, cross-site scripting), crucial for PCLDSS.

## 4.2. Compute and Orchestration (EKS/Kubernetes)

- **Hardened EKS Cluster:** Configure EKS with private endpoints, limiting access to the Kubernetes API server. Enable audit logging for the API server.
- **Pod Security Standards (PSS):** Enforce PSS (e.g., restricted profile) to prevent privileged containers and enforce secure pod configurations.
- **Network Policies:** Implement Kubernetes Network Policies to control ingress and egress traffic between pods and namespaces, enforcing microsegmentation.
- Service Mesh (Optional but Recommended): Implement Istio or Linkerd for:
  - Mutual TLS (mTLS): Encrypt all inter-service communication within the cluster.
  - **Traffic Management:** Fine-grained control over traffic routing, retries, and circuit breakers.
  - **Policy Enforcement:** Enforce authorization policies at the service level.
- **Resource Limits and Quotas:** Define CPU and memory limits for all containers and resource quotas for namespaces to ensure fair resource allocation and prevent denial-of-service attacks.
- Image Security: Use ECR for Docker image storage with image scanning enabled. Implement multi-stage builds and minimal base images in Dockerfiles. Integrate image vulnerability scanning into CI/CD.

## 4.3. Data Management (RDS/Databases)

- **Encrypted RDS Instances:** All RDS instances (PostgreSQL, MySQL, etc.) must be encrypted at rest using AWS Key Management Service (KMS).
- TLS/SSL for Connections: Enforce SSL/TLS for all database connections from applications and administrative tools.
- **Network Isolation:** RDS instances deployed in private subnets, accessible only from authorized EKS pods or bastion hosts via security groups.
- Automated Backups and Point-in-Time Recovery: Configure automated backups and enable point-in-time recovery for all databases to meet RPO/RTO objectives and compliance requirements.
- Audit Logging: Enable database audit logging to capture all database activities, including successful and failed logins, data access, and schema changes.
   Integrate these logs with the centralized logging system.

## 4.4. Identity and Access Management (IAM)

- **Least Privilege:** Implement fine-grained IAM roles and policies for all AWS resources, services, and users, adhering strictly to the principle of least privilege.
- IAM Roles for Service Accounts (IRSA): Use IRSA to grant AWS permissions to Kubernetes service accounts, eliminating the need to embed AWS credentials in pods.
- Multi-Factor Authentication (MFA): Enforce MFA for all administrative access to AWS accounts and critical systems.
- **Federated Identity:** Integrate with an identity provider (e.g., AWS SSO, Okta) for centralized user management and single sign-on.
- Access Reviews: Conduct regular access reviews to ensure that permissions remain appropriate and unnecessary access is revoked.

## 4.5. Secrets Management

- **AWS Secrets Manager:** Utilize AWS Secrets Manager for centralized storage and management of all application secrets (database credentials, API keys, etc.).
- **Kubernetes Integration:** Integrate Secrets Manager with Kubernetes using the AWS Secrets Manager CSI driver or a similar external secrets operator to inject

- secrets into pods at runtime securely.
- **Rotation:** Configure automatic rotation of secrets in Secrets Manager to minimize the risk of compromise.

## 4.6. Logging, Monitoring, and Auditing

- Centralized Logging: Aggregate all logs (application logs, system logs, audit logs, network flow logs) into a centralized logging solution, preferably an ELK stack (Elasticsearch, Logstash, Kibana) or a managed service like AWS OpenSearch Service.
  - Fluentd/Fluent Bit: Deploy Fluentd or Fluent Bit as a DaemonSet in Kubernetes to collect logs from pods and forward them to the centralized logging system.
- Audit Trails: Enable AWS CloudTrail for comprehensive API call logging across all AWS services. Configure CloudWatch Logs for system and application logs.
- Security Information and Event Management (SIEM): Integrate the centralized logging system with a SIEM solution (e.g., Splunk, IBM QRadar, or a cloud-native SIEM like AWS Security Hub/GuardDuty with custom integrations) for:
  - **Security Event Correlation:** Correlate security events from various sources to detect complex threats.
  - **Threat Detection:** Utilize threat intelligence feeds and behavioral analytics to identify suspicious activities.
  - **Incident Response:** Facilitate rapid incident detection, analysis, and response.

## • Monitoring and Alerting:

- **Prometheus & Grafana:** Continue using Prometheus for metrics collection and Grafana for visualization.
- Enhanced Alerts: Configure Prometheus Alertmanager with comprehensive alerts for security incidents (e.g., failed login attempts, unauthorized access, unusual network traffic, configuration drifts, resource exhaustion) and compliance deviations.
- CloudWatch Alarms: Set up CloudWatch Alarms for critical AWS service metrics and logs.

## • Vulnerability Management:

- AWS Inspector: Automate vulnerability scanning for EC2 instances and container images.
- **Container Image Scanning:** Enable ECR image scanning and integrate it into the CI/CD pipeline.
- Regular Penetration Testing: Conduct regular penetration tests and vulnerability assessments by third parties.

## 4.7. CI/CD and Automation

- Secure CI/CD Pipeline: Implement a secure CI/CD pipeline (e.g., AWS CodePipeline, Jenkins with security plugins) that incorporates security checks at every stage.
  - Static Application Security Testing (SAST): Integrate SAST tools (e.g., SonarQube) to analyze source code for vulnerabilities.
  - **Dynamic Application Security Testing (DAST):** Integrate DAST tools to scan running applications for vulnerabilities.
  - **Container Image Scanning:** Scan Docker images for vulnerabilities before pushing to ECR and before deployment.
  - Infrastructure as Code (IaC) Scanning: Use tools like Checkov or Terrascan to scan Terraform configurations for security misconfigurations and compliance violations.
  - Automated Testing: Implement comprehensive unit, integration, and endto-end tests.
- **Immutable Infrastructure:** Deploy immutable infrastructure components, where changes are made by deploying new versions rather than modifying existing ones.
- Automated Compliance Checks: Integrate compliance-as-code tools (e.g., AWS Config Rules, Open Policy Agent) to continuously monitor and enforce compliance policies.

#### 4.8. Data Protection and Resilience

• **Backup and Recovery:** Implement automated, regular backups of all critical data (databases, configuration files, logs) to secure, offsite locations (e.g., S3 with versioning and replication).

- **Disaster Recovery (DR):** Develop and regularly test a disaster recovery plan, including cross-region replication for critical data and services.
- **Data Residency:** Ensure data is stored and processed in compliance with data residency requirements (e.g., GDPR, UK-GDPR) by selecting appropriate AWS regions.
- **Data Masking/Tokenization:** For non-production environments, implement data masking or tokenization for sensitive data to reduce exposure.

## 5. Implementation Strategy

The implementation will follow a phased approach, prioritizing critical security and compliance enhancements.

#### 1. Phase 1: Foundational Security (Terraform & IAM)

- Harden VPC and network configurations.
- Implement least privilege IAM roles and policies.
- Integrate AWS Secrets Manager.
- Enable comprehensive encryption for data at rest and in transit.

## 2. Phase 2: Application and Orchestration Security (Docker & Kubernetes)

- Harden Docker images with multi-stage builds and non-root users.
- o Implement Kubernetes Network Policies and Pod Security Standards.
- o Integrate external secrets management with Kubernetes.
- Consider service mesh implementation.

## 3. Phase 3: Observability and Compliance (Monitoring & Auditing)

- Set up centralized logging and SIEM integration.
- Enhance security monitoring and alerting.
- Implement compliance-as-code checks.

## 4. Phase 4: Secure CI/CD and Operational Resilience

o Build secure CI/CD pipelines with integrated security testing.

- Refine Ansible playbooks for secure configuration management.
- Develop and test disaster recovery plans.

## 6. Conclusion

This comprehensive infrastructure architecture design provides a roadmap for transforming Finflow's infrastructure into a highly secure, compliant, and resilient environment. By systematically addressing the identified gaps and implementing industry best practices, Finflow can confidently meet financial regulatory standards, protect sensitive data, and ensure business continuity. This robust foundation will enable Finflow to scale securely and maintain trust with its customers and stakeholders.

## 7. References

- [1] Top 9 Cybersecurity Regulations for Financial Services UpGuard. (n.d.). Retrieved from <a href="https://www.upguard.com/blog/cybersecurity-regulations-financial-industry">https://www.upguard.com/blog/cybersecurity-regulations-financial-industry</a>
- [2] Cybersecurity Regulations for Financial Services in 2024 and Beyond HYPR. (2024, October 14). Retrieved from <a href="https://blog.hypr.com/top-financial-services-cybersecurity-regulations">https://blog.hypr.com/top-financial-services-cybersecurity-regulations</a>
- [3] The Top Compliance Regulations for Financial Institutions Arctic Wolf. (n.d.). Retrieved from <a href="https://arcticwolf.com/blog/a-simplified-regulatory-checklist-for-financial-institutions/">https://arcticwolf.com/blog/a-simplified-regulatory-checklist-for-financial-institutions/</a>
- [4] 11 Cyber-Security Compliance Regulations for Financial Services Metomic. (2025, April 30). Retrieved from <a href="https://www.metomic.io/resource-centre/financial-services-compliance-regulations">https://www.metomic.io/resource-centre/financial-services-compliance-regulations</a>
- [5] Security, Compliance, and Governance for Financial Services AWS. (n.d.). Retrieved from <a href="https://aws.amazon.com/financial-services/security-compliance/">https://aws.amazon.com/financial-services/security-compliance/</a>
- [6] Cyber Security Compliance Regulations for Financial Services Check Point. (n.d.). Retrieved from <a href="https://www.checkpoint.com/cyber-hub/cyber-security/cyber-security-compliance-regulations-for-financial-services/">https://www.checkpoint.com/cyber-hub/cyber-security/cyber-security-compliance-regulations-for-financial-services/</a>

- [7] Financial Services Compliance: How To Meet Data Regulations Sonrai Security. (2023, June 20). Retrieved from <a href="https://sonraisecurity.com/blog/financial-services-compliance-regulations-best-practices-strategy/">https://sonraisecurity.com/blog/financial-services-compliance-regulations-best-practices-strategy/</a>
- [8] Payment Card Data Security Standards (PCI DSS). (n.d.). Retrieved from <a href="https://www.pcisecuritystandards.org/standards/">https://www.pcisecuritystandards.org/standards/</a>
- [9] How to manage compliance at a Fintech company Escape.tech. (2025, March 12). Retrieved from <a href="https://escape.tech/blog/how-to-maintain-security-compliance-at-a-fintech/">https://escape.tech/blog/how-to-maintain-security-compliance-at-a-fintech/</a>
- [10] Gaining Control of Financial Services Cybersecurity Regulations Fortra. (n.d.). Retrieved from <a href="https://www.fortra.com/resources/guides/gaining-control-of-financial-services-cybersecurity-regulations">https://www.fortra.com/resources/guides/gaining-control-of-financial-services-cybersecurity-regulations</a>