

Reference Architectures and Protocols

Reference Architectures

1. Open Banking Architecture (PSD2/Open Banking UK)

- Multi-party API ecosystem with regulated third-party access
- Strong Customer Authentication (SCA) requirements
- Consent management and delegation frameworks
- Similar to MCP server federation approach

2. FIDO Alliance Authentication Framework

- Biometric authentication standards (FIDO2/WebAuthn)
- Hardware security key integration
- Matches CallSign biometric authentication layer

3. OAuth 2.0 / OpenID Connect

- Token-based authorization with time-limited access
- Delegation and consent management
- 15-minute TTL tokens follow OAuth patterns

Relevant Protocols

1. Model Context Protocol (MCP)

- Standardizes tool discovery and execution
- Bank/E-commerce MCP servers follow this specification

2. Payment Card Industry (PCI) Standards

- **PCI DSS**: Data security for card processing
- **3D Secure 2.0**: Strong authentication for CNP transactions
- **EMV 3DS**: Biometric authentication as SCA method

3. ISO 20022 Financial Messaging

- Standard for financial message formats
- Could standardize agent-to-agent payment messages
- Used in real-time payment systems globally

4. W3C Payment Request API

- Browser-based payment standardization
- Similar to Google Payment Protocol integration
- Supports multiple payment methods and authentication

Security Frameworks

1. NIST Cybersecurity Framework

- Risk management and authentication controls
- Aligns with HSM and biometric security layers

2. Zero Trust Architecture (NIST SP 800-207)

- "Never trust, always verify" principle
- Matches continuous authentication approach

3. SWIFT Customer Security Programme (CSP)

- Multi-factor authentication requirements
- Secure messaging between financial institutions
- Relevant for bank-to-merchant communications

Mobile Security Standards

1. OWASP Mobile Security

- Secure storage in device enclaves
- Runtime application self-protection
- Matches SQLCipher and secure enclave usage

2. Common Criteria (ISO 15408)

- Security evaluation for HSMs and mobile platforms
- Certification framework for CallSign SDK integration