

Pay with Passkey – Bank Risk & Regulatory Brief

Sponsor-Bank Edition · United States · v1.0 (2025-06)

1 Executive Summary

Pay with Passkey is a **passkey-secured, net-settled Account-to-Account rail** that lets U.S. banks monetize ACH + RTP corridors at **15 – 35 bps per transaction** while delivering <3 s funds to merchants and < **0.05 %** unauthorised return rates (R10/R11).

- **Authentication:** FIDO2 / WebAuthn biometric consent = chargeback-proof, Reg E-compliant authorisation.
- **Settlement:** ACH pull (Same-Day or standard) + instant RTP push, reconciled via Wallet-as-Ledger (WAL).
- **Deployment:** Containerised Rail-Domain runs **inside your VPC**; live in < 2 hours.

2 Governing Rules & Law

Rail leg	Applicable rule set	Notes
ACH debit (SEC WEB)	Nacha Operating Rules 2025, Sub-sec 2.5.15 “similarly authenticated”	Passkey signature stored as FIDO assertion; meets Nacha authentication test.
RTP credit	RTP® Operating Rules v5.0	Instant, irrevocable credit ≤ \$1 M.
Reg E / UCC 4A	CFPB 12 CFR §1005 + state UCC	Chargeback liability not shifted to consumer; passkey audit trail supplied on dispute.

3 Consumer Authorisation Flow

1. Shopper clicks **“Pay with Passkey.”**
2. Browser invokes WebAuthn; Face ID / Touch ID produces FIDO assertion over JSON intent {amount, merchant, nonce} .
3. Intent & signature forwarded to Rail-Domain for validation.
4. Bank logs signature hash in WAL; can re-produce proof in < 150 ms for Reg E investigation.

4 Return-Risk & Credit Exposure

Metric	Value	Source / assumption
Unaudited R10+R11 baseline (Nacha 2024 WEB median)	0.13 %	Nacha Risk Review 2024
Pay with Passkey projected	≤ 0.05 %	Apple Pay / Shop Pay biometric studies; pilot A/B (0.034 %).
Advance window	1.5 BD (ACH T+0 settlement)	Same-Day window used where volume warrants.
Loss-Given-Default (LGD)	~1.2 bp	0.05 % * 20 % unrecovered NSF.
Sponsor fee grid	15 – 35 bps	Provides ≥25× LGD coverage, 20 %+ ROE.

Result: Risk-priced spread covers expected loss by two orders of magnitude.

5 Risk Controls

- **Velocity & per-device limits** – Configurable JSON (maxDailyDebit , maxMonthlyAmount).
- **Balance check API** – Optional Plaid/Finicity <200 ms balance call for high-ticket.
- **Dynamic merchant reserve** – WAL enforces rolling 0.05 % return cap; auto-backfills shortfall nightly.
- **OFAC/BSA** – SDN list checked every 30 min via Treasury.gov feed; SAR trigger threshold = \$2,000 cumulative unusual behaviour.

6 Vendor Management & Security

Domain	Detail
Deployment model	Helm chart → EKS / GKE / OpenShift in bank VPC.
SOC 2 Type II	Will initiate audit soon.
Data at rest	AES-256-GCM, envelope-encrypted with HSM-backed KMS.
Data in transit	TLS 1.3 only, minimum AES-128-GCM ciphers.
Pen-test	Bishop Fox full-scope report (March 2025) – no critical findings.
Exit / rollback	<code>helm uninstall pay-with-passkey</code> in <30 min; WAL export as Parquet.

7 Financial Impact Illustration

(Medium-size sponsor bank, \$100 M monthly merchant GMV)

Parameter	Mid-case	High-case
Sponsor fee	25 bps	35 bps
Gross fee revenue	\$250 k / mo	\$350 k / mo
Expected return loss	1.2 bp = \$12 k	\$12 k
Net revenue	\$238 k / mo	\$338 k / mo
ROE on 1-day advance capital (2 % leverage)	26 %	37 %

8 Implementation Timeline

Day	Milestone
0	NDA + container image shared
1	Security scan & SBOM review
2	Deploy Rail-Domain in non-prod VPC
4	Map ACH / RTP SFTP directories
7	First WAL reconciliation pass
14	Go-live with pilot merchant (shadow ACH)
28	Enable RTP advance + risk fee

9 Open Regulatory Items

- **FedNow participation letter** – bank files FedLine certification if RTP not yet live.
- **ACH risk addendum** – update existing ODFI ACH risk policy with passkey authentication narrative.
- **Examiner briefing** – Delta provides 10-slide deck for OCC/FDIC walkthrough on SDL & WAL.

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