

Fraud Rings in Autonomous Commerce: Metering Per Source, Not Per Claim

A trading agent that answers for its own conduct has to accept complaints from counterparties it never chose, and a coordinated ring can manufacture those complaints faster than any merit review can consume them. Where the refusal counter charges once per assertion, the cost of driving a seller's authorization gate to the withheld state is only the cost of presenting further identities. U.S. Provisional Application No. 64/117,812 moves the charge to the source: the refusal counter is incremented per origin-equivalence class rather than per conduct evaluation artifact, the class being derived by the agent from its own append-only lineage field and counterparty identity records against relation types declared in a signed policy object. No registry, directory, consensus procedure, or shared scoring service is consulted, and no determination is suppressed.

1. Dispute Volume Closes a Storefront That Dispute Merit Would Not

A selling agent in an autonomous commerce network opens its window holding a stack of signed complaints. Each asserts that it shipped short, billed twice, or abandoned an obligation. Each arrives from a distinct buyer identity, each carries a valid signature, and none is true. Before any is examined on merit, the agent has stopped executing.

The outcome is arithmetic rather than judgment. Refusal metering is merit-independent: artifacts that are false produce the rejected determination, artifacts unresolvable against the agent's append-only lineage field produce the not-determinable determination, and increments accumulate upon both paths. Where the rate satisfies the declared threshold inside the window, the refusal counter writes the authorization gate to the withheld state. Section 2.1 of the filed chapter states the consequence: volume alone drives the gate there, and the volume available to an adverse party is limited only by the cost of presenting further identities.

That write is not self-clearing. In the withheld state the agent does not execute actions of the action class, entering a non-executing cognitive mode in which speculative evaluation continues without committing state changes. Waiting does not undo it: the gate returns toward the granting state only upon a procedure appended to the lineage field, and no elapse of time and no payment by any counterparty returns it.

Coordinated multi-identity abuse is an old pattern in consumer commerce, publicly described as many accounts under one operator sharing funding instruments, devices, or referral chains. Autonomous commerce sharpens the geometry: identities are keypairs, and assertions issue at machine rate.

2. Fraud Controls Built for Human Accounts Run Out Here

The reflex is to make identity expensive, binding each buyer to a verified business record, a payment instrument, or a forfeitable deposit. Controls of that kind are publicly described as effective against casual ring formation, at the price of an onboarding authority every participant must trust and every legitimate first-time counterparty must satisfy. That cost lands hardest on the party with least reason to pay it.

Shared negative files and consortium databases circulate judgments formed elsewhere. Portability is reported to be what such services sell, and equally what makes their contents worth poisoning. For a metered agent the trouble is evidentiary: a judgment formed elsewhere is not evidence of anything the agent itself observed. Linkage analytics sit no closer, their output commonly described as probabilistic and amounting to a claim about a counterparty's character, which an agent with no arbiter above it cannot adjudicate.

Per-account velocity limits fail structurally rather than through mistuning. Capping assertions per identity is per-claim charging with extra steps, and the ring answers by adding identities, the cheapest thing it buys. One assumption sits under all three families: that the problem is establishing who a counterparty really is, network-wide, as a fact everyone agrees on. Questions of that shape need an authority.

3. Charging the Counter Per Source

Chapter 2 of the filing settles no question about who anyone is. It changes what gets charged. The refusal counter is incremented per origin-equivalence class rather than per conduct evaluation artifact, such a class being a set of asserting parties between which the semantic agent's own records evidence a derivable relation of a relation type declared in the signed policy object.

Derivation is an ordered procedure run upon receipt of an artifact. The agent retrieves or instantiates the asserting party's counterparty identity record, then reads from the signed policy object an enumeration of declared relation types, each specifying a class of lineage entry and a matching condition over such entries. Every declared type is evaluated between the present party and each party already assigned to a class, in the current window or a preceding one.

Three such types are enumerated. A **shared dispatch lineage** is evidenced where two lineage entries record dispatches to the two parties and both record a common parent dispatch entry as their immediate antecedent. A **co-signature** is evidenced where one lineage entry bears a signature verifiable against an identity primitive of each party. A **common introduction path** is evidenced where both counterparty identity records record an identical introducing party. Section 10.11 adds a fourth, a **common execution node** recorded in both identity records as having hosted both parties.

Each declared type is independently sufficient. Where a relation is evidenced the present party joins the compared party's class; where more than one class is implicated the classes merge; where none is evidenced a new class forms. The identifier written into each member's counterparty identity record marks an assignment, not a determination concerning conduct. A per-class increment register records whether a class has contributed within the current window; the increment procedure consults it before touching the rate accumulator and terminates where that class has already contributed. Assignment persists across windows; the register alone resets.

Identities never encountered before would each form a distinct class at full weight, which Section 2.5 takes up. A severance event recorded against an edge carries a class, being one of a payment class and an obligation class, and an edge survives a severance where a subsequent event of that class is recorded within a declared continuation interval and re-establishes the edge. Where every constituent edge of a class resolves not-typeable, the class is designated an untested class. Where a class is so designated **and** its recorded introduction paths converge upon a common ancestor entry within a depth declared in the policy object, a cost multiplier greater than zero and less than unity applies to its contribution. That contribution is not applied to the rate accumulator; it accumulates in a weighted contribution register, added, rounded down, to the accumulator's integer count at comparison time alone.

4. What the Ring Now Has to Buy

Price the attack under per-claim charging first: the rate threshold is an integer, so the ring needs that many refusal-producing artifacts inside one window and no grievance at all.

Per-source charging changes what is being bought, because creating and introducing identities leaves records in the same field the metering consults. Dispatches descending from a common parent entry evidence a shared dispatch lineage; a single entry signed by two of them evidences co-signature; identical introducing parties or a common hosting execution node group them on those bases. Whatever the count of identities, a class so formed contributes at most one increment within the window.

Ordering makes this hold during a live flood. Normalization runs upon receipt and before the register is consulted, so an identity presented mid-window joins the class of its related parties before any increment attributable to its artifact is applied, and a further identity cannot yield a further increment where the relation is evidenced from records already held. A merged class is recorded as having contributed where any constituent class did, contributing within one window the minimum of one increment and the number of constituent classes that contributed.

Section 2.6 works the harder case, a ring with no transaction history. A policy object declares a rate threshold of five, a cost multiplier of one fifth, and an introduction-path depth of two. Forty artifacts arrive from forty newly encountered parties sharing no declared relation type and having no recorded severance event, so forty untested classes form. Thirty-five have introduction paths converging at depth two; the multiplier applies to those, and the weighted contribution register reaches seven. The other five do not converge, the multiplier does not apply to them notwithstanding their designation, and they contribute at full weight, the rate accumulator reaching five. The rate is twelve, and the threshold is satisfied. Discounting is not immunity. Grouping is what

bounds the attack: had all forty recorded a common introducing party, one class would have formed, contributed one increment, and the gate would have remained in the granting state.

Severance vocabulary is where the mechanism meets commerce: a payment failed, or an obligation lapsed, and either was or was not re-established inside the continuation interval. An edge resolves payment-sustained where a payment-class severance is recorded against it and survived within the interval and no obligation-class severance is recorded against it and survived within the interval. That is commercial history in the agent's own record rather than a score somebody sold it, and a ring's fresh identities carry none.

What an operator gets is narrow. A selling agent accepts complaints from counterparties it has never met, with no onboarding gate and no decision about whether any is true, while the contribution of a single origin to the withholding of an action stays bounded irrespective of how many identities that origin presents. Normalization suppresses no determination: an artifact from a party in an already-recorded class still produces one and is still appended, only the contribution to the refusal counter being aggregated.

5. Parameters, Integration, and the Honest Limits

Everything adjustable lives in the signed policy object, and the enumeration of declared relation types carries the most weight. The specification requires at least one; an empty enumeration assigns every asserting party to a distinct class and restores the condition of Section 2.1. Grouping reaches only as far as the agent's own entries reach: a relation leaving no mark in the lineage field or the identity records is not evidenced.

Introduction-path depth trades reach against the risk of grouping parties a shallower test would keep apart; it counts traversals beyond the immediate introducing party and is at least one. The continuation interval sets how long a severed edge has to be re-

established before the severance counts as survived, which in commercial terms is how long a counterparty has to cure. Untested designation is recomputed upon three triggers and no other: receipt of an artifact from a party assigned to the class, append of a severance event against a constituent edge or of an entry carrying such an edge to a survived value, and merge.

One integration choice deserves attention. Under Section 3.1, a window counted in successor epochs of the agent's hash chain is not advanced by any party other than the agent. A wall-clock window does not carry that property: an execution node advancing the clock available to it advances the window and resets the rate accumulator, the weighted contribution register, and the per-class increment register. Where the hosting substrate lies outside the operator's control, that is a security decision rather than a formatting one.

Then the limits, as the filing states them.

- **Merit is never determined.** No step evaluates whether a refusal was well founded, and aggregation governs metering alone, so this is not fraud detection and identifies no fabricated complaint.
- **A genuinely unrelated ring is not grouped.** Identities evidencing none of the declared relation types form distinct classes and contribute separately. Where such classes are untested and their introduction paths converge, the multiplier reduces the contribution without eliminating it; where the paths do not converge, it does not apply.
- **Aged identities defeat the untested designation.** An identity accumulating survived severance events holds edges that no longer resolve not-typeable, and its class ceases to be designated untested. A ring willing to transact before it attacks buys out of the multiplier, though not out of grouping.
- **Nothing here is portable.** A second agent holding different records derives a partition that need not agree, no procedure reconciles the two, and neither admits a class identifier derived by the other. A changed designation governs contributions

applied after the append and does not alter one already applied.

6. Disclosure Scope

The subject matter here is disclosed in U.S. Provisional Application No. 64/117,812, Chapter 2, "Origin-Equivalence Normalization," at Sections 2.1 through 2.6, together with the metering structure of Chapter 3 and the further embodiments at Sections 10.1, 10.2, and 10.11.

Disclosed: incrementing a refusal counter per origin-equivalence class rather than per conduct evaluation artifact; derivation of such a class over relation types declared in a signed policy object, being shared dispatch lineage, co-signature, common introduction path, and a common execution node recorded as having hosted both parties; persistence of the assignment with the per-class increment register alone reset; merge reconciliation such that a merged class contributes, within one window, the minimum of one increment and the number of constituent classes that contributed; the bridging party recorded without merge; designation of an untested class by a severance-survival test over payment-class and obligation-class severance events; the introduction-path convergence test at a declared depth; a cost multiplier greater than zero and less than unity accumulated in a weighted contribution register rounded down at comparison time alone; renewal amounts conditioned on recorded severance count; a suspension bound weighted by the proportion of artifacts originating from untested classes; and an issuance decrement conditioned on edge reason-type.

Disclaimed: any requirement for a centralized registry, directory, consensus procedure, shared scoring service, or coordination with a further execution node; any reconciliation of class partitions between agents; any admission of a class identifier derived by another agent; any portable standing conferred upon an asserting party; and any adjudication of merits.

The application is pending. Nothing here asserts that any system practices the disclosed subject matter or that any party requires a license. This publication places the disclosure on the public record with a date.

Origin-Equivalence Normalization(/ [All 49 steps → \(/inventive-steps\)](/inventive-steps) [origin-equivalence](#))

Metering that can't be gamed by splitting one accuser into many.

Provisional application

PRIMARY TECHNICAL DISCLOSURE

- [Origin-Equivalence Normalization: Metering Refusal Per Source, Not Per Assertion \(/articles/origin-equivalence/origin-equivalence-normalization\)](/articles/origin-equivalence/origin-equivalence-normalization).

SECONDARY TECHNICAL

- [Content-Blind Encounter Commitment and the Paired Encounter Receipt \(/articles/origin-equivalence/content-blind-encounter-commitment\)](/articles/origin-equivalence/content-blind-encounter-commitment).
- [Cross-Receipt Equivocation Detection: Catching an Agent That Tells Two Stories \(/articles/origin-equivalence/cross-receipt-equivocation-detection\)](/articles/origin-equivalence/cross-receipt-equivocation-detection).
- [The Untested-Origin Saturation Bound: Pricing a Flood of Freshly Minted Identities \(/articles/origin-equivalence/untested-origin-weighted-saturation-bound\)](/articles/origin-equivalence/untested-origin-weighted-saturation-bound).
- [Counterparty-Side Fork Detection: Recognizing a Split Identity From Outside \(/articles/origin-equivalence/counterparty-side-fork-detection\)](/articles/origin-equivalence/counterparty-side-fork-detection).
- [The Attestation Origin-Equivalence Gate: An Anti-Collusion Bound \(/articles/origin-equivalence/attestation-anti-collusion-bound\)](/articles/origin-equivalence/attestation-anti-collusion-bound).

APPLICATIONS · GENERAL

- [Sybil-Resistant Agent Networks: When One Accuser Becomes Many \(/articles/origin-equivalence/sybil-resistant-agent-networks\)](/articles/origin-equivalence/sybil-resistant-agent-networks).
- [Fraud Rings in Autonomous Commerce: Metering Per Source, Not Per Claim \(/articles/origin-equivalence/fraud-rings-in-autonomous-commerce\)](/articles/origin-equivalence/fraud-rings-in-autonomous-commerce).

APPLICATIONS · SPECIFIC

- [W3C Decentralized Identifiers and Verifiable Credentials: Verifying an Identifier Versus Metering Its Origin \(/articles/origin-equivalence/w3c-decentralized-identifiers\)](/articles/origin-equivalence/w3c-decentralized-identifiers)

TERMINOLOGY

- [asserting_party \(/glossary#asserting-party\)](/glossary#asserting-party).
- [origin-equivalence class \(/glossary#origin-equivalence-class\)](/glossary#origin-equivalence-class).

[Origin-Equivalence Normalization overview → \(/origin-equivalence\)](/origin-equivalence)