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Counterparty-Side Fork Detection: Recognizing a Split Identity From Outside

Counterparty-side fork detection is the outward-facing half of fork-, clone-, and reconstitution-resistant governance inheritance, disclosed in U.S. Provisional Application No. 64/117,812 at Section 10.10, paragraph [0477]. Inheritance binds a descendant agent at its own governed transitions. A party on the receiving end works from different material: it holds one recorded epoch identifier for the sending party, and two branches of a fork can each present a valid successor of that one epoch. Paragraph [0477] recites what the receiver does with the pair. It appends a lineage-discontinuity record, thereafter treats each presenting party as presenting the common parent's refusal-counter floor, and declines to advance the locally retained slope position for either until exactly one successor is corroborated. Neither presenting party is denied on the ground of the discontinuity alone.

1. What Inheritance Leaves Open

Paragraph [0475] of Section 10.10 names four attributes bound to descendants: the refusal counter (304), the withheld state (310) of the authorization gate (300), a renewal register that counts origin-equivalence classes (200) toward renewal of an authorization quantity, and a recurrence count. Across every fork, every clone, and every reconstitution of the semantic agent (100), each descendant inherits those parent

values as a refusal-counter floor under a monotonically non-decreasing discipline, the gate state being inherited per action class. Before any event creating a descendant, an inheritance evaluation determines the constraints that must persist; a descendant presenting a floor lower than its successor chain implies is inadmissible, every governed action it proposes denied as an unresolved lineage discontinuity. The recited result is that a semantic agent (100) cannot shed an accumulated refusal history, a withheld gate, or a recurrence record by forking, cloning, migrating, or reconstituting itself.

Paragraph [0476] gives the floor a carrier. The inherited governance record is held within the memory field (102) and appended to the append-only lineage field (104) upon each event creating a descendant, and the descendant presents it upon each governed transition. Because the parent signs the record and it is bound to a parent epoch identifier, a descendant cannot author a floor its successor chain does not imply.

Both operate at the descendant. A counterparty works from different material: it holds a counterparty identity record (114) of the sending party carrying one recorded epoch identifier of that party's dynamic agent hash chain, and tests a presented identifier under the successor-continuity test of Section 1, which recomputes the digest chain from the recorded entry forward and tests the recomputed identifier for equality, and not for distance, against the presented identifier. Two branches of a fork can each present a valid successor of that one recorded epoch. Validity is assessed per presentation; the condition paragraph [0477] names is the pair.

The receiving party also has no external place to send the question. The filing recites the conduct evaluation artifact (116) as arriving over the agent's ordinary interaction channel with no centralized intake service required, and recites origin-equivalence class (200) derivation as performed upon the agent's own records without reference to a centralized registry, without query to a directory, without participation in a consensus procedure, and without coordination with a further execution node. Nor is a hedged

output available: the admission evaluator (120) produces exactly one determination from a closed set of four classes, and produces no scalar confidence, no probability, and no graded weight in place of a determination.

2. How the Receiving Party Responds

Paragraph [0477] recites that a receiving party consumes the inherited governance record as a detection of a fork from the other side. It recites a trigger, a record, two consequences, and two limitations.

The trigger. A receiving party holding a counterparty identity record (114) of a sending party observes two distinct valid successors of a single epoch identifier recorded for that party. Both presentation topologies are recited and carry the same consequence: the same party across successive messages, or two parties each presenting a valid successor of the same recorded epoch. Nothing relaxes validity. Under Section 1, each epoch of a dynamic agent hash chain appends an entry committing to the immediately prior entry by a cryptographic digest, so the chain advances one epoch per committed entry and any divergence at an entry yields a divergent successor.

The record. The receiving party appends to its append-only lineage field (104) a lineage-discontinuity record comprising the recorded epoch identifier of which both are successors, both presented successor epoch identifiers, the identifiers of the presenting parties, and the recorded times of presentation. That field admits no deletion and no modification of an appended entry relied upon by the mechanisms of the disclosure. The enumerated contents name epochs, parties, and times, and designate no presentation as authentic.

Attribution of the floor to the common parent. Thereafter the receiving party treats each presenting party as presenting the refusal-counter floor recorded in the inherited governance record of the common parent, and admits no governed transition of either presenting party upon a floor lower than that floor. Paragraph [0476] fixes

how that comparison runs, member by member: counter value and recurrence count are scalars compared directly; gate states are ordered by restrictiveness, with the withheld state (310) most restrictive, so at or above requires a gate state at least as restrictive as the recorded one; and register contents are satisfied only where the set of origin-equivalence classes (200) counted toward renewal is a superset of the recorded set, and not by a bare count of that set. Whatever the parent's record carries therefore governs each presenting party at this receiver.

The slope position stops advancing. The receiving party declines to advance the locally retained slope position for either presenting party beyond the recorded epoch, until exactly one presented successor is corroborated by a further presentation carrying an inherited governance record consistent with the common parent. A slope position held in a counterparty identity record (114) is a reference point elsewhere: under Section 10.4, a third semantic agent (100) verifying a presented encounter receipt requires, as the second of three conjuncts, that each carried epoch identifier be a validated successor of a prior slope position it holds. Paragraph [0477] states one release condition, corroboration of exactly one successor, and no interval, retry count, or expiry.

What the paragraph forbids. Two negative limitations are recited. Neither presenting party is denied on the ground of the discontinuity alone, and the not-determinable determination (126) is produced where the discontinuity prevents resolution.

3. Operating Parameters

The filed disclosure declares the following, and no more.

- **Trigger arity.** Two distinct valid successors of one recorded epoch identifier, under either presentation topology.

- **Continuity test.** The successor-continuity test recomputes the digest chain from the recorded entry forward and tests the recomputed identifier for equality, and not for distance, against the presented identifier.
- **Lineage-discontinuity record contents.** The recorded epoch identifier of which both are successors; both presented successor epoch identifiers; the identifiers of the presenting parties; the recorded times of presentation.
- **Inherited governance record contents.** Parent epoch identifier; successor index of the descendant within the parent's successor chain; refusal counter (304) value; authorization gate (300) state per action class including any withheld state (310); renewal register contents; recurrence count; parent signature over the foregoing.
- **Comparison semantics.** Counter value and recurrence count are scalars compared directly. Gate states are ordered by restrictiveness, withheld (310) most restrictive, provisional granting next, granting least. Register contents are satisfied only by a superset of the recorded set of origin-equivalence classes (200), and not by a bare count.
- **Release condition.** Exactly one presented successor corroborated by a further presentation carrying an inherited governance record consistent with the common parent.
- **Outcome vocabulary.** Exactly one determination from the closed set of accepted (122), rejected (124), not-determinable (126), and not-applicable (128), with no scalar confidence, probability, or graded weight.

No numeric threshold, window length, or latency bound is recited for the detection; the quantities enforced are those carried in the common parent's record.

4. Where It Sits in the Filing

Paragraphs [0475] and [0476] act at the descendant; paragraph [0477] acts at a party the descendant transacts with, over records that party already holds.

Downward, the mechanism rests on the identity substrate. The counterparty identity record (114) is where the recorded epoch identifier, the slope position, and encounter attestations live, and it is also material over which origin-equivalence class (200) derivation runs. Section 2 charges the refusal counter (304) per source of assertion rather than per assertion, assigning asserting parties (118) to a common class where a declared relation type is evidenced from the agent's own records: a shared dispatch lineage (202), a co-signature (204), or a common introduction path (206). That section addresses many identities presented by one origin; Section 10.10 addresses one identity continuing as two.

Sideways, the paragraph has a sibling in the encounter-receipt material. Paragraph [0384] recites cross-receipt equivocation detection, in which a third semantic agent (100) finds two encounter attestations it holds recording an identical pair of identity primitives, an identical pair of epoch identifiers, and an identical scope-partition identifier yet naming different determination classes. That detection is stated to run entirely over material the verifier already holds, without registry, directory, or coordination with any other execution node, and to append nothing adverse to any party beyond ceasing consumption.

Upward, the discontinuity reaches cognitive state. Under paragraph [0479], an appended lineage-discontinuity record naming a counterparty is one of the enumerated state changes a cross-agent coupling function consumes, alongside an accepted determination (122) or a rejected determination (124) recorded against that counterparty and a persistence designation change of its record. The function computes an update to a cognitive domain field of the same agent, deterministically from that state change and the field's current value, the scoped integrity vector (106) and the self-esteem aggregate (108) each being such a field, under coefficients declared in the signed policy object (112) in force, and no field is updated in isolation. Where two agents are co-resident at an execution node, each applies the function only to a state change it has itself recorded, and no quantity is aggregated across the two into a stored score of any counterparty.

Underneath sits the carried substrate of Section 1.1: the agent holds its memory field (102) and append-only lineage field (104), and a stateless hosting node validates state transitions without retaining authority over that state.

5. Prior-Art Distinction

Revocation and key-compromise infrastructure. Revocation lists, status responders, and key-compromise reporting answer a duplicated credential by terminating its validity, the answer published by an issuing or status authority. Paragraph [0477] recites no issuer and no publication. Its consequences are a floor attributed from the common parent, a held slope position, and a not-determinable determination (126) where the discontinuity prevents resolution.

Transparency logs and split-view detection. Append-only log ecosystems surface equivocation by comparing signed views across monitors and auditors, so detection depends on parties exchanging views and the finding is meant to become global. Here the record is appended to the receiving party's own lineage field (104), and the filing recites no transmission of it. The origin-equivalence class (200) is likewise local to the agent that derived it, no class identifier passing between agents.

Consensus equivocation handling and double spending. Byzantine-fault-tolerant protocols, fork-choice rules, slashing designs, and double-spend detection resolve competing histories to one canonical chain through a validator set or shared ledger, invalidating the losing branch and penalizing the equivocator. Paragraph [0477] selects no canonical successor and invalidates neither presented successor. Both are recorded in the lineage-discontinuity record, both are held to the parent's floor, and neither party is denied on the ground of the discontinuity alone.

Sybil resistance and reputation scoring. Identity-binding schemes resolve identities against a shared registry, a scarce resource, or a coordinating authority, and commonly emit a portable score. The origin-equivalence class (200) of this filing is

computed by the agent from its own records, is not transmitted, and confers no portable standing. In the fork case the governing quantity is a floor recorded in the parent's own signed record.

Platform-side clone and rollback detection. Hypervisor clone detection, monotonic hardware counters, and attestation-based rollback protection observe duplication or state regression from the position of a host or a trusted module, and respond by halting a workload or refusing attestation. Here the governance attributes are carried within the agent's own memory field (102) and lineage field (104), the hosting node validates transitions without retaining authority over that state, and the observer is a counterparty holding a counterparty identity record (114).

6. Disclosure Scope

The mechanism described here is disclosed in U.S. Provisional Application No. 64/117,812, at Section 10.10, "Fork-, clone-, and reconstitution-resistant governance inheritance," paragraph [0477], with its predicate constructions at paragraphs [0475] and [0476] and its coupling into cognitive state at paragraph [0479]. Reference numerals above are those of that filing.

What is disclosed is the recited structure: consumption of the inherited governance record by a receiving party as a detection of a fork from the other side; the trigger of two distinct valid successors of one recorded epoch identifier under either presentation topology; the enumerated contents of the lineage-discontinuity record; attribution of the common parent's refusal-counter floor to each presenting party and the bar on a governed transition below that floor; the hold on the locally retained slope position until exactly one presented successor is corroborated; and the two limitations recited at the close of the paragraph.

Paragraph [0475] states that the non-decreasing floor over a fork, clone, migration, or reconstitution event is an embodiment of that disclosure and does not disclaim, and is without prejudice to, embodiments in which the substrate initiates rollback to a last verified state as described in commonly owned Application No. 19/230,933. Nothing here characterizes, or asserts anything about, any system operated by any other party. This publication describes the applicant's own filed disclosure. It waives no claim scope and admits no subject matter described here as prior art to that filing.

Origin-Equivalence Normalization (/origin-equivalence)

All 49 steps → (/inventive-steps)

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)

SECONDARY TECHNICAL

- Content-Blind Encounter Commitment and the Paired Encounter Receipt (/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)
- The Untested-Origin Saturation Bound: Pricing a Flood of Freshly Minted Identities (/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)**
- The Attestation Origin-Equivalence Gate: An Anti-Collusion Bound (/articles/origin-equivalence/attestation-anti-collusion-bound)

TERMINOLOGY

- asserting party (/glossary#asserting-party)
- origin-equivalence class (/glossary#origin-equivalence-class)

Origin-Equivalence Normalization overview → (/origin-equivalence)