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Relay Non-Execution Attestation With Depth and Cycle Bounds

When one automated agent withholds an action it will not take, and a second agent that dispatches to it must carry that withholding to a third, the withholding usually decays into a number: a failure count, a health score, a suspicion level that penalizes the withholding party as it climbs. The relay non-execution attestation, disclosed in U.S. Provisional Application No. 64/117,812, lets a middle agent that has itself written no authorization gate disclose downstream that it cannot dispatch, without fabricating an authorization it never made and without reducing the upstream abstention to a magnitude. The emitting agent derives its withheld action-class enumeration from its own failing dispatch-authority predicate, marks it with its own abstention class, and carries a relay depth field and a per-counterparty ceiling that bound chain length and break cycles, so the withholding propagates by disclosure while remaining a value of the abstention type at every hop.

1. The Gap

A semantic agent writes its authorization gate (300) to the withheld state (310) for an enumerated set of action classes and transitions into the non-executing cognitive mode (302). A second agent that dispatches work of those classes to it, and consumes the results in its own determinations, faces a choice with no good option. It can learn

nothing and keep dispatching into a class the first agent cannot execute, treating the resulting non-response as evidence bearing on that agent. Or it can learn of the condition through an availability signal reduced to a failure count, a health score, or a suspicion level, each such reduction converting a governed withholding into a magnitude that constrains the described party as the number rises.

The base non-execution attestation (504) solves the two-agent case: the withholding travels as a signed disclosure, and the receiving agent writes it as a value of the abstention type (506), never as a magnitude. The gap opens when the withholding must travel farther than one hop, across a chain of persistent semantic agents (100).

The middle agent in such a chain is the hard case. It never wrote an authorization gate (300) of its own. Its inability to dispatch is entirely derived: it holds a carried abstention entry from an upstream agent, and its own dispatch-authority predicate fails as a result. If it stays silent, the withholding stops at it and the downstream agent is left to rediscover the same wall by dispatching into it. If it forwards the upstream attestation verbatim, it speaks in another agent's name for a gate write it did not perform. And if the chain forwards anything at all without bound, three failures follow: some hop reduces the abstention to a scalar and the type discipline is lost, the disclosure travels the whole graph of agents without terminating, or two agents each holding the other's entry re-emit forever. What is needed is a distinct object a relay agent can honestly emit, and a bound that makes the chain terminate.

2. Mechanism

The relay non-execution attestation is that object. A receiving agent emits one responsive to its dispatch-authority predicate failing, by operation of carried abstention entries then held, across a count of action classes exceeding a bound declared in its governing signed policy object (112). A withholding then propagates by disclosure across the chain of persistent semantic agents (100), each hop preserving the abstention type (506) and each hop subject to the cross-boundary conversion bar.

The relay attestation is a governed observation of the form of the non-execution attestation (504), but it is a distinct object, and it must be, because the emitting agent has performed no write of its own authorization gate (300) and holds no such write to attest. Four structural differences carry that honesty.

First, its withheld action-class enumeration is derived from the emitting agent's failing dispatch-authority predicate and not from any gate write. It enumerates each action-class identifier for which that predicate fails toward the counterparty concerned by operation of a carried abstention entry then held, and no other. The relay agent describes what it cannot dispatch, which is a fact of its own state, rather than claiming to have decided to withhold.

Second, in place of an evidentiary basis it carries a reference to the carried abstention entry relied upon and the identity primitive of the agent from which that entry was admitted. It carries no entry of any prior agent's append-only lineage field (104). The chain is traceable through a reference to the immediate upstream source, not through the accumulated internal records of every agent behind it.

Third, its abstention-class marker is the emitting agent's own recorded abstention class, not the marker carried by the carried entry. The relay agent signs its own reason for abstaining. What the upstream agent recorded remains held as data within the carried abstention entry and is not adopted as the class of anything the relay agent emits, so each agent's records disclose that agent's own grounds and disclose separately what it received.

Fourth, the express non-determination designation applies, and the emitting agent's authorization gate (300) remains unwritten. Emitting a relay attestation is not a determination of the closed set and is not a denial of any dispatch. It causes no write of any gate and no transition into the non-executing cognitive mode (302).

An agent admitting a relay non-execution attestation verifies it under the same receiver verification the base attestation undergoes and writes it as a carried abstention entry exactly as it does a non-execution attestation (504), so the abstention type (506) is preserved at each hop and the cross-boundary conversion bar reaches it as it reaches an entry admitted directly from a disclosing agent.

Two bounds keep the chain finite. The relay attestation carries a relay depth field. Its value at the first relay emission is a declared relay depth drawn from the emitting agent's signed policy object (112). At each subsequent relay emission its value is one less than the value carried by the carried abstention entry relied upon. An agent whose entry carries a relay depth of zero emits no relay attestation for that entry, so the disclosure fades out after a declared number of hops rather than traveling the whole graph.

The depth cannot be replenished. Each agent maintains, per counterparty and per action class, a relay depth ceiling, being the least relay depth value it has admitted, monotonically non-increasing under the anti-rollback discipline. A relay attestation carrying a relay depth above that ceiling is appended under the failing-element path of the receiver verification and is not admitted, so an agent cannot restore a depleted chain by re-emitting at a raised value.

Cycles terminate on identity rather than on depth alone. A relay attestation whose chain of carried abstention entries names the admitting agent as a prior agent of the chain is appended under the failing-element path and is not admitted. A cycle of agents each holding a carried abstention entry of the other therefore terminates rather than re-emitting without bound. Being appended under the failing-element path, a rejected relay attestation is disposed of without becoming a denial: it modifies no value of the scoped integrity vector (106), increments no counter, and appends nothing adverse to any counterparty identity record (114).

3. Operating Parameters

The filed specification declares each parameter of this mechanism in the signed policy object (112) rather than as a fixed numeric value, so the parameters below are structural, and no threshold, latency, or magnitude is asserted.

- **Relay emission bound.** The relay attestation is emitted when the dispatch-authority predicate fails across a count of action classes exceeding a bound declared in the emitting agent's signed policy object (112).
- **Declared relay depth.** The first relay emission carries a relay depth field set to a declared relay depth from that policy object; each subsequent emission carries one less than the value in the carried abstention entry relied upon; a value of zero suppresses further relay emission for that entry.
- **Relay depth ceiling.** Maintained per counterparty and per action class as the least relay depth value the agent has admitted, monotonically non-increasing under the anti-rollback discipline; an attestation above the ceiling is not admitted.
- **Cycle bar.** An attestation whose chain of carried abstention entries names the admitting agent as a prior agent is not admitted.
- **Origin-equivalence anti-collusion bound.** Admission of a carried abstention entry is conditioned on an attestation origin-equivalence gate: where a count of carried abstention entries held from parties of one origin-equivalence class (200) exceeds a bound declared in the policy object, a further attestation from a party of that class is not written as a carried abstention entry.

Each of these is recomputed by the admitting agent from records carried in its own memory, and none carries a magnitude of any prior agent forward.

4. Composition

The relay attestation sits on the portable-abstention substrate and adds one capability to it. The base non-execution attestation (504), the receiver verification and admission that write it as a value of the abstention type (506), the conversion bar (502) that forecloses its reduction to a scalar, and the dispatch-authority predicate that fails when a carried abstention entry bears on a dispatch are all reused unchanged. The relay is what an agent does when that predicate fails across enough classes: it re-enters the same verification and admission path at the next agent, so the chain is built from the same primitive at every link.

The failed dispatch-authority predicate is both the trigger and the payload source. It triggers the relay emission, and it supplies the withheld action-class enumeration, which is why the relay agent needs no gate write of its own to speak.

The mechanism composes with the two companion protections disclosed in the same section of the filing. The sibling channel across the agent boundary is the accepted determination (122), carried as a determination propagation record, which unlike the abstention does move the scoped integrity vector (106); there an anti-amplification magnitude bound, a declared fraction less than unity of a reference displacement magnitude, keeps aggregate movement bounded so a propagated determination does not amplify as it traverses a chain. The relay abstention needs no magnitude bound of that kind, because the cross-boundary conversion bar forecloses any movement of the scoped integrity vector at all; the relay depth field performs the analogous termination role for the abstention channel. The origin-equivalence anti-collusion gate then closes the remaining gap, preventing a set of agents of common origin from foreclosing an unbounded set of action classes by attesting in concert. Depth bounds the chain, the conversion bar bounds the effect, and the origin-equivalence gate bounds the fan-in.

5. Prior-Art Distinction

Several established categories bound propagation across a distributed system, and the relay attestation is genuinely adjacent to each without being any of them.

Hop-count and time-to-live limits in flooding and epidemic dissemination protocols bound how far a message travels, and the relay depth field resembles them. The difference is not the bound but the object being bounded: those protocols propagate a data value or a state update, with no notion of a type that forbids reduction to a scalar. The relay attestation propagates an object that remains a value of the abstention type (506) at each hop, and its bound governs a governed non-determination rather than a datum.

Failure detectors, circuit breakers, and health-scoring schemes, including accrual detectors that emit a graded suspicion level, are the mechanisms the conversion bar (502) is defined against. Each converts unavailability into a magnitude that penalizes the described party as it climbs. The relay attestation carries the opposite property by construction: no hop increments a counter, computes a suspicion level, or appends anything adverse to the described agent's counterparty identity record (114).

Delegated-authorization chains, such as forwarded access tokens or attenuated capabilities, forward an authorization the delegating party holds. The relay agent holds no authorization to forward. It attests non-execution, deriving the enumeration from its own failing predicate and signing its own abstention class, which is the inverse posture: a disclosure of inability to dispatch rather than a grant of permission.

Loop-prevention in path-vector routing rejects a route whose recorded path already names the receiving node, and the cycle bar is structurally similar: an attestation whose chain of carried entries names the admitting agent is rejected. The carried object again differs, being a type-preserving non-determination rather than a reachability

advertisement, and the rejection is recorded as a failing-element append rather than as a route withdrawal. These distinctions are structural and are drawn to locate the mechanism, not to characterize the conduct of any named party.

6. Disclosure Scope

The operative disclosure is U.S. Provisional Application No. 64/117,812, Section 10.8, "Chained cross-agent withholding, anti-amplification, and introduction protocols," at paragraphs [0449] and [0450], with the companion anti-amplification magnitude bound at [0451] and the attestation origin-equivalence anti-collusion gate at [0452]. That filing discloses the relay non-execution attestation as a distinct governed observation, its four structural differences from the base non-execution attestation (504), the derivation of its withheld action-class enumeration from the emitting agent's failing dispatch-authority predicate, the relay depth field and its per-counterparty per-action-class ceiling, the cycle bar keyed on the chain of carried abstention entries, and the preservation of the abstention type (506) at each hop subject to the cross-boundary conversion bar. Every parameter is declared in the signed policy object (112); this article asserts no numeric value, because the filed specification declares none. Nothing here claims coverage beyond what that provisional discloses, and any variant or deployment appearing only in the applicant's fuller drafting exposition, and not in the filed provisional, is neither disclosed nor claimed by this article.

Positive Abstention and the Conversion Bar (/positive-abstention)

All 49 steps → (/inventive-steps)

Refusing to act is a first-class, recorded outcome — and can't be laundered into acting.

Provisional application

PRIMARY TECHNICAL DISCLOSURE

- Positive Abstention: Withholding as a First-Class, Non-Convertible Outcome (/articles/positive-abstention/withholding-as-a-first-class-outcome)

SECONDARY TECHNICAL

- **Relay Non-Execution Attestation With Depth and Cycle Bounds (/articles/positive-abstention/relay-non-execution-attestation)**
- The Anti-Amplification Bound on Propagated Determinations (/articles/positive-abstention/anti-amplification-magnitude-bound)
- The Attestation Revocation Object (/articles/positive-abstention/attestation-revocation-object)
- Empty-Intersection Mutual Positive Abstention (/articles/positive-abstention/empty-intersection-mutual-abstention)
- Curing Counterparty Absence by Introduction Protocol (/articles/positive-abstention/introduction-protocol-cure)

TERMINOLOGY

- abstention outcome (/glossary#abstention-outcome)
- conversion bar (/glossary#conversion-bar)
- non-execution attestation (/glossary#non-execution-attestation)
- positive abstention (/glossary#positive-abstention)

Positive Abstention and the Conversion Bar overview → (/positive-abstention)