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The Anti-Amplification Bound on Propagated Determinations

When one autonomous agent judges another's conduct and hands that judgment to peers that share a scope partition, a naive relay lets the judgment gain weight at every hop, so a single accusation can pass for broad consensus and move every recipient's internal state by its full original magnitude. The anti-amplification magnitude bound on propagated determinations, disclosed in U.S. Provisional Application No. 64/117,812, prevents this. Each admitting agent caps the movement of its own scoped integrity vector at a declared fraction, below unity, of a reference magnitude it computes locally from the determination class alone, using its own policy parameters. No magnitude of the emitting agent crosses the boundary, and because the cap holds at every hop, aggregate movement across a chain of agents stays bounded.

1. The Gap

The architecture lets an accepted determination cross the boundary between two independent agents. Where a first semantic agent produces an accepted determination (122) on a conduct evaluation artifact concerning conduct inside a scope partition it shares with a second agent, it emits a determination propagation record as a governed observation. A peer that has itself acted in that partition can then react to conduct it did not directly observe.

The danger is what happens to the weight of that finding as it moves. Suppose every admitting agent responded by moving its own scoped integrity vector (106) by the same magnitude the emitting agent did. Then one determination, relayed hand to hand through a chain of agents, would move each recipient by that full magnitude, and the total movement across the chain would grow with the length of the chain. A single asserting party's judgment would then read as many independent judgments, and a run of admitting agents would let one determination pass for broad agreement.

There is a second, structural danger. The obvious way to bound a recipient's movement against the emitter's is to carry the emitter's magnitude inside the record. But the determination propagation record is defined to carry a governance object and not a magnitude, keeping it distinguished from a cognitive field value. Carrying the emitter's displacement would collapse that distinction.

So the gap is narrow: let an accepted determination reach shared-partition peers and let each react by moving its own state, without the movement amplifying as the determination traverses the chain, and without any magnitude of the emitter crossing the boundary.

2. Mechanism

Start with what the record actually carries. The determination propagation record comprises the determination class identifier of the accepted determination (122), the scope-partition identifier, the identity primitive of the asserting party, an epoch identifier of the emitting agent's dynamic agent hash chain, an implicated action-class enumeration naming action-class identifiers alone, and a propagation depth field. It carries a governance object and not a magnitude. Nothing in it says how far anyone's state should move.

When the second agent admits the record, its scoped integrity vector (106) is modified only through the state modifier and only under the coupling functions, no field being updated in isolation. This is the same machinery that moves the agent's state when the agent produces a determination of its own. The propagation path does not get a private side channel into the vector.

Onto that admission the bound is placed. The magnitude by which an admitting agent's scoped integrity vector (106) is modified upon a determination propagation record is bounded above by a declared fraction, below unity, of a reference displacement magnitude, the fraction being declared in the signed policy object (112). Because the fraction is below one and the cap is applied at every admitting agent, aggregate movement across a set of admitting agents is bounded, and a propagated determination does not amplify as it traverses a chain. No admitting agent moves further on a relayed finding than it would move on a finding it produced itself, so the chain cannot produce, at any node, a larger movement than a locally authored determination would.

The pivot is how the reference is obtained. The reference displacement magnitude is computed by the admitting agent from the determination class identifier carried by the record. It is the magnitude by which the admitting agent's own scoped integrity vector (106) would be modified were the admitting agent itself to produce an accepted determination (122) of that class under the parameters declared in its own signed policy object (112). Each agent, in effect, asks a hypothetical question: if I had reached this finding myself, how far would my own state move? It then caps its response to the relayed finding at a declared fraction of that answer. The reference is derived from the enumerated contents of the record, meaning the class identifier, together with the admitting agent's own declared parameters. No magnitude of the emitting agent need be carried by the record.

Two consequences follow. First, an emitter cannot inflate a recipient's movement by inflating its own, because the recipient measures against its own hypothetical rather than the emitter's actual displacement. Second, agents with different policies compose

without importing one another's scale: each admitting agent moves by a fraction of the magnitude its own declared parameters assign to the class, so the class identifier crosses the boundary while the units by which it is weighed stay home.

A further embodiment admits a carried number without surrendering that property. Here the determination propagation record instead carries a propagated displacement magnitude field recording the magnitude by which the emitting agent's scoped integrity vector (106) was modified upon the accepted determination (122), and the bound is then taken as the declared fraction of that carried value. Even in this form the carried field is admitted only as a bound on the admitting agent's own modification, and is never admitted as an input to the function that modifies that agent's vector. The number can lower the ceiling; it can never drive the movement. That keeps the carried governance object distinct from a cognitive field value. Where the field is absent from a record, the bound falls back to the locally computed reference displacement magnitude.

The magnitude bound governs the size of each hop. A separate constraint governs the count of hops. The record carries a propagation depth field decremented upon each admission, a record whose depth reaches zero not being propagated further. Each admitting agent maintains, per determination class identifier and per asserting party, a propagation depth ceiling, being the least depth value it has admitted for that determination, held monotonically non-increasing so a depleted depth cannot be restored by re-emitting the determination at a raised value. Bounding the number of hops and the per-hop magnitude together is what bounds the aggregate.

3. Operating Parameters

The disclosure fixes the shape of these parameters, not numeric values, and this article states no number the filing does not.

Its fraction is declared in the signed policy object (112) and is less than unity. The disclosure fixes no particular value, and each party applies the fraction declared in its own signed policy object.

The reference displacement magnitude is not a stored constant. It is computed per record from the determination class identifier and the admitting agent's own declared parameters, being the magnitude the state modifier and coupling functions would produce for a locally authored accepted determination (122) of that class. Because it is recomputed by each agent, it is expressed in that agent's own units.

The propagated displacement magnitude field is optional. When present, the bound is the declared fraction of it, and the field is admitted as a bound alone, never as an input to the state-modifying function. When absent, the bound is taken against the reference displacement magnitude.

The propagation depth field is initialized to a declared initial propagation depth, and its ceiling is maintained per determination class identifier and per asserting party, held monotonically non-increasing. These bounds are applied per agent: the fraction comes from each party's own signed policy object (112), and each party maintains its own depth ceiling.

4. Composition

The parent section, Section 10.8, concerns what crosses the agent boundary in a chain of persistent semantic agents (100). Two kinds of matter do. The abstention type propagates by disclosure through the relay non-execution attestation, each hop preserving the abstention type under the cross-boundary conversion bar. The accepted determination (122) itself propagates through the determination propagation record. The anti-amplification bound belongs to the second path, and it is the answer to the question the first path never has to ask, because an abstention carries no magnitude while a determination does.

The bound acts only on records that clear admission. The admitting agent gives a determination propagation record effect only where the emitting agent and the asserting party are not assignable to a common origin-equivalence class, so a determination the emitter sourced from a party in its own equivalence class moves no recipient. Admission is further conditioned on a self-execution intersection conjunct, under which the carried scope-partition identifier must resolve to a partition in which the admitting agent has itself executed an action of an implicated class, so an agent is not moved by conduct in a partition where it never acted. Admission is suspended while a containment determination stands for the partition in either agent, and where a per-partition receipt rate of propagation records exceeds a declared bound while the mean rate across the remaining partitions stays below it, the attack-conditional cross-boundary suspension applies. The magnitude bound is the last line: even a record that satisfies every admissibility conjunct moves the scoped integrity vector (106) by no more than the capped amount.

The bound also depends on the state modifier and the coupling functions to mean anything. Because the vector is modified only through them, and because the reference magnitude is exactly what they would produce for a locally authored determination of the class, the cap is denominated in the same units the agent uses for its own findings. The filed claim that a propagated determination does not amplify is thereby a statement about one set of units, not a loose figure of speech. And because the magnitude used for the cap is computed locally rather than carried, the design keeps the governance-object-not-magnitude line intact while still bounding movement against a magnitude.

5. Prior-Art Distinction

Transitive-trust and reputation-propagation systems move a scalar trust or reputation value through a graph, often normalized across the whole graph, and the carried value is the quantity that changes each node's state. The distinction here is where the scale

originates: no magnitude is carried, each node computes its own reference from its own policy and the class label alone, and the cap is a local ceiling relative to what the node would do for a finding of its own.

Gossip and epidemic dissemination protocols bound how far a message travels with a time-to-live or hop count. That is analogous to the propagation depth ceiling, but it bounds reach, not the magnitude of any recipient's internal state change; a recipient still adopts the payload as received. The anti-amplification magnitude bound is a separate constraint that operates on the size of the state movement rather than on the distance the message covers.

Damping-factor schemes in iterative reputation computation apply a single global constant to a propagated quantity. The mechanism here declares the fraction per signed policy object (112) and multiplies a reference that each agent computes for itself, and any carried magnitude can only lower the cap, never raise the movement.

Certificate and attestation chains validate authenticity and authority along a chain. They govern whether a chain should be trusted, not how far a recipient should move an internal state on its strength. The anti-amplification bound presumes admission is handled by the propagation admissibility gate and addresses the magnitude question those chains do not reach. Across all of these categories the filed mechanism carries only a class label and a depth, computes the scale locally, and caps each node below its own full-determination magnitude.

6. Disclosure Scope

The operative disclosure is U.S. Provisional Application No. 64/117,812, Section 10.8, paragraph [0451]. It discloses the anti-amplification magnitude bound on propagated determinations: the declared sub-unity fraction drawn from the signed policy object (112); the reference displacement magnitude computed by the admitting agent from the determination class identifier and its own declared parameters; and the results that no

magnitude of the emitting agent need be carried by the record and that aggregate movement across a set of admitting agents is bounded. Paragraph [0464] discloses the alternative propagated displacement magnitude field, admitted only as a bound and never as an input to the function that modifies the admitting agent's scoped integrity vector (106), with a fallback to the reference where the field is absent.

What is disclaimed: the disclosure fixes no numeric value for the fraction, the initial propagation depth, or any threshold, stating the fraction only as declared and below unity, and this article states none. Every assertion above is drawn from the filed provisional. Where a fuller drafting exposition frames a propagation-admissibility conjunct in terms of common origin-equivalence between the two propagating agents, that framing is not part of the filed provisional and is not relied upon here; the filed conjunct concerns common origin-equivalence between the emitting agent and the asserting party.

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)