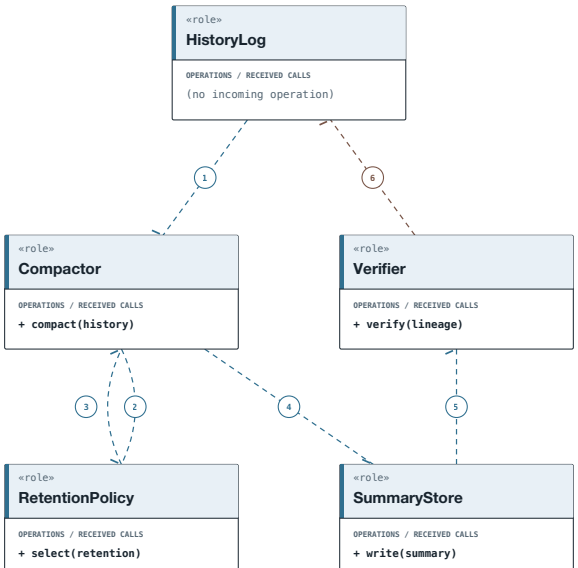
P27 Lineage and threshold compaction

Primitive / UML CLASS VIEW / ANALYTICAL MODEL

Bound history while retaining useful state.

UML CLASS VIEW

dashed arrow: call dependency · brown: return/failure · analytical, not an observed trace



POINTCUT / PATTERN INTERFACE

CONTEXT	History approaches a context or count threshold before a model call.
TRIGGER	A compaction policy activates.
STRUCTURE	Threshold, selection strategy, summarizer or truncator, and lineage metadata.
EFFECT	Model input is reduced while retained and removed evidence remains attributable.

CONTRACT / REQUIRED BEHAVIOR

REQUIRES	Context usage, protected items, and eviction policy are available.
ENSURES	The replacement fits the target and records what replaced which history.
INVARIANT	Required system, safety, or current-task evidence is not silently evicted.
VIOLATION	Summary failure, threshold conflict, or empty projection falls back explicitly.

RELATIONSHIPS / ANALYTICAL CALLS

number · caller → callee · message

1 HistoryLog → Compactor compact(history)
2 Compactor → RetentionPolicy select(retention)
3 RetentionPolicy → Compactor return(policy)
4 Compactor → SummaryStore write(summary)
5 SummaryStore → Verifier verify(lineage)
6 Verifier ↩ HistoryLog preserve(lineage)

VARIATION / TEST / NEGATIVE CONTROL

VARIATION	Message count, token budget, oldest-first, protected groups, remote or local.
TEST_OBLIGATION	Test threshold edge, protected item, failure, lineage, and post-compaction facts.
NEGATIVE_CONTROL	A generic text truncate utility is not compaction without lineage.