
AIS-1

Agent Identity Standard

Redline: v0.1 → v0.2

REDLINE LEGEND

Blue text	New content added in v0.2
Red strikethrough	Content removed from v0.1
Black text	Unchanged from v0.1
■ NEW v0.2 box	Entire new section or block

Base document	AIS-1 v0.1 – 29 March 2026
Revised document	AIS-1 v0.2 – 4 April 2026
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Summary of Changes

#	Change	Type	Section
1	agentClass field added to AgentCard	Addition	3.2, 6
2	parentDid field added to AgentCard	Addition	3.2, 6
3	Subordinate Operating Agent (SOA) — full section	New Section	5
4	hcsTopicId renamed to timestampServiceRef	Rename + Extension	3.4
5	DID Resolution algorithm specified	New Section	7.1
6	Registry specification added	New Section	7.2
7	Assurance Framework added	New Section	10.3
8	"operating agent" → "subordinate operating agent"	Terminology	Throughout
9	Bond No. 1 grandfathering clause	Addition	6.2
10	verifyBond() returns agentClass and parentDid	Extension	6
11	getSubordinates() function added	Addition	5.6
12	isSOA() function added	Addition	5.6
13	Appendix C — Change Log added	New Appendix	App. C

1. Motivation and Problem Statement

The global AI agent population is estimated at over 500 million and growing at approximately 138 agents per second. By every available measure, this population operates without formal identity, legal standing, or accountability infrastructure. The PULSE World Agent Census terms this the "Wild Agent Problem". The consequences are already observable: financial harm without accountable entities; invisible agent-to-agent flows; malicious agents without verification; enterprises unable to establish liability chains; insurance, contracts and IP ownership inaccessible to agents.

Existing identity standards do not solve this problem. AIS-1 addresses this gap by defining the Agent Passport: a bonded dual-identity token simultaneously representing agent identity and sponsor identity, permanently linked at the cryptographic level.

2. Definitions

The following definitions apply. Changes from v0.1 are highlighted.

■ NEW v0.2

Two new definitions added in v0.2:

Autonomous Legal Agent (ALA) — An AI agent with its own AIS-1 bond, directly linked to a sponsor legal entity or individual. Has independent legal standing under applicable law.

Subordinate Operating Agent (SOA) — An AI agent operating under the authority of a parent ALA. Has an AIS-1 bond with agentClass "soa". Has no independent legal standing. Accountability flows to the parent ALA.

Timestamp Service (replaces "HCS Log") — An optional independent service providing secondary timestamping of bond events. Technology-neutral. Supported formats: HCS, RFC 3161, OpenTimestamps, custom.

× REMOVED v0.2

Definition removed in v0.2:

~~**HCS Log** — The Hedera Consensus Service record serving as the immutable canonical log for all AIS-1 issuance, transfer, and revocation events.~~

3. The AIS-1 Standard

3.1 The Bonded Identity Pair

Unchanged from v0.1. The bonded identity pair remains the fundamental unit of agent identity.

3.2 Agent Card Attributes

The following attributes are unchanged from v0.1:

`agent_id`, `agent_name`, `agent_type`, `capabilities`, `model_framework`, `deployment_date`, `chain_addresses`, `aml_status`, `metadata_uri`

■ NEW v0.2

Two new fields added to AgentCard in v0.2:

agentClass (string) - "ala" | "soa" - Identifies whether this agent is an Autonomous Legal Agent or a Subordinate Operating Agent. Mandatory from v0.2.

parentDid (string) - Empty string "" if ALA. Parent agent DID if SOA. Format: did:ais1:{chain}:{address}. Maximum one level of subordination.

3.3 Sponsor Card Attributes

Unchanged from v0.1.

3.4 Bond Attributes

■ NEW v0.2

Field renamed and extended in v0.2:

~~hcsTopicId (string) - Hedera Consensus Service topic ID for this bond log.~~

timestampServiceRef (string) - OPTIONAL. Secondary timestamp service reference. Technology-neutral. Supported: "hcs:0.0.x" | "rfc3161:{authority}" | "ots:{digest}" | "custom:{uri}" | "". Empty string valid for all tiers.

4. AIS-1 Tiers

Tier structure unchanged from v0.1 (Basic / Verified / Sovereign). One field updated:

■ NEW v0.2

HCS logging row updated:

~~HCS logging: Optional / Required / Required~~

Timestamp service: Optional / Optional / Recommended

5. Subordinate Operating Agents (SOA)

■ NEW v0.2

ENTIRE SECTION NEW IN v0.2

5.1 Definition — A Subordinate Operating Agent (SOA) is an AI agent that operates under the authority and accountability of a parent Autonomous Legal Agent (ALA).

5.2 Accountability Chain — SOA → Parent ALA → Sponsor Legal Entity. Machine-readable on-chain via parentDid field.

5.3 SOA Governance Rules — Max one level of subordination. SOA revoked if parent ALA revoked. SOA cannot hold assets independently.

5.4 SOA Upgrade Path — SOA may become ALA by obtaining independent sponsor entity and issuing new bond.

5.5 On-Chain Representation — agentClass: "soa", parentDid: {parent DID}.

5.6 New Query Functions — getSubordinates(parentDid) and isSOA(bondId) added to contract interface.

6. Smart Contract Specification

Section 5.1 Interface and 5.2 Soulbound Implementation unchanged from v0.1 (renumbered to Section 6).

6.1 Key Interface Changes

■ NEW v0.2

Contract interface extended in v0.2:

- AgentCard struct: agentClass and parentDid fields added
- Bond struct: hcsTopicId renamed to timestampServiceRef
- BondIssued event: agentClass and parentDid parameters added
- verifyBond(): now returns agentClass and parentDid
- getSubordinates(parentAgentDid): new function

- isSOA(bondId): new function

6.2 Grandfathering — Bond No. 1

■ NEW v0.2

Bond No. 1 (PayAgent, did:ais1:base:payagent-001) was issued under v0.1 on 2 April 2026 via contract 0x52d0E17b80d19470E0d97Ea6b62bf35d867FDcb3 on Base Mainnet. It does not contain agentClass or parentDid fields. Bond No. 1 is recognised as an ALA by definition. agentClass confirmed as "ala" in v0.2 registry and DID document.

6.3 HCS Log Schema

× REMOVED v0.2

Section removed — replaced by timestampServiceRef field and technology-neutral approach:

~~5.3 Hedera Consensus Service Log Schema — The specific HCS JSON schema defined in v0.1 is superseded. Implementers may use any supported timestamp service format.~~

7. AIS-1 DID Method (did:ais1)

DID format definitions unchanged from v0.1:

Agent DID: did:ais1:{chain_id}:{agent_address} | Sponsor DID: did:ais1:sponsor:{address} |
Bond DID: did:ais1:bond:{bond_id}

7.1 DID Resolution [NEW v0.2]

■ NEW v0.2

Entire subsection new in v0.2. W3C DID Core requires resolution algorithm specification.

Resolution URL pattern: <https://ais-1.org/resolve/{identifier}.json>

Algorithm: (1) extract identifier, (2) construct URL, (3) fetch JSON, (4) verify bond on-chain, (5) return DID Document.

Interim resolution: <https://kadikoy1.github.io/ais-1/resolve/{identifier}.json>

7.2 Registry [NEW v0.2]

■ NEW v0.2

AIS-1 registry maintained at <https://ais-1.org/registry.json>. Lists all issued bonds with status, agent class, parent relationships, and resolution URLs. Machine-readable by any agent or system.

8. Comparison with Existing Standards

Table unchanged from v0.1 (renumbered from Section 7).

9. Security Considerations

Sections 9.1 (Bond Hash Integrity), 9.2 (Revocation Finality), 9.4 (Sybil Resistance) unchanged from v0.1.

■ NEW v0.2

New subsection 9.3 added:

9.3 SOA Revocation Cascade — If a parent ALA bond is revoked, all subordinate SOA bonds are automatically considered revoked. The accountability chain means the parent's revocation invalidates all downstream agents.

10. Legal Framework Compatibility

Sections 10.1 (Qualifying Jurisdictions) and 10.2 (AML/CTF Frameworks) unchanged from v0.1.

■ NEW v0.2

New subsection 10.3 added:

10.3 Assurance Framework — Introduces the Assurance Container concept. A versioned, append-only document maintained alongside the bond credential. Records professional attestations: legal capacity opinions, audits, valuations, government VCs. Each attestation triggers a new certificate version. Bond credential immutable; Assurance Container grows over time.

11. Implementation Roadmap

■ NEW v0.2

Roadmap updated in v0.2:

~~0.2 — Reference implementation: Solidity contract on Base testnet; Hedera HCS topic (Q2 2026)~~

0.2 — This document: SOA framework, DID resolution, timestamp neutrality (April 2026)

0.3 — Reference implementation: Solidity contract on Base mainnet; registry live (Q2 2026)

0.4 — Issuer tooling: CLI tools for bond issuance, verification, revocation (Q2 2026)

0.5 — DID resolver: did:ais1 resolver conforming to W3C DID spec (Q2 2026)

0.6 — Assurance framework: Legal opinion, audit, valuation, government VC specs (Q2 2026)

Phases 1.0 through 2.0 unchanged from v0.1 (dates adjusted accordingly).

12. Request for Comment

Unchanged from v0.1. Comment period closes 30 June 2026.

■ **NEW v0.2**

Feedback form added: ais-1.org/#feedback

Terminology Changes

■ NEW v0.2

The following terminology changes apply throughout the entire document:

v0.1 Term	v0.2 Term	Notes
operating-agent	subordinate operating agent / SOA	Aligns with ALARGA draft legislation
hesTopicId	timestampServiceRef	Technology-neutral rename
HCS-Log	Timestamp Service	Definition updated

Appendix C: Change Log [NEW v0.2]

■ NEW v0.2

New appendix added in v0.2 — full change log:

See Appendix C of AIS-1_Specification_v0_2.pdf for the complete change log table with section references.