Mobile Store-and-Forward Without Cellular Backhaul

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What Mobile Store-and-Forward Specifies

A unit carrying a conforming device receives credentialed observations from sources within range, stores them in its outgoing buffer, transports them as it moves, and re-broadcasts them to receivers within range of its destination. The architecture is the mesh-protocol equivalent of pre-Internet sneaker-net but with cryptographic governance and architectural admissibility.

Each carried message retains its original credentialed authority, hop history, and FEC structure. The carrying unit is not a re-originator — it is a relay whose hop record is appended to the existing hop history. Receivers evaluate the message under the same admissibility framework regardless of how it propagated.

Why Cellular-Backhaul Dependency Limits Deployment

Smart-infrastructure deployments have been constrained to dense urban geographies largely because the operating model assumes continuous cellular backhaul to centralized cloud infrastructure. The assumption fails in maritime, agricultural, mining, defense, expeditionary, and deeply rural deployments. The cumulative effect is that smart-infrastructure value remains concentrated in dense-urban use cases.

Mobile store-and-forward closes the gap structurally. A region with no fixed mesh infrastructure receives policy and observation propagation through transit by mobile units. Vehicles, drones, robots, and even pedestrians carrying smartphones contribute. The architecture supports deployment across the geographies that cellular-backhaul-dependent architectures cannot reach.

How Admissibility Composes Across Carriage

When a mobile unit receives a credentialed observation in range of the originator, the unit's local admissibility evaluator decides whether to admit it for carriage. Carriage is itself a credentialed action; the unit's authority signs the carriage event, contributing to the message's hop history.

When the unit later moves into range of a receiver, the unit re-broadcasts the message. The receiver evaluates the message under its own admissibility framework: the originating authority's credential, the hop history including the carrier's record, and the temporal scope under which the observation remains admissible. The receiver is not asked to trust the carrier; it is asked to evaluate the original authority's credential against its policy. The carrier's role is logistical, not authoritative.

What This Enables for Deployment Geography

Maritime mesh between vessels carrying observations across ocean stretches without satellite dependency. Agricultural mesh between agricultural equipment, drones, and inspection vehicles. Mining mesh between haul trucks, drilling equipment, and exploration drones. Defense mesh between deployed units in expeditionary operation. Each gains structural propagation that cellular-backhaul-dependent architectures cannot provide.

The pattern composes with intentional disconnection (cross-mesh reconciliation). A unit operating in a temporarily-disconnected region carries observations that

propagate when the region reconnects. The patent positions the primitive at the layer where deployment geography is currently bounded by infrastructure dependency.