SHIM6 Update

Geoff Huston
Kurtis Lindqvist

SHIM6 co-chairs

The Multi6 Problem

- how to support IPv6 end-site configurations that have multiple external connections to support application-level session resiliency across connectivity failure events

- how to use IPv6 multi-addressing and connection-based address aggregates to avoid overloading the routing system with site-based specific address advertisements

The SHIM6 Solution

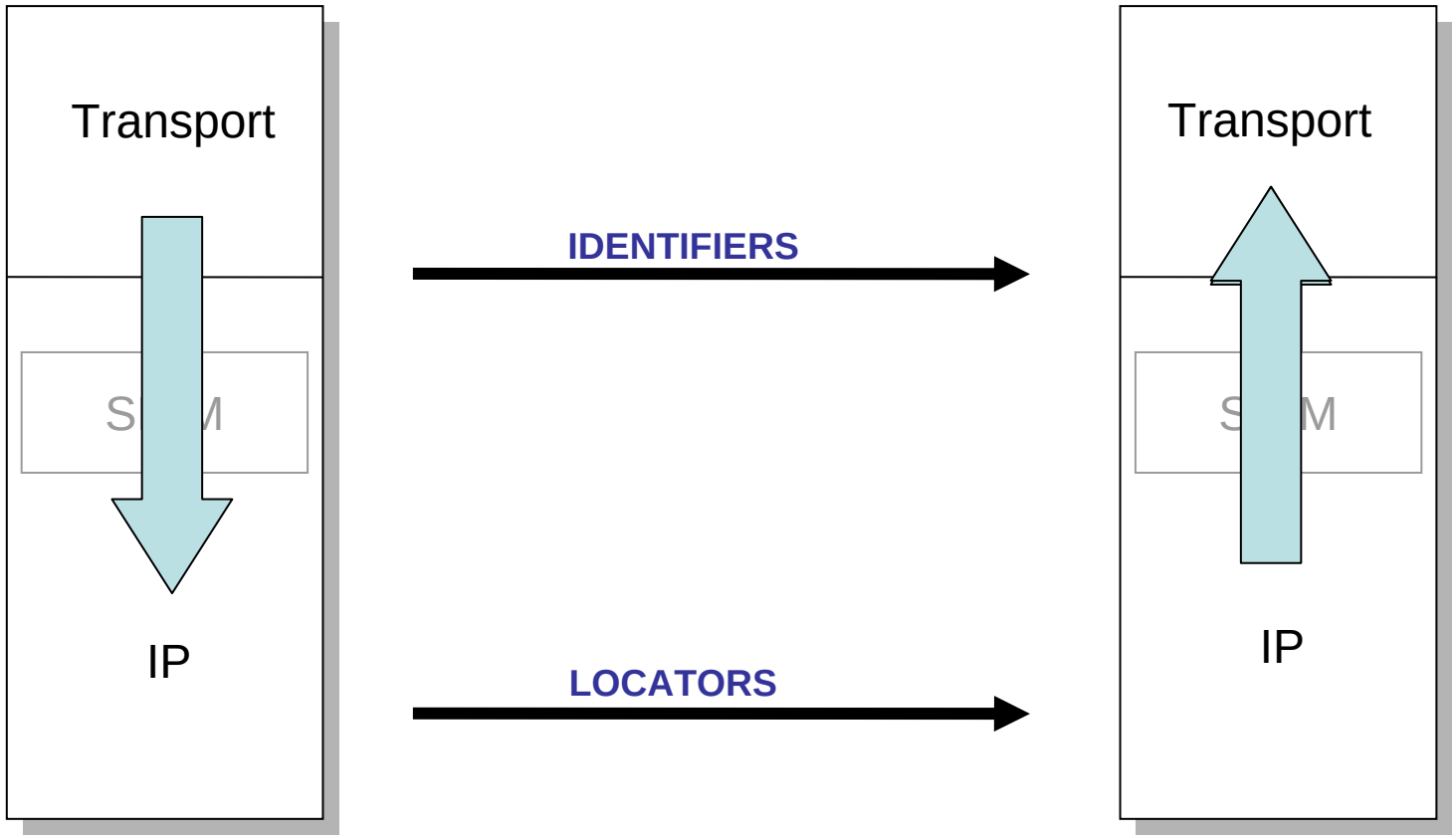
- host-based solution (rather than host and router)
- network layer (rather than transport)
- discoverable negotiated capability
- no new identifier space

The SHIM6 Approach

- a functional module at layer 3 (IP)
- the initial locator is the upper layer identifier (RFC3484 selection)
- subsequent negotiation to enable the Shim6 module for an upper layer identifier pair
- the Shim6 module translates upper layer identifiers into the currently active forwarding layer locators
- the upper layer identifier pair plus a context value forms the shared shim6 state identifier
- an IPv6 end-to-end header is used to signal SHIM6 context

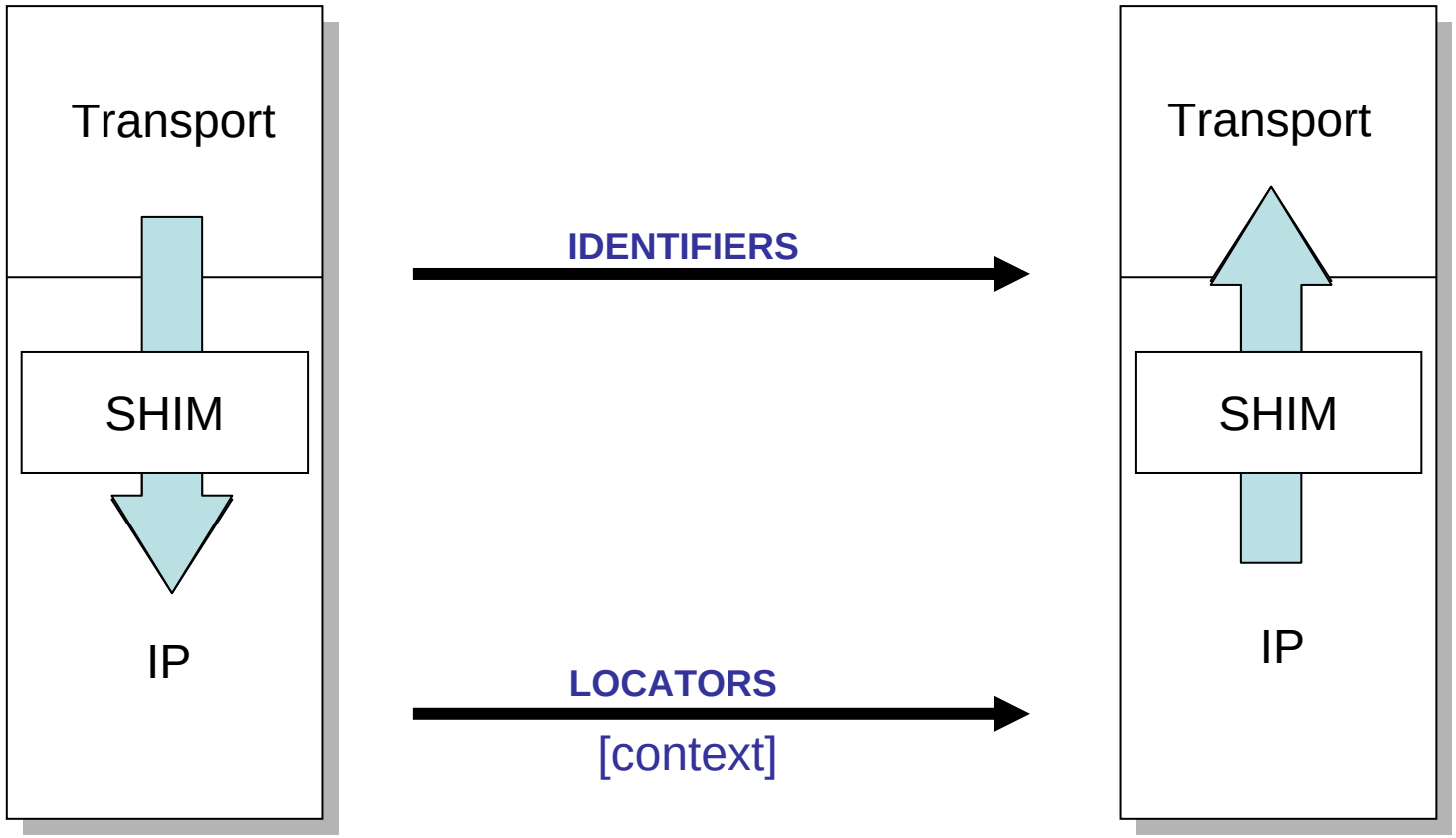
Initial Contact

No SHIM state active
Locator Selection using RFC3484
Locators and Identifiers are Equivalent



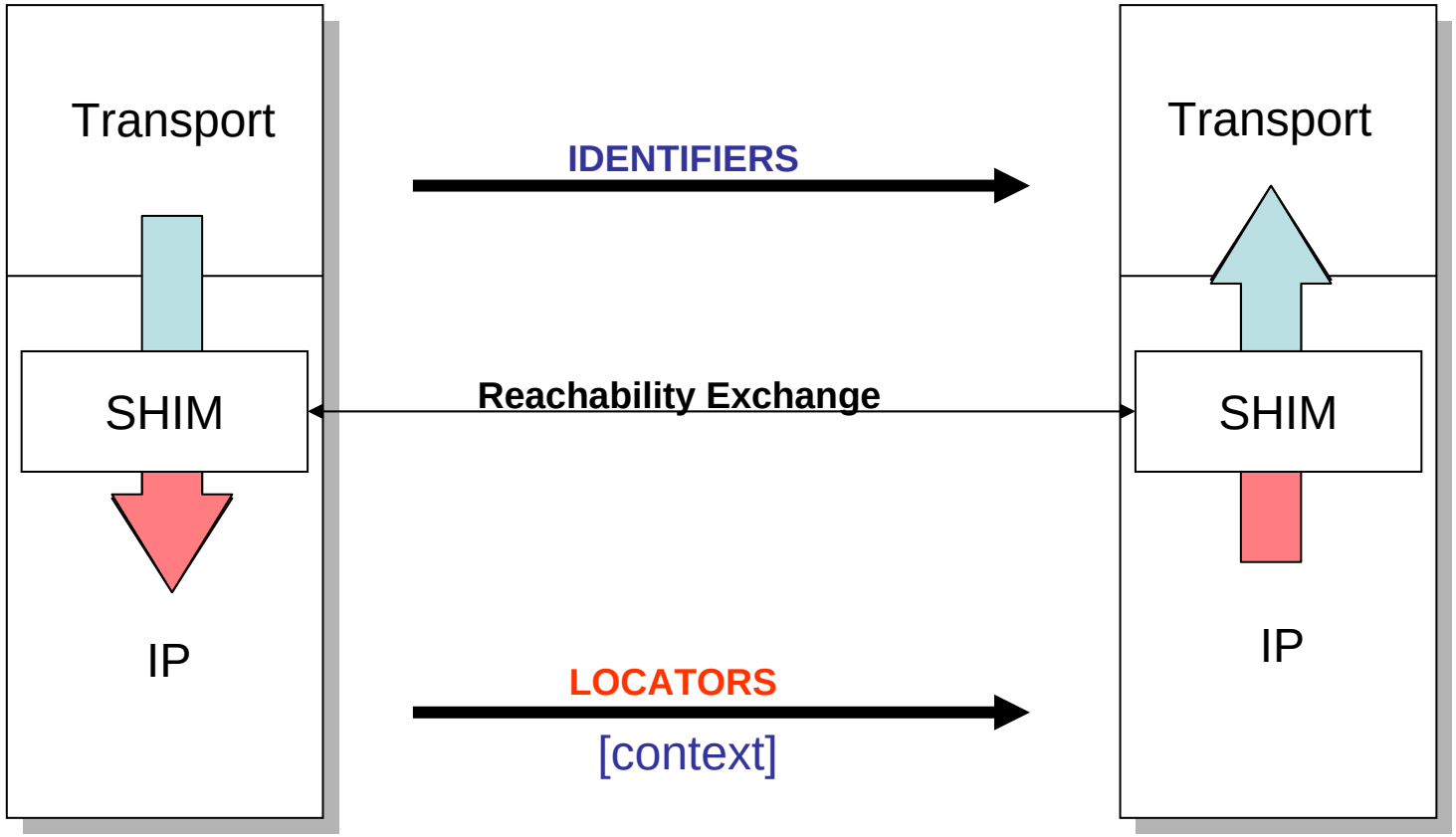
SHIM6 Activation

SHIM active
Current Locator Sets exchanged
Locators and Identifiers are Equivalent



SHIM6 Locator Failure and Recovery

Detect locator failure
Explore for functioning locator pair
Use new locator pair – preserve identifier pair



SHIM6 Control Elements

- initial handshake (4-way) and locator set exchange
- locator list updates
- explicit locator switch request
- keepalive
- reachability probe exchange
- No-Context error exchange

SHIM6 WG Approach

- base protocol specification
  - protocol exchange and packet formats
  - address specification: CGA and HBA
  - functional decomposition
- refinements
  - upper layer signalling
  - traffic engineering hooks
  - contactless shim6
  - failure detection refinements
  - ingress filtering / source address path selection