CAmkES Representation of Connectors

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Requirements of CAmkES to AADL Semantics Mapping

- Unidirectional only for internal connections
- Must be asynchronous and thread safe
- Non-blocking send operations
- No return acknowledgement signals (if possible)
- Performance is important, but secondary to security and verification priorities
- Must conform to interpretation of AADL semantics, but not all details are necessarily in scope under CASE
- CAmkES pattern will be auto-generated via HAMR

Data Port

- Basic shared memory communication construct, no queuing.
- BEFORE: Monitor component, which included a blocking send and return acknowledgements between monitor and end points.
- AFTER: Removed monitor components and changed CAmkES data port to “hash” approach on shared memory communication construct that overwrites previous sent data, non-blocking send, no return acknowledgement.
- STATUS: Available in CAmkES. Completing HAMR integration.

Event Ports

- Basic notification signal
- Same security requirements as data ports
- Current status: Implemented a seL4Notification, emit/consume pair
- Questions:
  - Does the current implementation conform to AADL semantics?
  - Does the current implementation satisfy security requirements?

Event Data Ports

- Semantics defined as event communications with data that is queued
- Same basic security requirements as data ports
- Current status: Implemented with monitor component that bundles event and data on the sender side, marshals and queues data for the receiving side.
- Questions:
  - Does the current implementation conform to AADL semantics?
  - Does the monitor implementation satisfy security requirements?