

Event source simulation in FairRoot

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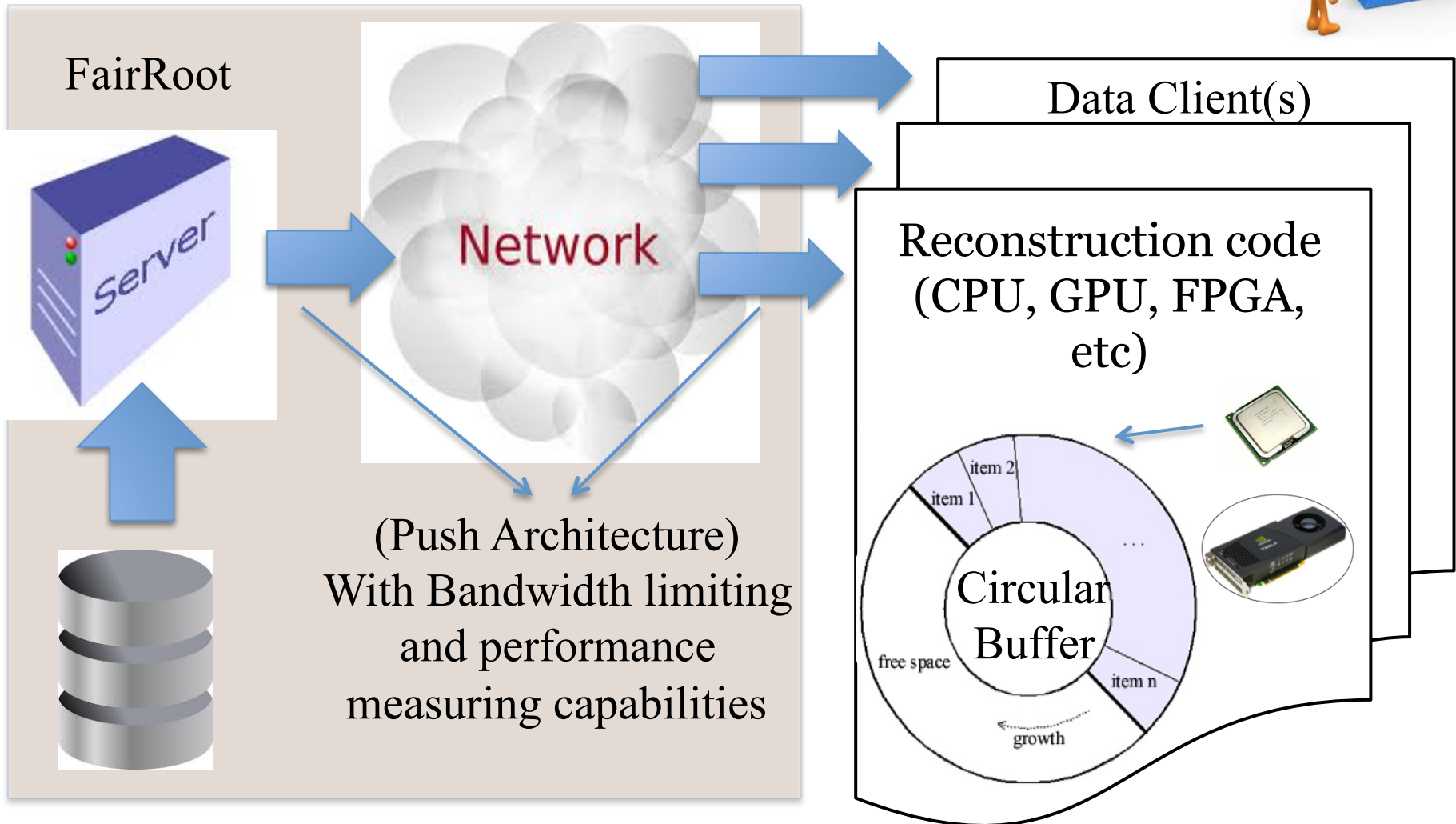
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Why?

- We need to develop, debug and test the full chain for the online/offline algorithms in a realistic environment.
- Investigate new concepts for distributed computing
- We need a system that can run on any hardware and scale to any size! With minimum or no effort.

Event source simulation: A tool for real time testing of online algorithms



ØMQ (zeromq)

- A socket library that acts as a concurrency framework.
- Faster than TCP, for clustered products and supercomputing.
- Carries messages across inproc, IPC, TCP, and multicast.
- **Connect N-to-N** via fanout, pubsub, pipeline, request-reply.
- A synch I/O for scalable multicore message-passing apps.
- 30+ languages including C, C++, Java, .NET, Python.
- Most OSes including **Linux**, Windows, OS X, **PPC405/PPC440**.
- Large and active open source community.
- **LGPL free software** with full commercial support from iMatix.

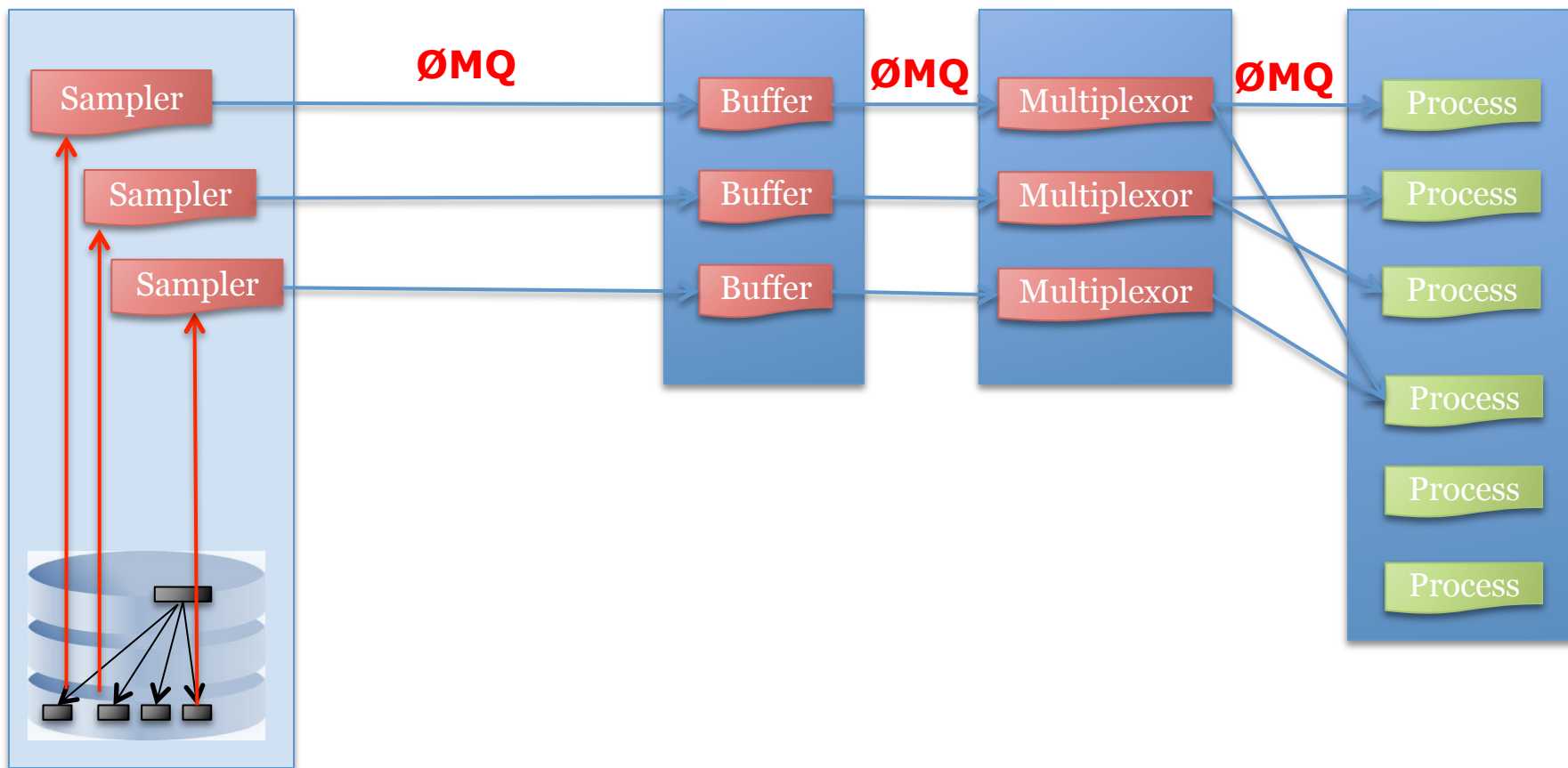
Zero in ØMQ

Originally the zero in ØMQ was meant as "zero broker" and (as close to) "zero latency" (as possible). In the meantime it has come to cover different goals:

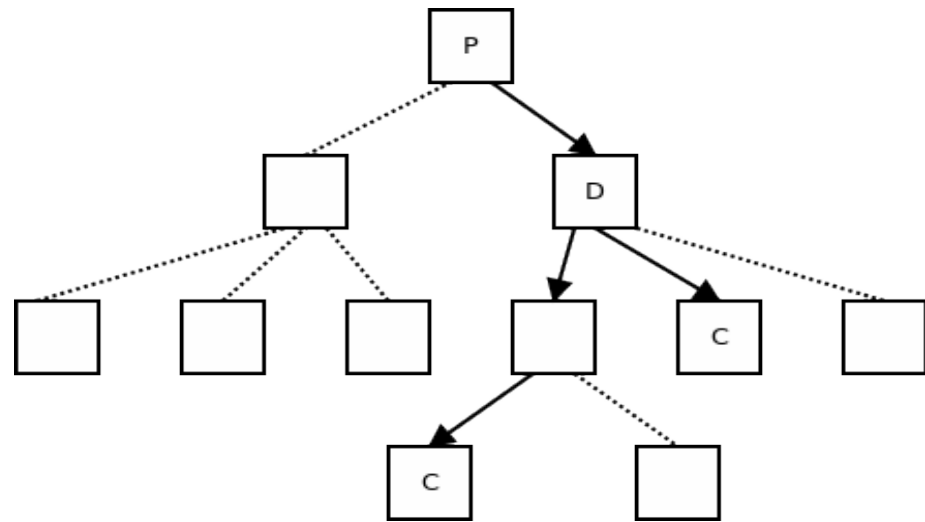
- zero administration,
- zero cost,
- zero waste.

More generally, "zero" refers to the culture of minimalism that permeates the project.

Adding power by removing complexity rather than exposing new functionality.

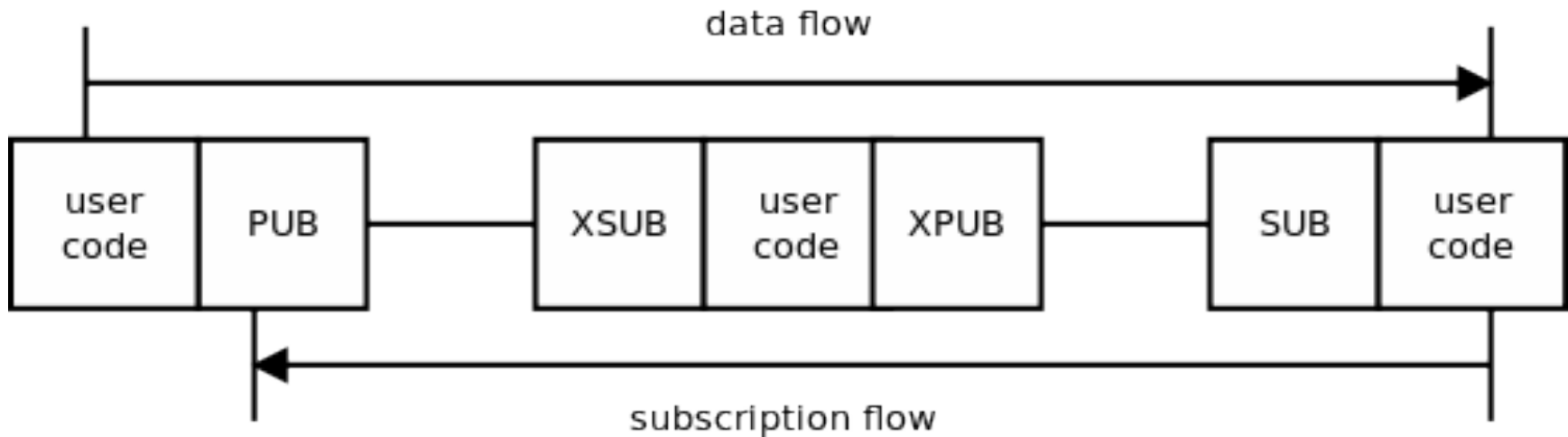


Messages should travel only through those lattices in the message distribution tree that lead to consumers interested in the message

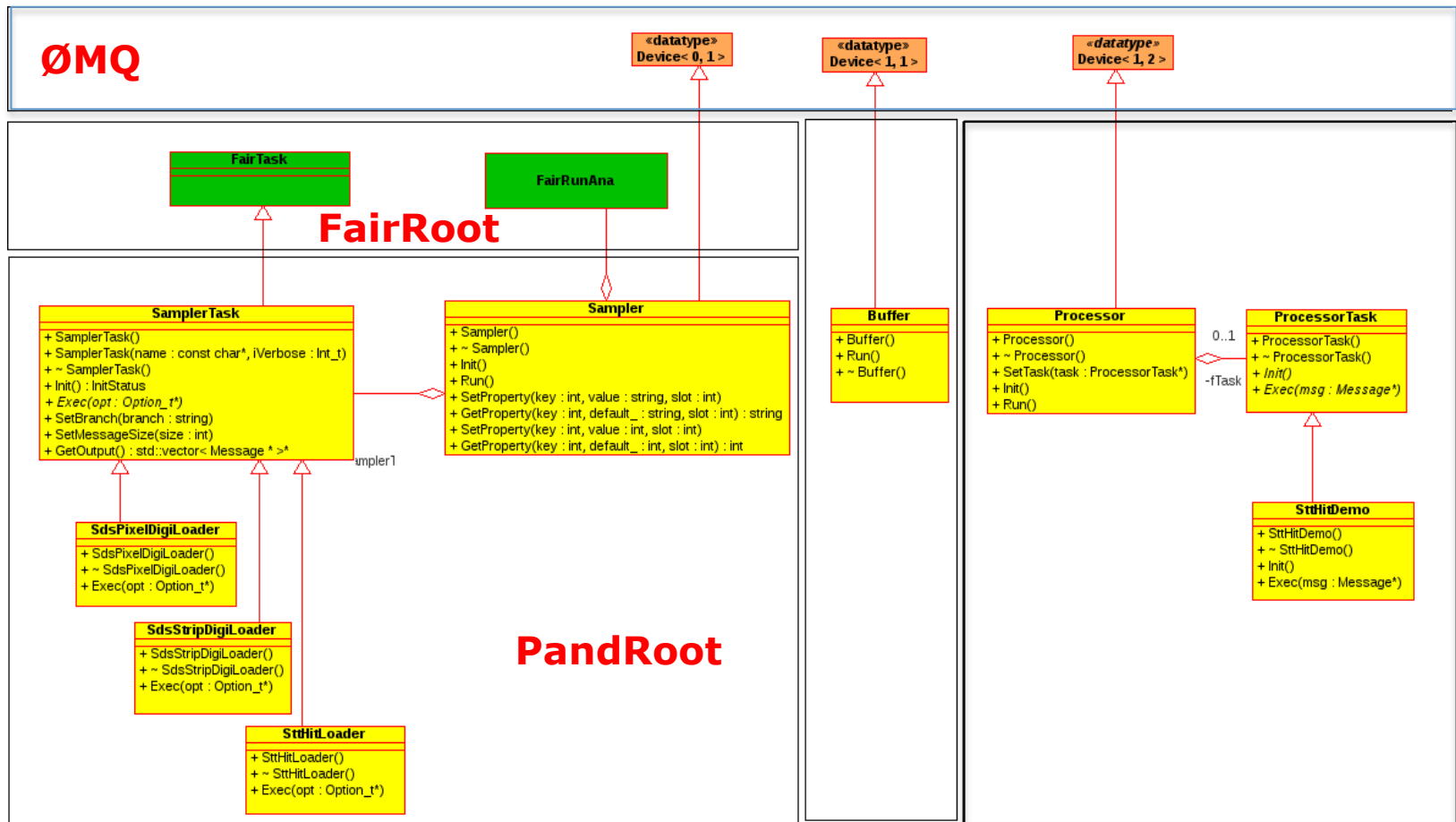


Subscription Forwarding

- XPUB is similar to a PUB socket, except that you can receive messages from it. The messages you receive are the subscriptions traveling upstream.
- XSUB is similar to SUB except that you subscribe by sending a subscription message to it.
- Subscription messages are composed of a single byte, 0 for unsubscription and 1 for subscription



Current Status

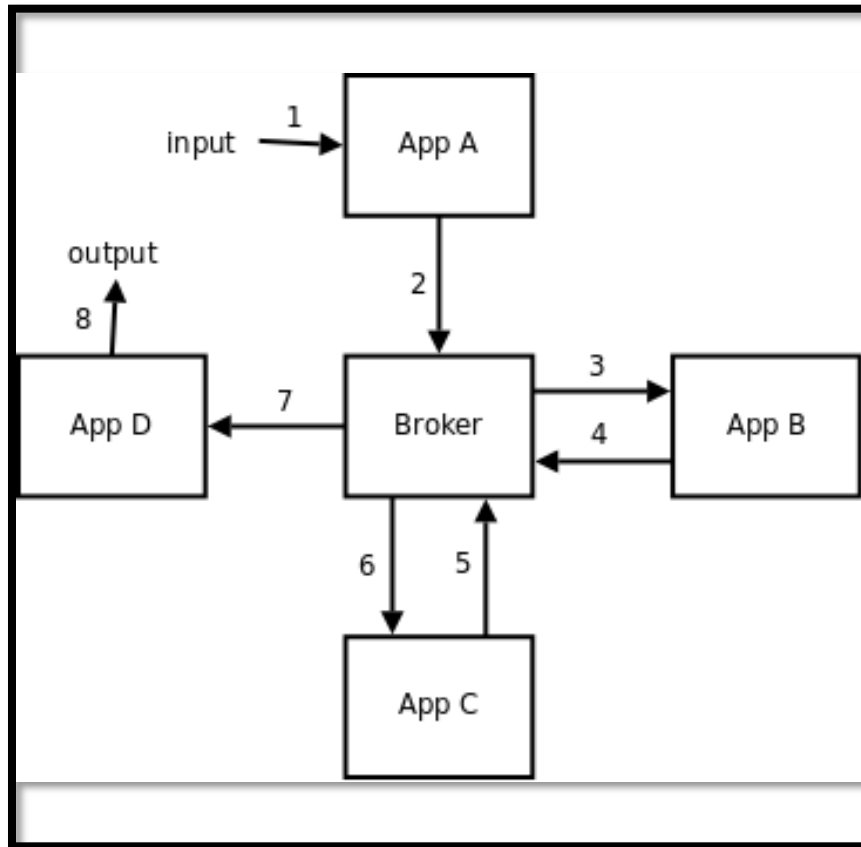


Thanks!

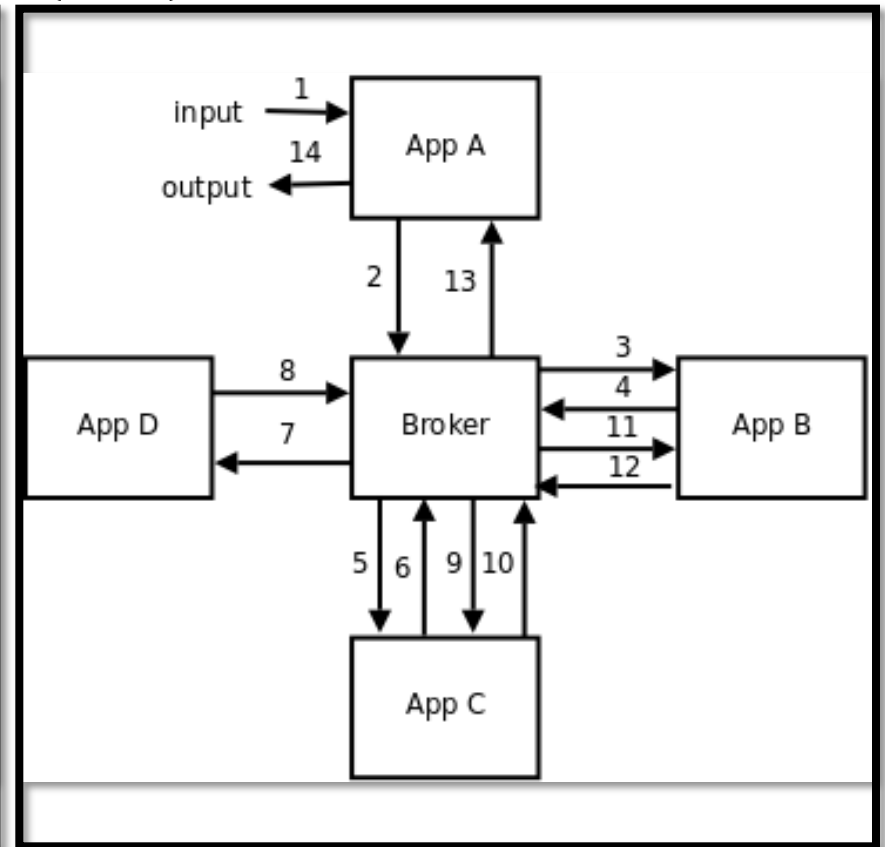


Broker pattern

pipelined fashion

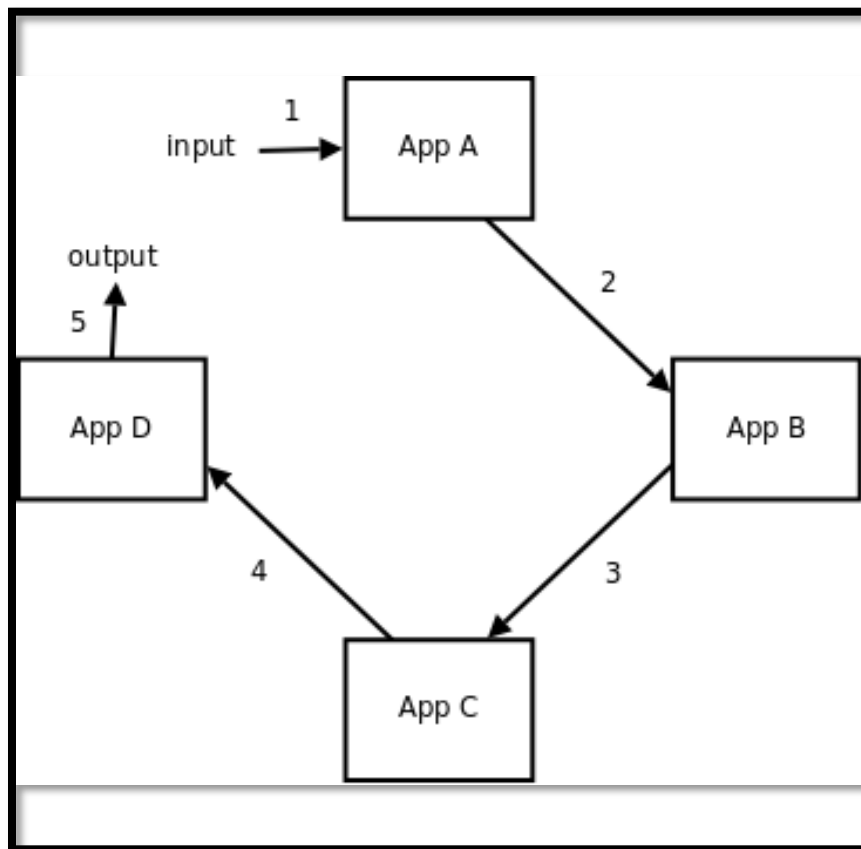


service-oriented architectures (SOA)

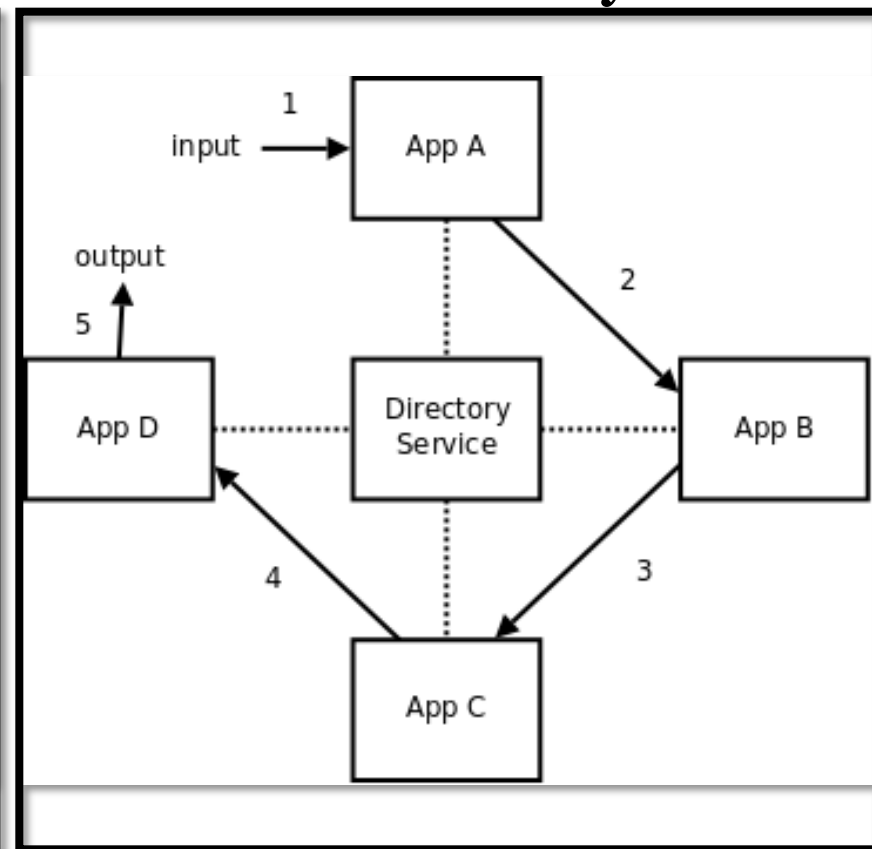


Examples of No Broker model in ZeroMQ

No Broker



Broker as a Directory Service



More Models

Distributed directory service

Distributed broker

