Improving the performance of a Publish-Subscribe message broker

CISTER – Research Centre in Real-Time & Embedded Computing Systems

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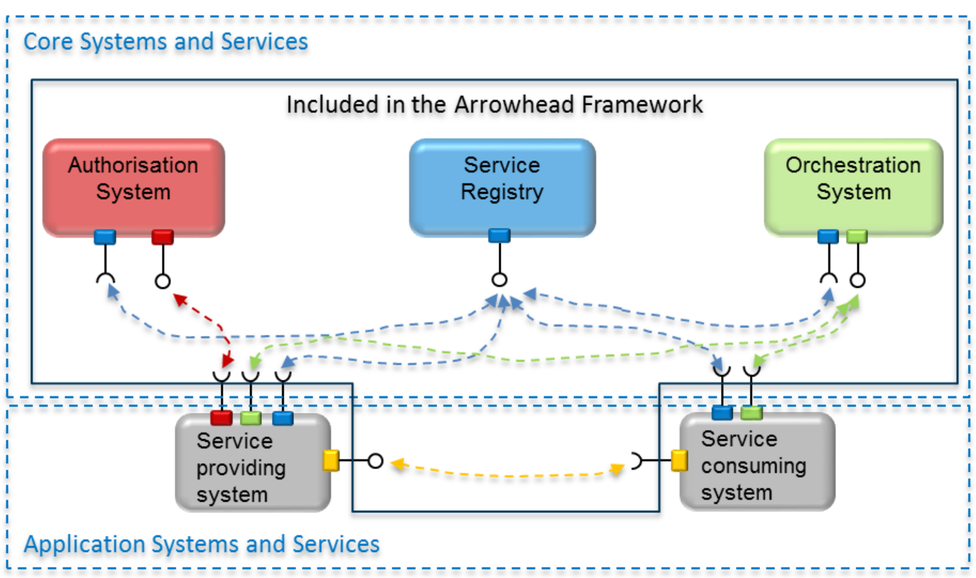
Arrowhead Framework

- Defines SOA framework for IoT applications;
- Based on 3 core services:
  - service discovery
  - orchestration
  - authentication
- Several other services: QoS Manager, Gate keeper, Event Handler, etc



Improving the Event Handler

Problems:

1. none of the three components (producer, consumer and the Event Handler) reused connections
2. Event Handler creates a new thread for every incoming request

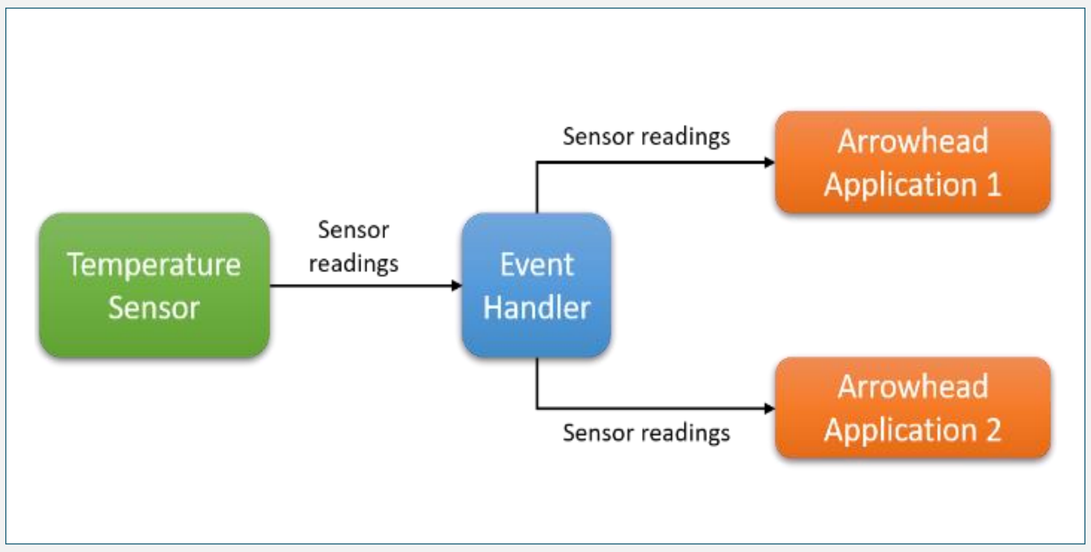
Solutions:

1. A connection pool at the publisher side
   - request for a route for which the client already has a persistent connection available in the pool will be handled by renting a connection from the pool rather than creating a brand-new connection
2. Server-Sent Events in the Event Handler and Subscriber
   - Just by changing the configuration of the Event Handler on Jersey
3. Thread Pool in the Event Handler
   - At the Grizzly HTTP server module

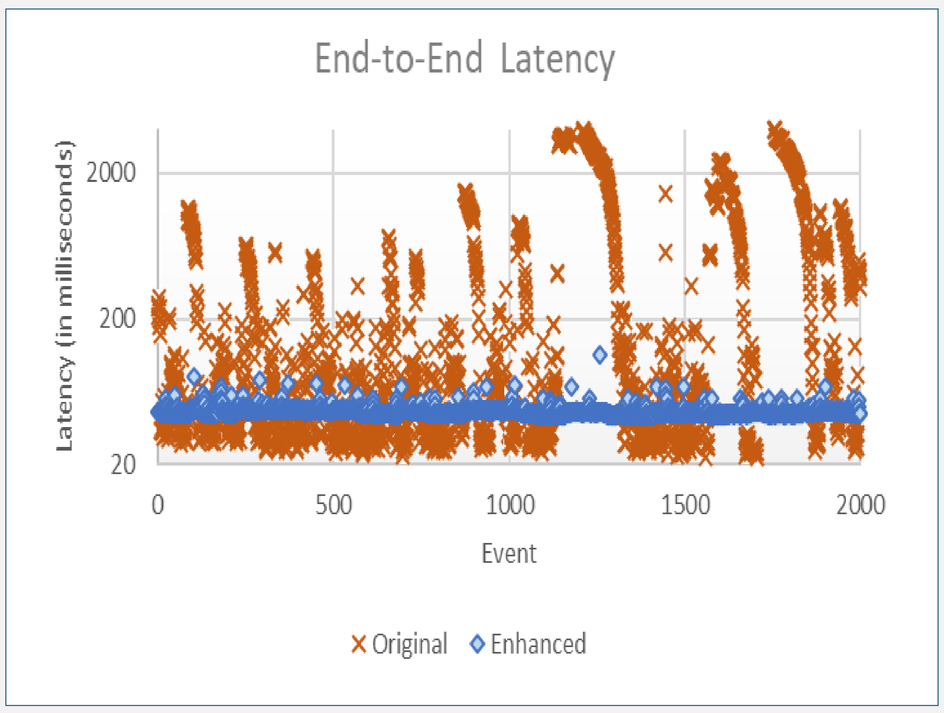
Event Handler

Used for sending periodic updates from a producer service to several consumer services. It is also based on a SOA approach.

- REST/HTTP(S) implementation of a publish-subscribe message broker
- High demanding applications require:
  - High throughput
  - Low end-to-end delay



Experimental results



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