Addressing Scalability with Message Queues: Architecture and Use Cases for DIRAC Interware

**MQ Connection Scheme**

- **Producer 1**
- **Producer 2**
- **Producer N**
- **Message Queue**
- **Consumer 1**
- **Consumer 2**
- **Consumer M**

**Advantages**

- Scalability
- Performance
- Resilience
- Connect heterogeneous environments
- Redundancy
- Delivery Guarantee

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**Message Queues in DIRAC**

- **DIRAC**
  - [http://diracgrid.org/](http://diracgrid.org/)

- **ActiveMQ**
  - MQConfiguration
    - MQConnectManager
    - MQConnector
    - RabbitMQ

- **MQ Configuration**
  - Resources
    - MQService
      - mardirac3.in2p3.fr
      - MQType = Stomp
      - Host = mardirac3.in2p3.fr
      - Port = 9165
      - User = guest
      - Password = guest
      - Queues
        - TestQueue
          - Acknowledgment = True
          - Persistent = False

- **MQ Communication**
  - createProducer()
  - createConsumer()
  - producer1.put(message)

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**Message Queues Use Cases**

1. Component of perfSONAR-DIRAC bridge (in production)
2. Failover mechanism for Elasticsearch in DIRAC monitoring services (in production)
3. Part of Pilot Logging architecture (in progress)
4. MQs for DIRAC services logging system (under tests)

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**Pilot Logging System**

- Final goal:
  - Automatized, general and scalable logging system for all pilots

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