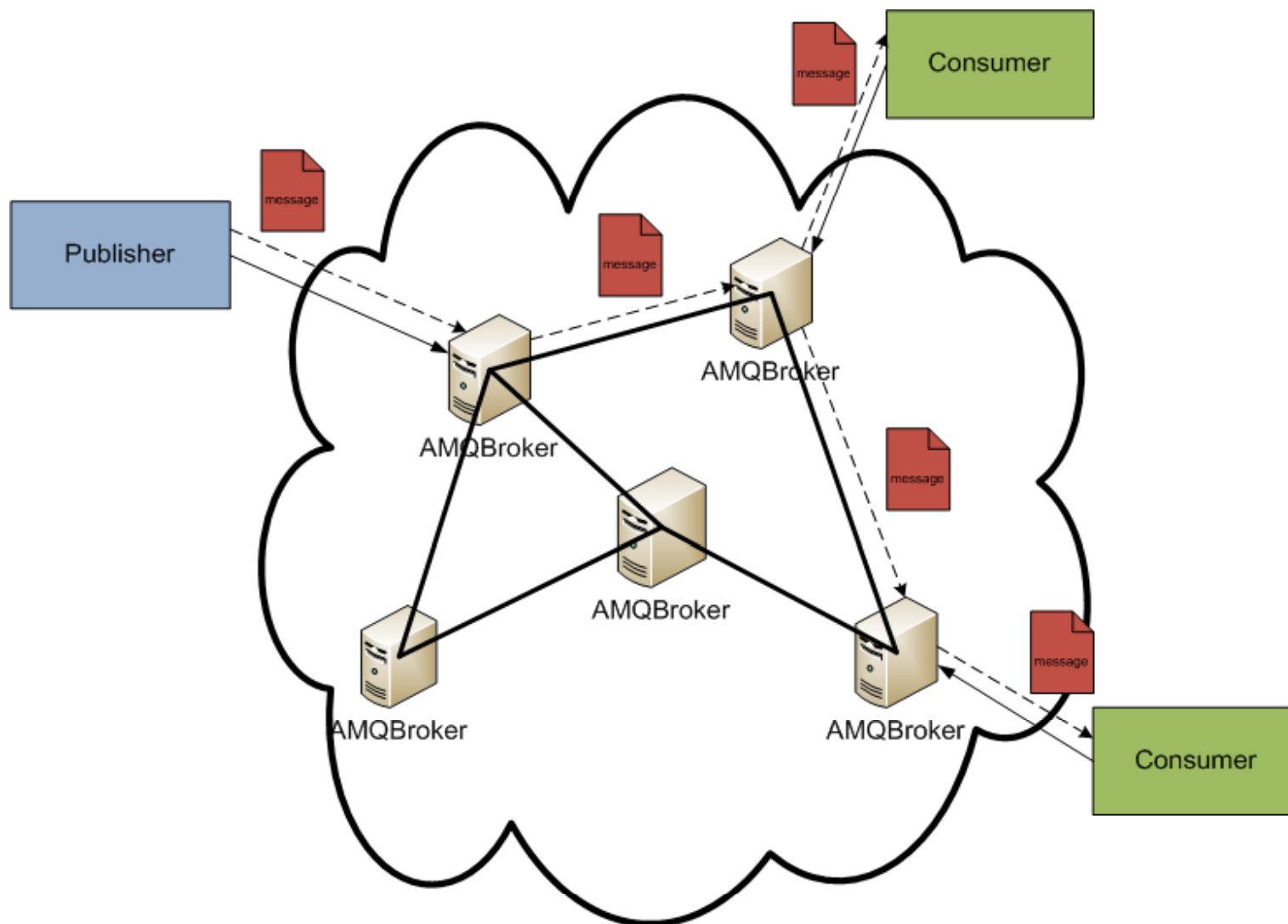
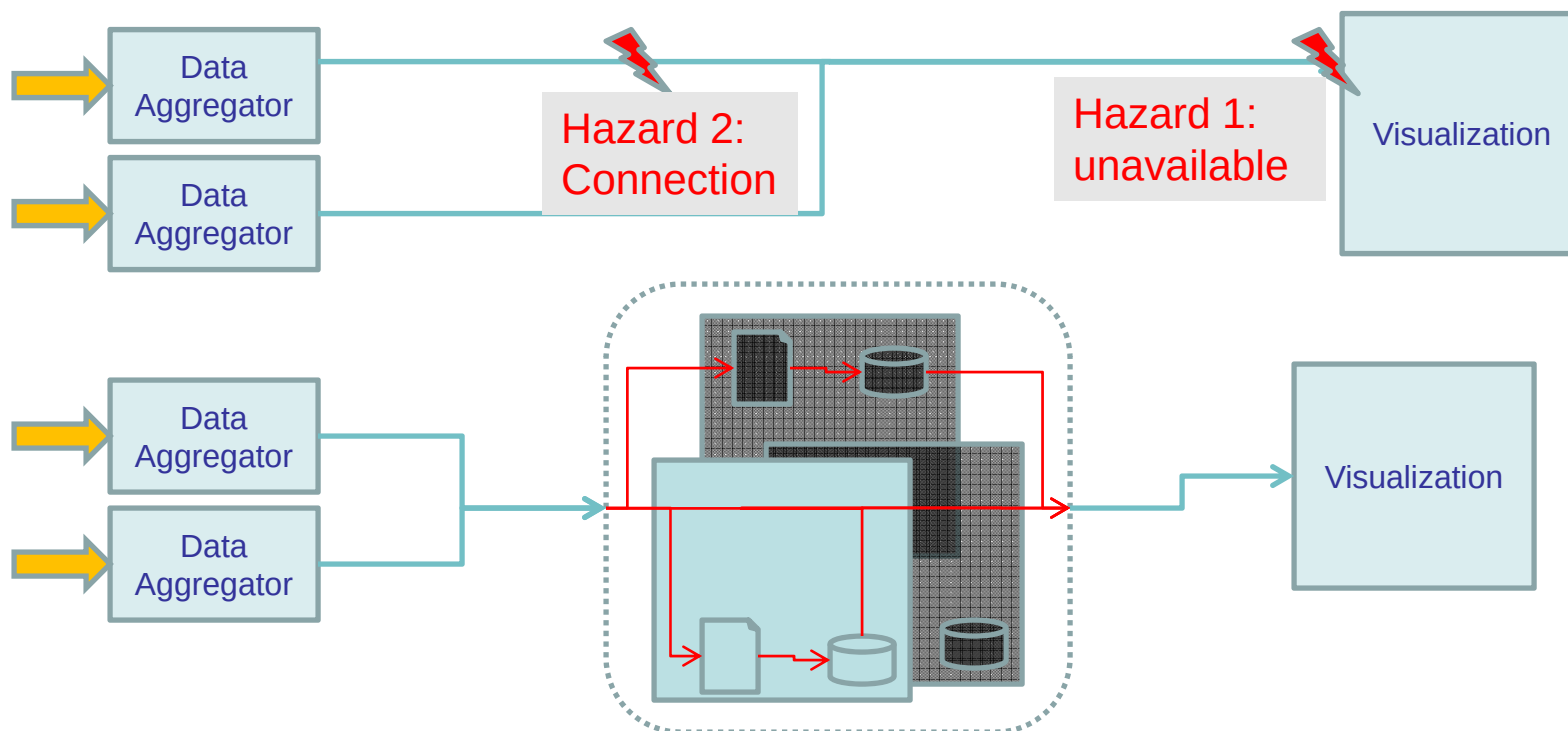




- Features of a Messaging System:
 - Flexible architecture:
 - Deliver messages, either in point to point (queue)...
 - ... or multicast mode (topics)
 - Support Synchronous or Asynchronous communication.
 - Reliable delivery of messages:
 - Provide reliability to the senders if required
 - Configurable persistency / Master-Slave.
 - Remove single points of failure
 - Highly Scalable:
 - Network of Brokers
- ActiveMQ is an Open Source message broker providing these and many other features.

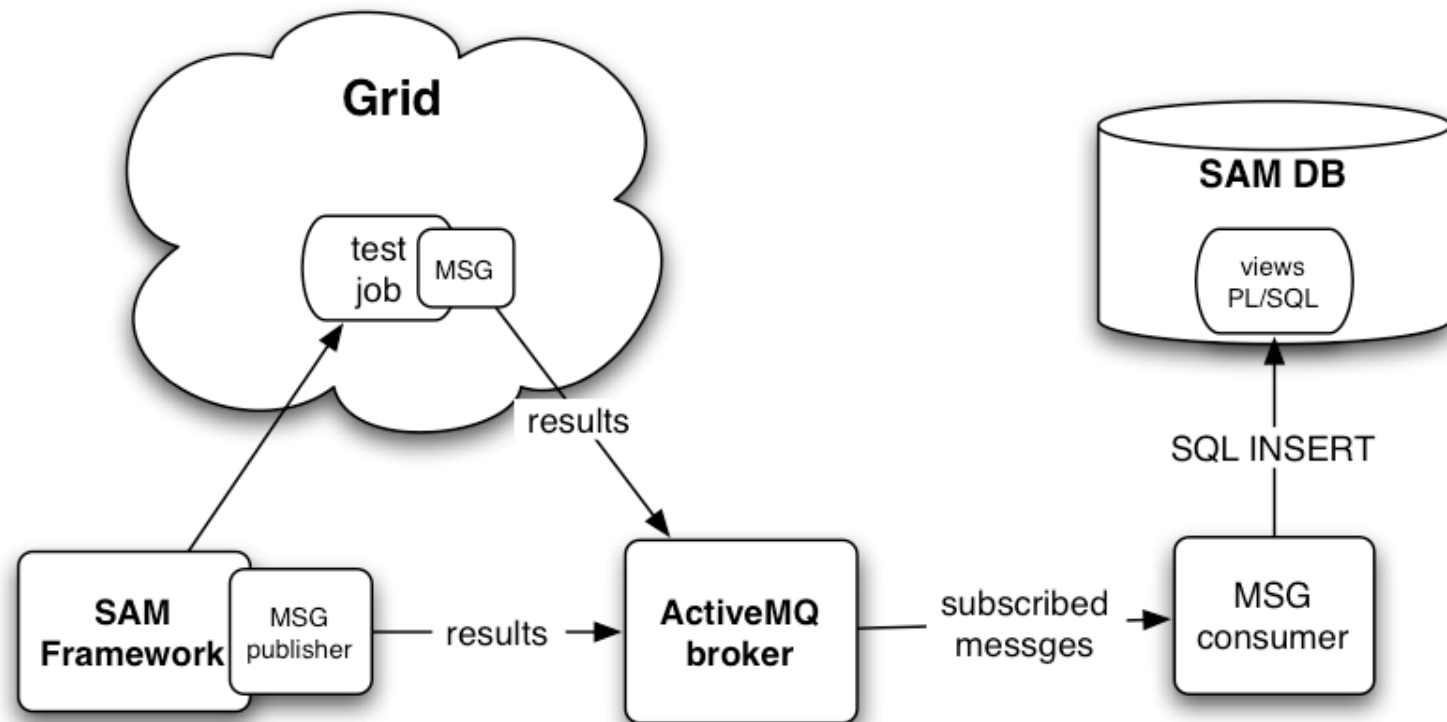


Messaging system reliable solution:

Hazard 1: Persistent messages.

Hazard 2: Master-Slave/Network of Brokers.

Plus message Broadcasting/Routing.



- Test results are published both from the framework and directly from test jobs executing in grid sites
- MSG-consumer is using “transport views” in Oracle DB (see later)



Evaluated Parameters:

- 1) Number of Producers
- 2) Number of Consumers
- 3) Message Size
- 4) Message Number

Measurement of timestamps:

- 1) Message Sent
- 2) Message on Broker
- 3) Message Received

Results analysis:

- 1) Logs containing all information for each message
- 2) From logs, extract messages/second...
- 3) ... and messageLag

B) Connects + subscribes control;
C) On control message, subscribes
testTopic;
D) On testTopic message, save
message information to local file;

A) Manually start client;
B) Connects + subscribes control;
C) Sends control messages
according to algorithm;

C) On control message, publishes
messages to testTopic;
D) On finish sending sends status
control message;

- Broker statistics:
 - Running for 6 weeks with no crashes
 - 60 Million messages of various sizes (0 to 10 kB) forwarded to consumers
 - 15 Million incoming messages from producers
 - Up to 40 Producers and 80 Consumers connected at the same time
 - Stable under highly irregular test pattern:
 - Number of clients change
 - Frequent client process kills
 - Daily number of tests vary
 - Message Rates up to 16000 messages/s
 - Message lags dependent on clients performance, not on broker.

- Scalability in a distributed environment
 - Network of Brokers
 - Testing optimized wire protocols (OpenWire)
- Evaluation under real world use cases
 - SAM
 - 1 Consumer ~ 300 Producers per VO
 - 15 (~2k) messages / second
 - Prototype already in place for OSG
 - Atlas
 - 10 Producers ~ 100 Consumers
 - Streaming of messages with 200 B each
 - Persistence required

