

## Ship Movement and Insurance Validation System

### Client

Client specializes, accesses and interprets large sets of data, such as Ships statistics, movements, local weather, machinery information and traditional demographic data, and combines these with historical claims and information to reveal behaviors that correlate to claims.

### The Challenge

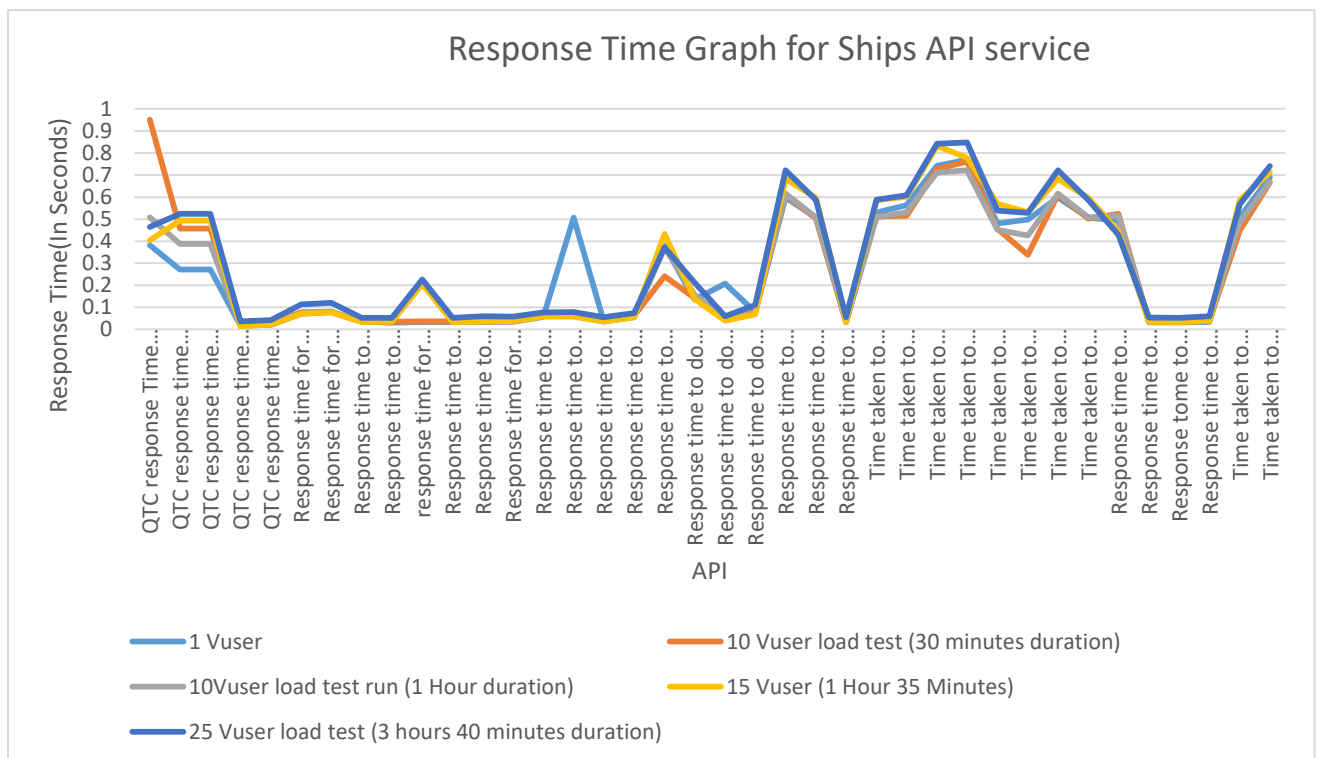
One of the biggest challenges that the organization faced was to change the location of ships through Active MQ messaging services, and in achieving stability in the application behavior at peak performance and scalability levels. The system without any solid, well framed methodology for finding or predicting system behavior and performance under real time stress, became very cumbersome to use. The roadblocks the client came across were-

- Identifying the cause due to which the application was not able to handle the desired load.
- Evaluate performance, during the load test run including how DB (BigData MongoDB) can handle/create Ships, Ports, Watches/Alerts and Zones. For example:
  - Ships – 300, Ports – 4000, Watches/Alerts - 500, Zones – 50
  - Ships – 3000, Ports – 5000, Watches/Alerts - 750, Zones – 75
  - Ships – 6000, Ports – 5000, Watches/Alerts - 750, Zones – 85
  - Ships – 25000, Ports – 5500, Watches/Alerts - 1000, Zones – 100
- Collecting data, such as response time (Processing time) of all ships' services API endpoints using messaging services:
  - Asynchronous Login service
  - Geo Location service
  - Ships Info Service
  - Data Discovery Service
  - Watch/Alert Manager Service
  - Watch/Alert Execution Service
  - Notification Service
  - Moment Reactor
- Capturing stats using 'Bulk Packet Service' process where time taken to pull and process multiple ships.
- Verifying queue for changing movements of Ships.
- Knowing the behavior of the system with various load parameters with different API/DB server configurations.
- Finding out the process to change the location of Ships (Including Parameters – Ship ID, Current Location, and Ships Movement Location).

### The Solution:

Performance and Load Tests were designed after thorough analysis of end to end workflow of application. This included –

- Analysis of Java Controller files that impacted performance scenarios of system, which included API's of Ships services.
- Interaction with Client BigData MongoDB database. For creating Ships, zones, watches/alerts and ports, we created JMeter scripts using DB queries and groovy language code.
- Creation of JMeter scripts to measure response time of all Ships API and their movements.
- Used Open Source JMeter as a performance testing tool, Implemented 'Location Change Message Queue' service using Java Code and create Sampler of MQ plugin to send messages to the MQ (Messaging Queue).
- Automated the PUTTY tool to get the time taken to process multiple ships using 'Bulk Packet Service'.
- Solution for sending data packets on Queues (Parameters – Ship ID, Current-Location JSON data).
- Solution for "Internal server object return error" using server log files.
- Load tests with different Vusers load to capture response time of all Ships API services. Below is the response time graph:

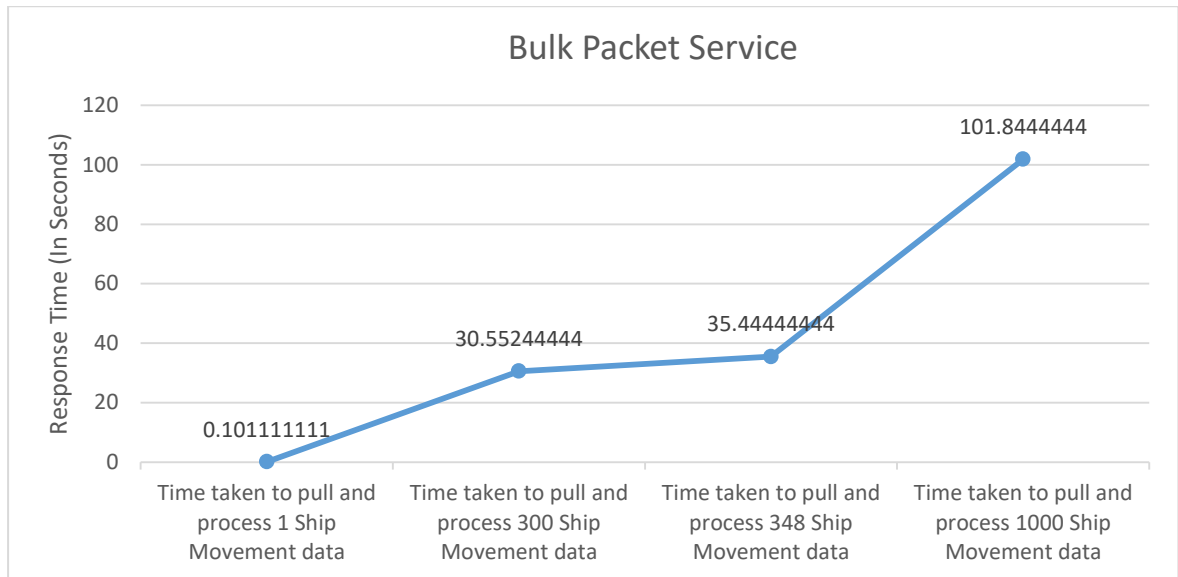


- Checks to ensure no notifications after the load test run.

## The Benefits

- The development team could now identify the system's API glitches

- After providing stats of 'Bulk Packet Service', development team was able to understand and see the variations in how system can pull and push the data through this service.
- The product team was able to identify the performance bottlenecks/issues and able to measure the capacity of their existing infra.
- Product management was able to predict and give infra projection to support higher load on their platform.



- CI/CD Integration: Integrated JMeter scripts with their automated Jenkins job to trigger tests automatically as and when new builds or code changes came in, for further performance evaluation and code optimization.

## About QA InfoTech

At QA InfoTech we specialize in providing independent offshore software testing and unbiased software quality assurance services to product companies, ranging from the Fortune 500 to start-up companies.

Established in 2003, with less than five testing experts, QA InfoTech has grown leaps and bounds with its three QA Centers of Excellence globally; located in the hub of IT activity in India, Noida, Bangalore and our affiliate [QA InfoTech Inc.](#) at Michigan USA.

- ✓ Currently we have 1000+ QA Engineers and Domain Experts.
- ✓ QA InfoTech is an ISO 9001:2008, CMMi Level 3, ISO 20000-1:2011 and ISO 27001:2005 Compliant Company
- ✓ Thought Leaders in Test Automation, Performance Testing and Accessibility Testing

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