

### Client Summary

**Industry:** Asset Manger  
**Turnover:** \$25m +  
**Deployed:** On-Premise & Cloud  
**Location:** UK

### Challenges

- Systems reliant on a single Cloud provider
- Bottlenecks when scaling compute to thousands of instances for back-testing caused inefficiencies and slowed the business
- Cloud use needed to be monitored manually so it could only be used between 8am – 11pm
- The technology should be invisible, it should just work

### Results

- Integration of YellowDog' Platform API took less than two hours
- Reliance on a single Cloud provider removed
- Client data sovereignty and Cloud provider requirements fully met
- No more bottlenecks when scaling to thousands of instances for back-testing
- Full automation achieves 24/7 operation

## Background

Fulcrum Asset Management were looking to accelerate their Cloud transformation and improve their ability to securely burst workloads to multiple Clouds, all while still ensuring budget and performance was optimised to make best use of on-premise and Cloud resources.

## Problems

### Single Vendor

Fulcrum's systems had been developed internally, using a single Cloud provider when workloads required more compute resources. This strategy had provided some advantages however also presented the team with challenges:

- **Performance:** Fulcrum's back-testing would often require over 1,000 Cloud instances. The team had observed issues with machine availability and boot time which extended run times or, in some cases, meant workloads had to be restarted the next day.
- **Price:** Due to the ad hoc nature of the workloads, they were run on machines hired by hour which exposed Fulcrum to spikes in market pricing and also risked losing data if the instance was lost to another bidder before finishing it's task.

### Compliance & Control

Fulcrum wanted to ensure Cloud costs were optimised to avoid overspending through over-provisioning or letting instances continue running when they were no longer needed.

To further control costs and ensure maximum return on capital investment, Fulcrum needed to have the ability to prioritise the utilisation of their on-premise computing resources before bursting to the Cloud.

## Solution

The YellowDog Platform was integrated with Fulcrum's systems and the YellowDog Agent deployed on Fulcrum's on-premise servers as well as being added to Fulcrum's compute images across multiple clouds:

- The YellowDog Platform contains the intelligence and the machine learning to parse the workload and orchestrate the compute
- The YellowDog Agent resides on the compute that is made available to YellowDog and informs the Platform when that compute is available
- Fulcrum integrated with YellowDog through API, which then provided access to YellowDog services and multiple Cloud providers in a single connection

Within the YellowDog Platform there are a number of modules that, when configured, can create a tailored solution to meet business's most sophisticated needs. Fulcrum's deployment has made use of the following modules:



### Business Rules

Business Rules are used to create compute strategies to ensure compliance with data sovereignty, cost and performance optimisation, latency, location and more. Fulcrum's implementation of Business Rules prioritised provisioning on premise compute before bursting to Cloud to optimise Cloud spend and also meant work could be pulled from the Cloud if on premise resources became available.



### Compute Orchestration:

Efficiently automates the orchestration of available on-premise and Cloud compute resources. YellowDog was configured to use Fulcrum's existing Virtual Private Cloud with AWS and their own dedicated Compartment within Oracle Cloud Infrastructure. Not only did this ensure total separation and privacy for Fulcrum's data and workloads, it also meant that Fulcrum's existing Cloud accounts could be used, minimising business process change.



### Performance Analytics & Dashboard:

Provides visibility of how compute resources are being used, their performance and job efficiency. The information is available in a web browser or via an API which can be integrated with existing monitoring systems.

## Results

### Cloud Transformation

Working with YellowDog accelerated Fulcrum's Cloud transformation by several years and enabled them to be one of the first in their market to become Cloud agnostic. The freedom to optimise their Cloud use and intelligently utilise on-premise hardware will save the business significant amounts on Capex and Opex, while helping improve business performance through the delivery of business intelligence far faster than before.

### Client & Regulatory Compliance

Real-Time monitoring of active workloads and Cloud provider performance by the YellowDog Platform and Agent has delivered the highest resilience in the market to provider outages and other issues. Where an issue is identified, YellowDog automates the lifting and shifting of active workloads to new locations or providers in seconds, avoiding any significant interruption to critical services, a key requirement for business continuity.

### Faster Decision Making

YellowDog's Compute Orchestration feature has halved the time it takes to bring up 1,000 instances, feeding information back into the business faster than ever before, helping Fulcrum stay ahead of the market.

The Fulcrum team no longer experience any bottlenecks when scaling to 1,000 instances and beyond, maximising the cost efficiency and performance of every instance. Furthermore, the monitoring and reverse-burst strategy has given Fulcrum the confidence to run analyses 24/7 as the YellowDog Platform provides the control to manage all scaling and continually evaluates if more cost-effective resources are available which would still deliver the information to the business within the target deadline.

*'YellowDog have transformed how we use our existing hardware and the Cloud, making all the behind the scenes workload management invisible'*

**Jago Westmacott**

Chief Technical Officer  
Fulcrum Asset Management

## For more information:

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