Transforming Mining Optimisation: From Hours to Minutes with Massively Parallel Serverless Processing

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# ABSTRACT

Mining optimisation is an area that can benefit immensely from High Performance Compute (HPC) to provide data driven decisions through the application of novel mathematical, statistical and machine learning approaches. Where these algorithms or approaches scale well with parallel processing we have the ability to apply the massive scale of cloud computing to how quickly we can produce these results. Traditional approaches require large up-front investment in infrastructure and do not scale well with demand.

In this paper the author will discuss an approach that utilises serverless technologies within Amazon Web Services to deliver optimisation of thousands of ore body plans to users within 5 minutes. This fundamentally changes how this information can be used as the time horizon has shifted from what could be delivered with traditional approaches, taking in the order of several hours. It is also cost effective with no existing infrastructure in place, scaling to meet the demand automatically and requiring the customer to only pay for what they consume.

This approach is in use within a global mining organisation. Mechanisms from Amazon’s culture of innovation was used to rapidly prototype, develop and implement this solution within the miner’s environment. A relentless focus on the customer and working backwards from their needs allowed the team to prioritise experiments and testing to quickly eliminate sub-optimal decisions and approaches and learn quickly from failures. This paper will also discuss the evolution of this architecture and the lessons learned and data points that were taken to deliver the final outcome for the customer.