

Miu Platform Comparison - Performance

RMS® Miu Platform

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Introduction

This document highlights the performance differences between the Miu platforms.

This comparison was last updated February 2020. The Miu on the Cloud platform is continually being updated and this document may not reflect the latest performance improvements.

The desktop and cloud platforms are inherently different due to the nature of the underlying technology. Therefore, while it is not possible to use identical specifications, when comparing these two platforms, equivalent configurations were used in order to best isolate and highlight the performance improvements.

Platform Specifications

Miu Desktop

Desktop analyses were run:

- via software version Miu v2.10
- via data version v18.0
- via Apache Tomcat
- on Microsoft Windows Server 2008 R2
- with 6 cores
- size 2.3GHz
- and 32 GB RAM

Miu Connector (Small Cluster)

Connector analyses are launched from desktop v2.10 and run on the cloud with a small cluster.

Miu on the Cloud (Small Cluster)

Cloud analyses were run:

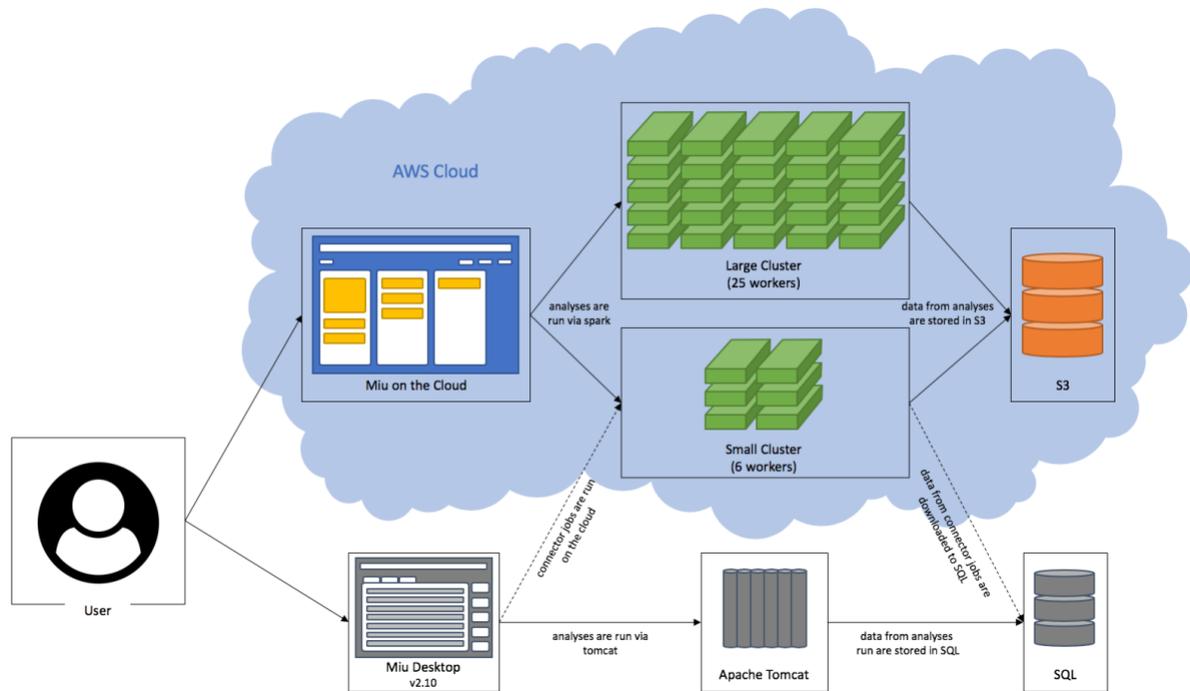
- via data version 18.0
- via Apache Spark
- on Amazon Web Services EMR
- with 6 workers
- AWS instance type m3.2xlarge

Miu on the Cloud (Large Cluster)

Cloud analyses were run:

- via data version 18.0
- via Apache Spark
- on Amazon Web Services EMR
- with 25 workers
- AWS instance type m3.2xlarge

Platform Infrastructure



Performance Results

Sample Set

A collection 144a cat bonds were used for the performance benchmarking.

The sample set consisted of 90 programs comprised of 155 individual classes in total.

Program Results

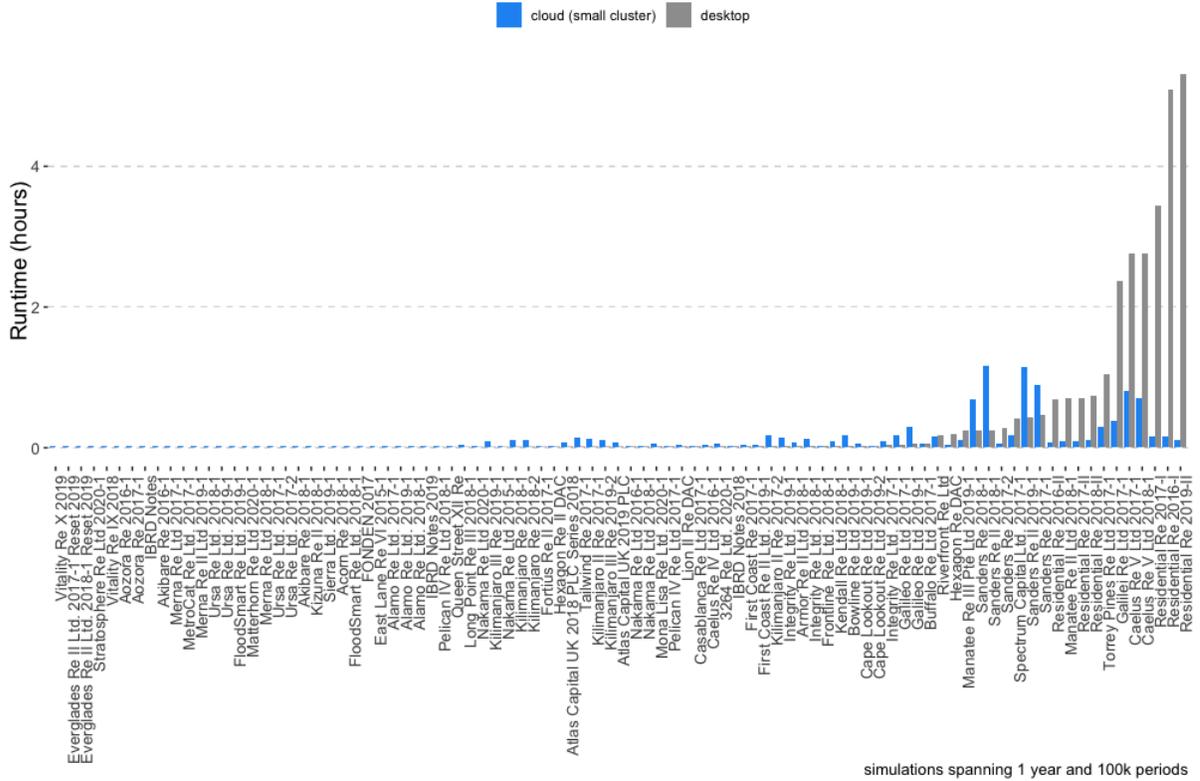
Program results were generated by analysing the first year of the risk period with 100k periods of simulation and recording runtimes across the following platforms:

- Desktop vs Connector (Small Cluster)
- Desktop vs Cloud (Small Cluster)
- Desktop vs Cloud (Large Cluster)

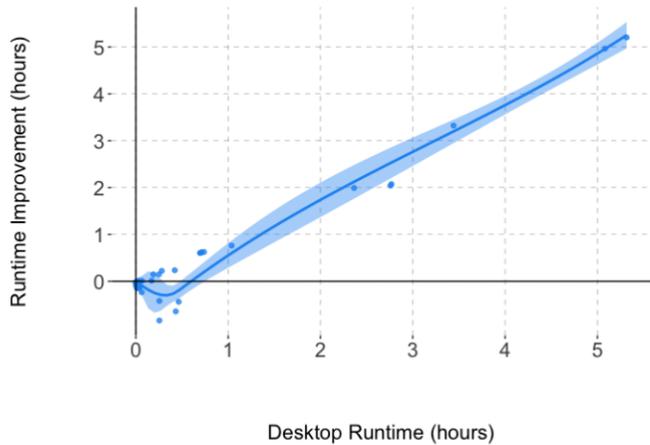
Portfolio Results

Portfolio results were generated by aggregating all program runtimes.

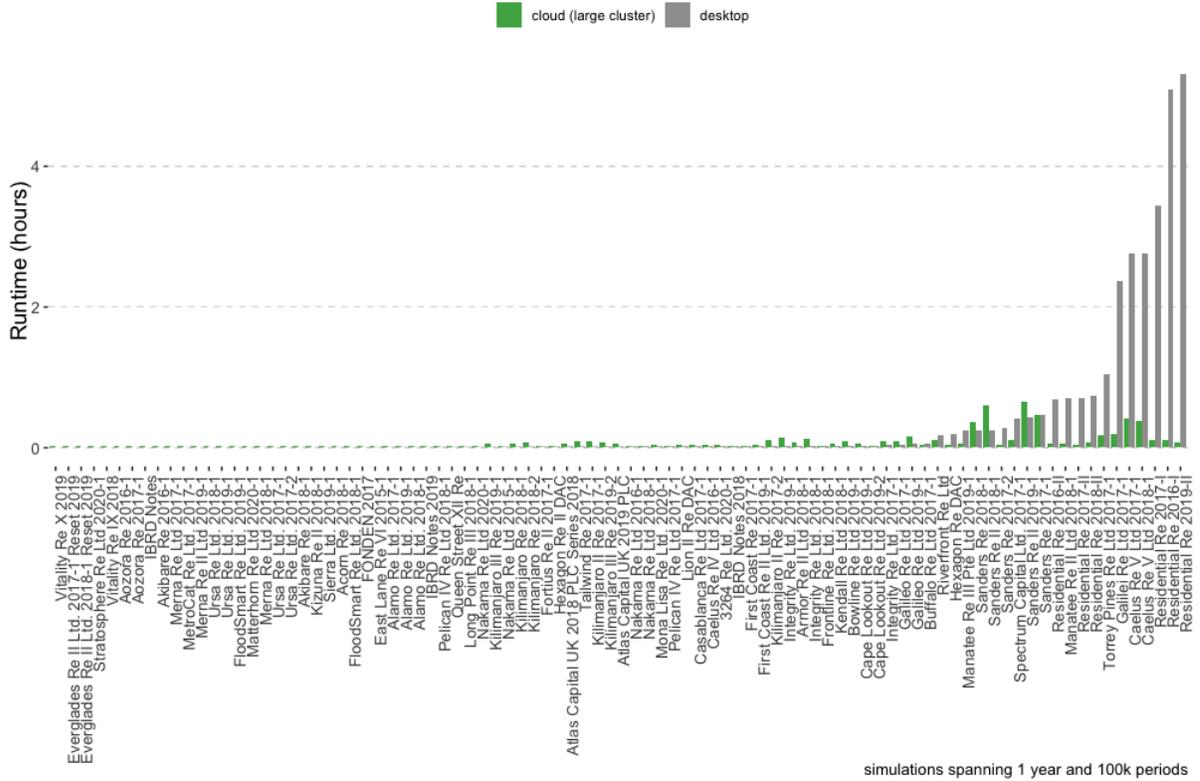
Program Performance Desktop vs Cloud (Small Cluster)



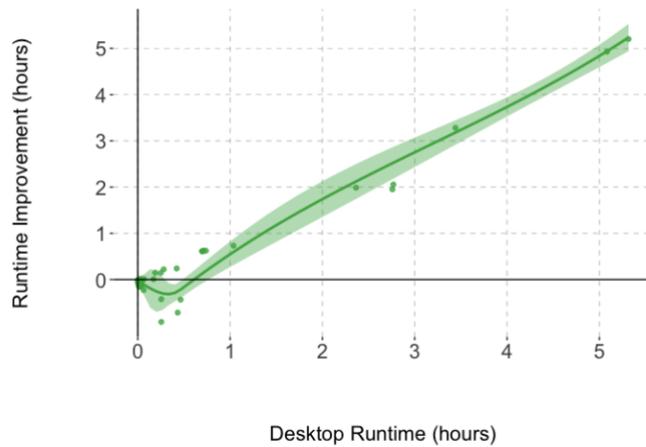
Program Performance Improvement Desktop vs Cloud (Small Cluster)



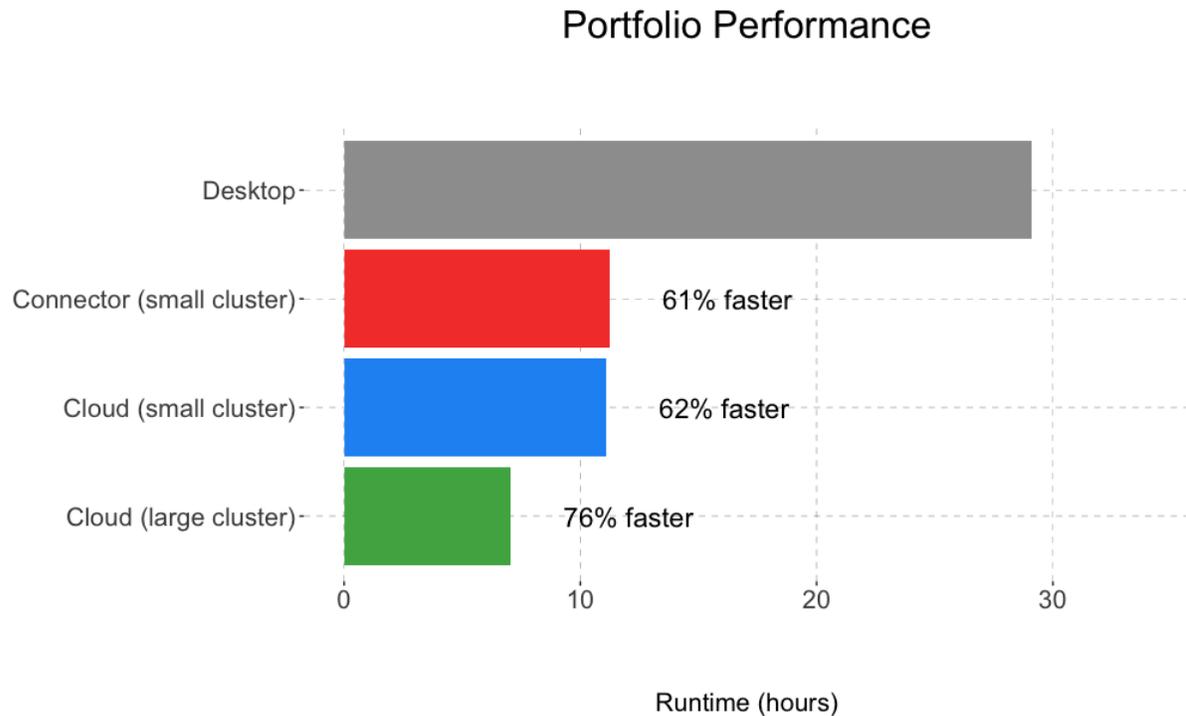
Program Performance Desktop vs Cloud (Large Cluster)



Program Performance Improvement Desktop vs Cloud (Large Cluster)



simulations spanning 1 year and 100k periods



simulations spanning 1 year and 100k periods

Conclusion

It should be noted that there are many factors that contribute to the total runtime of an analysis. For instance:

- Number of classes
- Type of classes (i.e. custom, aggregate, etc.)
- Size of ELTs (i.e. number of rows)
- Size of YLTs (i.e. number of rows)
- Risk Period (i.e. start date to end date span)
- Simulation Periods (i.e. 10k to 100k)

Considering these factors, one can clearly notice that as programs increase in complexity (i.e. more classes, ELTs, YLTs, periods, etc.) the Connector and Cloud platforms outperform the Desktop. Desktop does have a slight advantage for smaller simpler programs, when run in isolation—however, these small advantages are only significant at the program level. Once those programs are aggregated into a portfolio, these small runtime advantages are lost with Connector and Cloud options showing approximately 60-75% faster runtimes.

Contacting RMS

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- Hardware and configuration details of the system you are using, including network details, for example desktop or client/server configuration.
- Details on the difficulty you are encountering, for example, the product and version you are using.

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