

DATABASE COSTS AND SAVINGS PLAN

Zachary Theiss and Kendall Bingham (advisor)
University of Missouri-Kansas City
Kansas City, MO 64110
zat7w6@mail.umkc.edu

INTRODUCTION

AWS exploded onto the scene and has been a very valuable tool for any company no matter the size. This is due to the ease of use and access, along with its ability to be expanded into a more sophisticated and detailed service. Offering redundant servers in both regions (large portion of the US) and areas (locations inside each region) to prevent a complete stoppage of data flow by saving copies of data across the country. The focus of this paper is set on AWS Database Affordability by examining the hard and soft costs that companies must evaluate when starting or buying servers.

HARD COSTS

AWS offers technology departments of all sizes the ability to run their company without having to go out and make large investments in servers. This is incredibly helpful since most individuals must "over buy" or buy servers that are much larger than their needs on the assumption of future growth. This can create an issue as the company now has a server that is two to three times larger than needed, but they have already sunk the money. This large investment into a server is considered a "Hard Cost," something that is tangible and required for the service to be completed. Hard Costs in servers can be broken down into operation vs capital expenses, server rooms, disaster recovery, and life cycles of technology.

SOFT COSTS

The "Soft Costs" are also referred to as Esoteric costs for the company and these are usually expenses that are not completely thought through by most companies, let alone by individuals not in the technology industry. These costs can be entirely missed when evaluating the cost of a server project, which could come back to be a major issue for many smaller firms. The points of emphasis include procurement and installation, operations, human capital, cloud benefits, and spot instances.

CLOUD BENEFITS

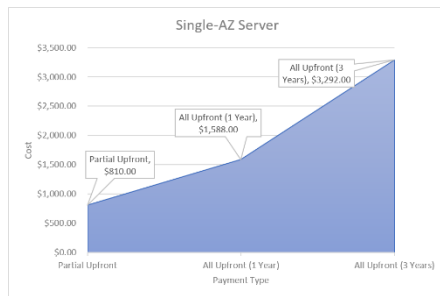
This section revolves around what AWS offers to companies.

- There is an increased innovation and velocity that can be achieved with cloud design patterns. The speed that everything is developed and deployed is an asset to every company that wants to keep a cutting-edge advantage when it comes to database servers. Having the latest and greatest technology can be helpful when a company relies on consistent updates.
- AWS offers the ability to leverage human expertise, specifically looking at accessibility of systems, common technologies and design patterns, AWS's development operations, and infrastructure expertise. Thus, not only do they provide the platform to grow and develop, they offer their own expertise to help any customer reach the goals they want to on their servers. If help is required, there is someone there 24/7 to provide guidance and support.
- Security has been a strong talking point for companies around the world and the conversation happens nearly every day. This is because one company after another experiences a data breach and the fear of being next is growing due to the stigma that follows that company around for years. Having another party handle the security and provide reassurance of safety is worth nearly any cost as public image drives sales.

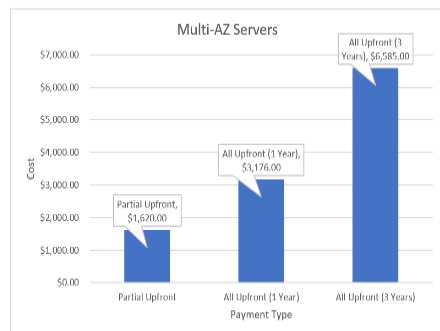
- The last benefit of note is the essentially unlimited capacity while providing support for scaling up and scaling down. Scaling down is not a common thought process when it comes to onsite servers because the cost to replace a server that is too large does not make sense. AWS allows for adjustable server sizes meaning that if the company is cutting something back there is no big deal, or if more space is needed, it can be expanded with spot instances. Server usage can also be done by number of hours running, thus if a server runs for a month, it can be turned off after the month of testing to save money.

DECISION

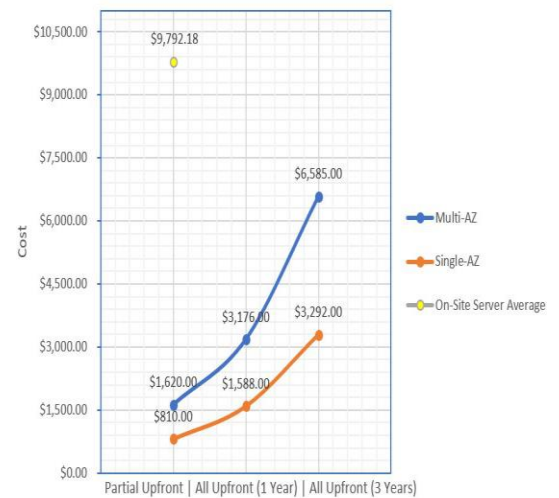
AWS provides enough benefits that it is hard to not side with them especially if a company is looking to start their own server management for the first time. Multi-AZ servers focus on the production environment in a prepaid method, this setup comes with redundancy, and disaster recovery. Single-AZ is the same, but instead focuses on a server for development as it does not have the same redundancy. The line graph looks at how the AWS options match up to a new server being purchased and installed [1].



Payment	Effective Monthly Price	Savings Percent/Hour	Equivalent/Hr Demand Price
Partial Upfront	\$0.19	32%	\$0.272
All Upfront (1 Year)	\$0.18	33%	
All Upfront (3 Years)	\$0.13	54%	



Payment	Effective Monthly Price	Savings Percent/Hour	Equivalent/Hr Demand Price
Partial Upfront	\$0.37	32%	\$0.544
All Upfront (1 Year)	\$0.36	33%	
All Upfront (3 Years)	\$0.25	54%	



CONCLUSION

AWS is an incredible service with many different aspects to explore for any company attempting to keep up with the new technology. Hard and soft costs are key to any company that is looking to start a major project and the beginning of a relational database can be a major venture for nearly any company. Thus, knowing the options available could come back to save a company millions of dollars down the line, and AWS provides a platform that no matter how big or small your business is or how much physical space available the company can run a full-size database server for a reasonable price.

REFERENCES

[1] Amazon RDS for MySQL pricing, <https://aws.amazon.com/rds/mysql/pricing/>, retrieved March 9, 2019.