



Estimating Potential Operational Cost Savings by Migrating On-Premises to Cloud: A Study using Amazon TCO

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Abstract : In order to use Amazon TCO (Total cost of ownership) calculator to compute the company operational cost saving by migrating on-premises, Colocation workloads to the AWS cloud, we started investigating the case studies showing on the AWS web page. Cases are categories by either company type or by solution. Data are gathered from Amazon webpage. The following reports are from TCO calculator to show the IT cost savings based on both qualitative and quantitative methods. By solution, the parameters like Big Data, Data Center Migration, Enterprise Solutions, Financial Services, Healthcare & Life Sciences, Internet of Things, Machine Learning & Artificial Intelligence and Web & Mobile Apps are normally considered. By company the parameters like type and size, Enterprises, Startup and Public Sector are considered.

Key words : TCO; Operational Cost; Migration On Premises; AWS Cloud; Qualitative Methods; Quantitative Methods; Big Data; Financial Services; IoT;

INTRODUCTION

Service delivery in cloud computing companies with three different service models: i. Software – as – a – service (SaaS):- provides complete application to a clouds end user. It is mainly accessed through a web portal and service oriented architecture based on web service technologies. Eg. Google drive. ii. Platform– as– a– Service (PaaS):- Comprises the environment for developing and provisioning cloud applications. The main user of this layer are developers. The services offered on a cloud platform tend to represent a compromise between complexity and flexibility that allows application to be implemented quickly and loaded in the cloud without much configuration. iii. Infrastructure– as– a– Service (IaaS):-This provides essential IT resources like data storage resources, computing resources and communication channel. Physical resources are abstracted by virtualization, which means they can be shared by several OS and end user environments on the virtual resources ideally without any mutual interference. These virtualized resources usually comprise CPU and RAM, data storage resources.

Amazon Web Services – long considered the gold standard for web scale cloud services has begun a very focused effort on driving growth in their customer base from enterprise audiences. We believe this will become a common theme as all the larger public cloud providers shift their focus from the “cloud first” workloads to the massive underbelly of Enterprise IT spend. One of the major challenges that these vendors will face is increasing pressure to demonstrate TCO in the face of incumbent internal IT opposition. There are arguments being made inside enterprise that (security and regulatory concerns notwithstanding) enterprise IT can deliver cloud-like shared services

as, or more, cheaply than AWS and its peers. This argument may or not be true generally, but it does force these providers to work harder to justify the TCO/ROI case to move to the cloud for enterprise workloads. So let’s take a look at how TCO is being calculated by public cloud vendors today, working through a real world example, and identify some of the critical limitations of applying an on-premium costing model for the on-demand world. Amazon has developed and published a TCO tool (<http://www.awstccalculator.com/>) designed to help organizations better understand the financials behind their IT infrastructure, and how that would compare to an equivalent AWS configuration. The challenge behind this, and in fact the challenge with all traditional enterprise ROI calculations is the complexity of the enterprise cost models. The transition to more modern shared services infrastructures exacerbates these issues by intermingling the various resources and costs. AWS has invested considerable effort in building out a default cost structure that can be used for the TCO calculations (from an assumptive point of view) and a set of assumptions on how enterprise hardware is architected and deployed. The result of this is a simple to use tool that enables a user to enter in some basic information around the configuration of an app, and get a baseline cost comparison against the equivalent running in Amazon. While the tool is quite simple to use, the logic underpinning it leaves a lot to be desired.

Specifically:

1. The tool assumes a discrete, complete, comprehensive stack for each application that you are conducting an ROI on, with no re-use from existing resources.

- It assumes that you can fully eliminate the cost of the underlying hardware by switching the app to Amazon.
- The tool assumes a 3 year ROI, starting from today – it doesn't allow for partial amortization.

These assumptions then mean this tool is only useful if you migrate 100% of apps to Amazon, and that you can retire the underlying infrastructure completely, and that that hardware is new.

METHODOLOGY

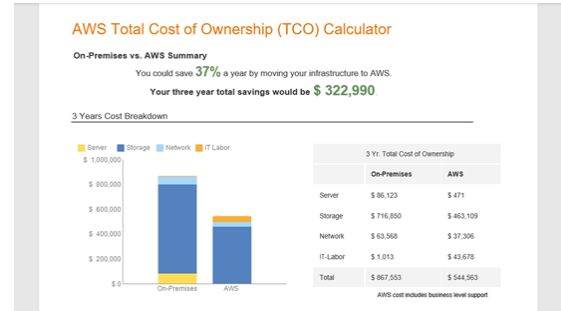
For the qualitative method, we cataloged the data by company type. By reading several case studies, we noticed that firms usually have more than one challenge, meaning firms will need at least one solution. After analyzing the data by solutions, the results will still have some caveats. First of all, compartmentalizing the research by company type and size, research goes with enterprises, startup and public sector. Second, inventorying the data from case studies on AWS web page. It is generally picked up the firms that appeared on the front page of each categories. And then enrolled the relevant numbers in excel that need to be used in TCO Calculator. After gathering the data, Look up the range of number for configurations of each company type. Since the locations of each company will be different, Hold this configuration constant as US East. Similar to the DB engine, enterprises will have more than one engine that either My SQL or Oracle. However, the partially data shows that SQL will be more frequent. So, hold this configuration constant as My SQL.

For the quantitative method, despite of the limited configuration information found on the webpage, other configurations such as the number of VMs, CPU Cores, Memory(GB) will be taken from the instances provided by AWS. For example, AWS provides Memory instance up to 256 GB. We take 1GB, 125GB, 256GB as the experiencing numbers. The reports are analyzed by company type and size and reports will present macro-data regarding on the company type.

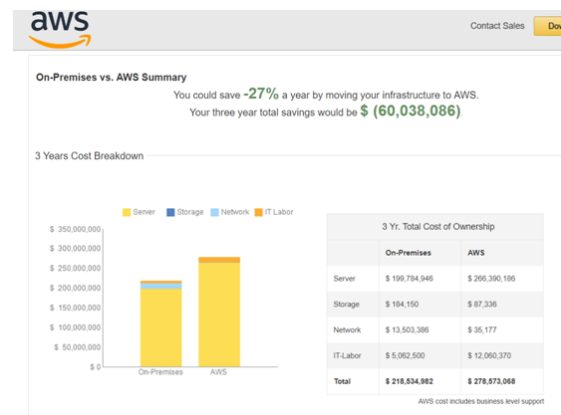
RESULTS

- Result (for the complete report, please see the URL under the image):

Enterprises: database is frequently employed by enterprises; storage will be hold constant as 500 TB, but one exception is that I used 100 TB to test the median range.

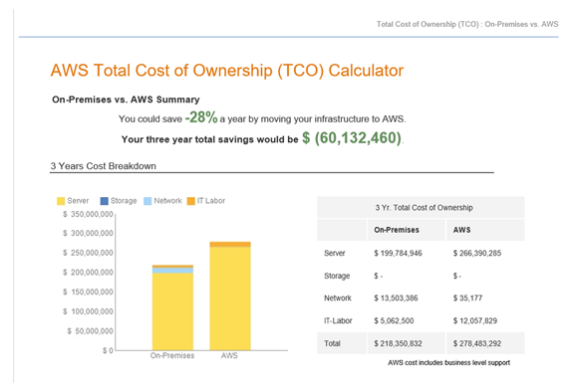


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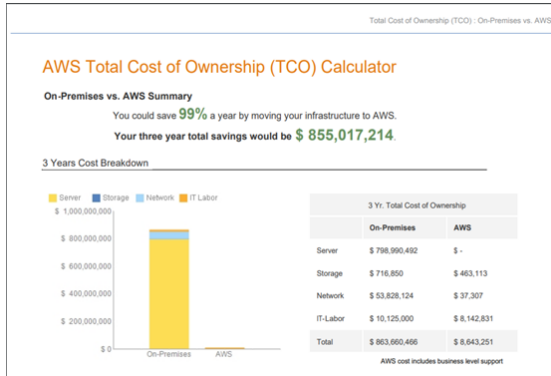
(100TB)

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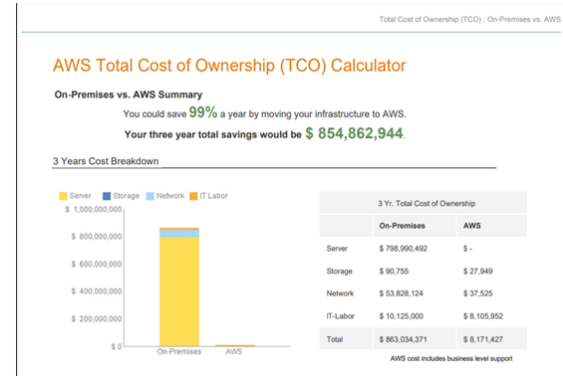


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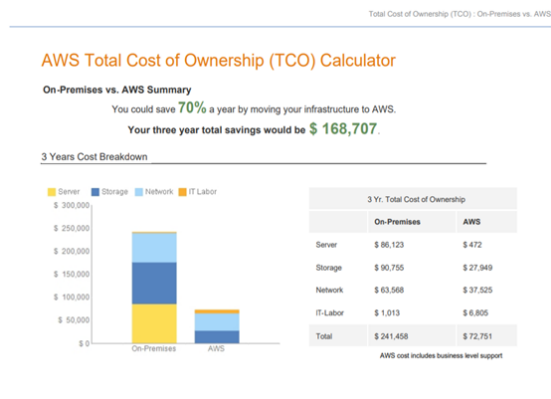


Startup: database is frequently employed by startup; storage will be hold constant as 30 TB, which is slightly small compared to enterprises.

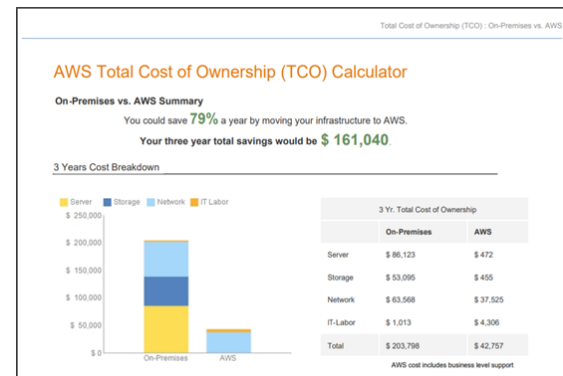


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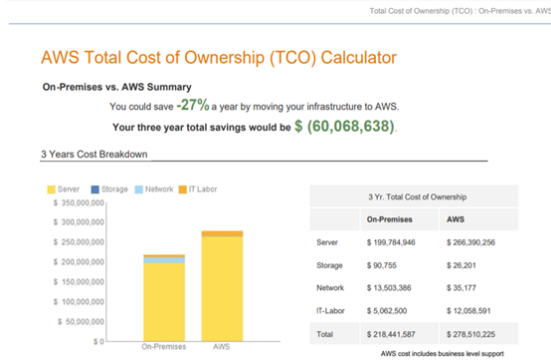
Public sectors: this type have either non-database or database; storage will be hold constant as 500GB, which is considerable small compared to enterprises and startup.



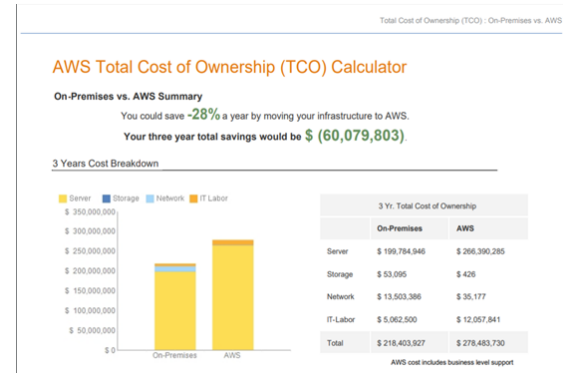
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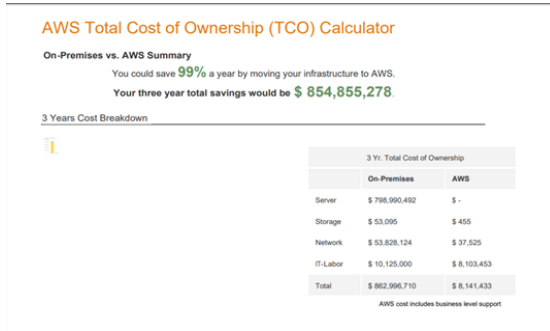
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CONCLUSIONS

Besides the on-premises, company may previously use colocation. This type should also be analyzed by instances numbers given by AWS. However, majority of companies used on-premises instead of colocation. So, this research will only focusing on analyzing the on-premises conditions. Thus we use Amazon TCO (Total cost of ownership) calculator to calculate the company operational cost saving by migrating on-premises, Colocation workloads to the AWS cloud, we started investigating the case studies showing on the AWS web page. Cases are categories by either company type or by solution. Data are gathered from Amazon webpage. The aforesaid reports are from TCO calculator to show the IT cost savings based on both qualitative and quantitative methods. By solution, the parameters like Big Data, Data Center Migration, Enterprise Solutions, Financial Services, Healthcare & Life Sciences, Internet of Things, Machine Learning & Artificial Intelligence and Web & Mobile Apps are normally considered. By company the parameters like type and size, Enterprises, Startup and Public Sector are considered.

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