

Chapter 5

A Cost-Effective Cloud Strategy for Small and Medium Enterprises (SMEs): Transforming Business With Amazon's EC2 Spot Instances

Debashis Saha

Indian Institute of Management (IIM) Calcutta, India

ABSTRACT

In cloud service provisioning, spot instances are an attractive option for IT managers of small and medium enterprises (SMEs) that usually have sporadic requirements for cloud resources. Though priced dynamically, spot instances are usually cheaper. Cloud service providers (CSPs) employ the spot instance approach to sell their “idle” resources because spot instances are spare slots requiring no pre-booking, unlike reserved or on-demand instances that require prior booking. However, IT managers have to win spot instances via auctions conducted by CSPs. An SME continues to consume spot instances as long as its bid exceeds the current spot price. But, if it loses at any point in time, the unfinished task is to be put on hold by checkpoint mechanism. Optimizing both bid price and checkpoint overhead calls for strategic thinking on the part of the SME. This chapter dwells on this issue to help the IT managers of SMEs transform their business with cloud.

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INTRODUCTION

The world is going the digital way, and so are the organizations – resulting in digital transformation of enterprises, be it small, medium or large. *Digital* is the new normal of the modern way of carrying out businesses. However, digitalization^{1,2} is easier said than done. Organizations are really struggling to cope up with and embrace effectively the deluge of digital disruptions spanning from mobile wireless communication to cloud based data analytics. On top of this, digital has given rise to a new threat. Disruptive business paradigms that harness the afore-mentioned new normal to innovate novel business models are giving rise to a plethora of Internet-based start-ups, which do not dare to challenge the existing behemoths in their own domain. These companies are able to ramp up their IT infrastructure very quickly because they rely heavily on cloud. Furthermore, while managers in traditional firms are trying hard to transform their businesses from analog to digital in order to keep pace with the changing competition, customer demands are also changing very fast with the digital millennials constituting a major chunk of online consumers, who are extremely tech-savvy and mobile-fanatic. For them, since mobile handheld devices do not have massive storage (but they are very strong in wireless data transfer), cloud has become the order of the day when it comes to using mobile computing. Hence, not surprisingly, cloud computing has turned out to be one of the most significant digital disruptions that drive digital business transformation³ today.

Cloud is also impacting the IT infrastructure within an established organization considerably. Riding on the *utility model* of cloud, the companies are moving away from the “build-own-operate” model of in-house IT systems to “rent-on-demand” model for servers, operating systems, software development platforms, and even for big software like ERP. The executives and managers are taking cloud seriously (Karunakaran, Mooney, & Jan, 2015) because it relieves the organizations of planning, purchasing, and maintaining complex in-house computing facilities, thereby converting their massive upfront Capital Expenditure (i.e., CapEx) into much smaller Operational Expenditure (i.e., OpEx). According to a recent estimate, about 24% of the companies have strategically adopted “cloud-first” policy⁴, whereby they look for cloud options first whenever any new requirement for IT resources comes up within the organization. This is very much lucrative for small and medium enterprises (SMEs) worldwide because they need not any more spend upfront for IT systems, and more importantly, need not bother about maintaining those hardware and software, which they have conventionally found extremely cumbersome to handle internally and hence most of them avoided IT adoption to a large extent.

Simply speaking, cloud is the utility-way of sharing hardware and software resources and services – similar to the way we consume our daily utility needs (say, electricity, water, etc.). Certainly, there are corresponding service providers, known

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