Chapter 43
Monitoring and Auditing in the Cloud

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ABSTRACT

The cloud computing is the term which have different services such as storage, servers, and applications which are delivered to an organization's computers and devices through the Internet for both technical and economical reasons. However they are many potential cloud users are reluctant to move to cloud computing on a large scale due to the unaddressed security issues present in cloud computing and so is increased the complexity of the infrastructures behind these services. So in this chapter, the challenges faced on both auditing and monitoring is identified. Accordingly it considers an investigation which uses to produce the major security audit issues present in cloud computing today based on a framework for security subsystems. To overcome the standards of auditing and process of auditing is briefly explained. There are also many platforms that provide cloud services also those domains are listed out with domain based monitoring process.

INTRODUCTION

Cloud Computing has rapidly become a widely adopted paradigm for delivering services over the Internet. Many thought that once the National Institute of Standards and Technology (NIST) came up with a formal definition for cloud computing. The NIST cloud definition has three main components that consists of five key cloud characteristics: On demand self services, Rapid elasticity, Broad network access, Resource pooling and Measured Services. There are four cloud deployment models: Public Cloud, Private cloud, Hybrid Cloud and Community cloud. Finally three cloud service models incorporated: Software as a Service, Platform as a service and Infrastructure as a service. The entire cloud model is shown in Figure 1.

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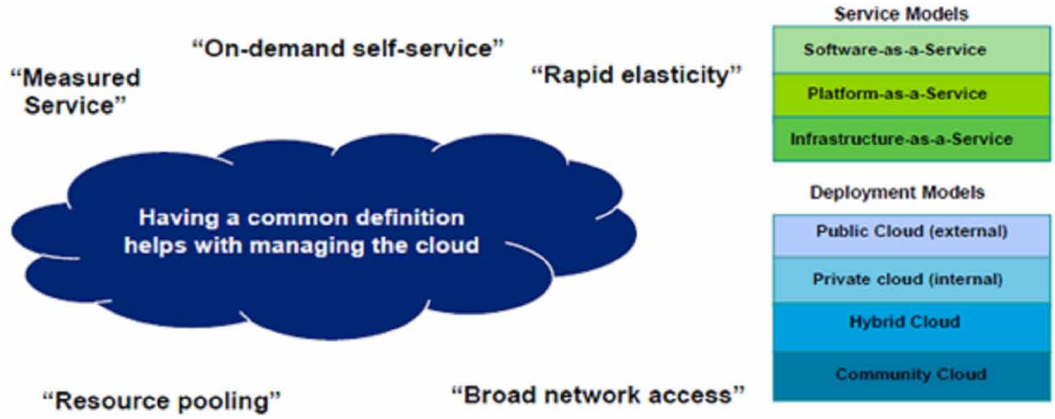
Figure 1. Cloud model



Infrastructure as a Service

Infrastructure as a Service (IaaS) providers allow their customers access to different kinds of infrastructure. The provider typically provides this service by dividing a very large physical infrastructure resource into smaller virtual resources for access by the consumer. Sometimes the service provided is a complete virtual machine with an operating system. In other instances the service provided is simply for storage, or perhaps a bare virtual machine with no operating system. In cases where the operating system or other software is included, the cost of the required license is either amalgamated into the cost for the service, or included as an additional surcharge. IaaS providers are often service providers to other cloud providers (see Integrator).

Platform as a Service

Platform as a Service (PaaS) providers extend the software stack provided by IaaS to include middleware. Middleware generically refers to software such as a DB2 database, or runtime environments such as a Java Runtime Environment (JRE) or a Websphere application server. This middleware is a prerequisite to running more sophisticated applications, and provides a rich operating environment for the application to exploit. PaaS providers have two methods in which they facilitate the extra capacity needed for a large multitenant system.

Software as a Service

Application as a Service, or Software as a Service (SaaS) providers as they are more commonly known, typically provide a rich web-based interface to their customers. The customer, in most cases, is completely abstracted from the nuances of the application running behind the scenes. Tenant separation is often done at the application layer, leaving a common application, platform, and infrastructure layer underneath.