

Silver Lining L.L.C.
WHITE PAPER ON CLOUD COMPUTING FOR ONLINE RETAILERS

Meredith Binder, HCDE 424
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Introduction

Online retail customers demand fail-proof service. The competition for online customers is fierce. If a site is down, information lost, or security questioned, a customer's loyalty can instantaneously shift to a competitor, forever.

Cloud computing is a general term for hosted services provided over the Internet. When services are provided through a cloud, the end-user does not have knowledge of the physical location nor of the configuration of the system that provides the service. Cloud computing can provide computational services, software applications, and/or data storage and retrieval.¹

Cloud computing provides many advantages over in-house IT departments. Cloud services are scalable. A customer pays only for the amount of service used on a monthly basis, allowing for flexibility without having to invest in enough hardware to provide for the anticipated maximum need. Cloud computing also provides data back up and recovery, further reducing the need for in-house hardware.

Specific Challenges Faced by Online Retailers

Online retailers require a large amount of data to be stored and archived. The storage needs are subject to wide seasonal shifts, making it expensive to maintain adequate data storage capacity throughout the year. Kenshaw Co., a digital marketing software company, reported that online sales increased as much as 40% in 2011 during the peak month of December.²

Because of the sensitive nature of the customer's personal information, which includes credit card numbers and mailing addresses, reliable security and data backup is also of primary importance.

All sales and related information must be backed up and easily restorable. One failure could cause millions of customers to shift loyalties. Not only can a company lose sales during a website downtime, but it is also likely to lose the customers forever.

How Cloud Computing Works

After a company contracts with a cloud service provider, cloud users, i.e., individual employees, continue to work from their desktop computers. These computers, however, now rely on the cloud computing to provide applications and to store and retrieve data. The users' desktop computers cease to work from internal hard drives or on-site servers.^{3,4}

Clients use the Internet to connect to the cloud as shown in Figure 1. The service providers are a conglomeration of computer hardware and software products that typically include multi-core processors, cloud-specific operating systems, and data storage.⁵

The service providers constantly shuffle data and application storage among multiple servers to accommodate the dynamic storage needs of clients and minimize response time. Clients' desktop computers access data and applications through virtual computers, depicted on the right side of Figure 1, that automatically link to current storage areas. The movement of information between cloud servers is invisible to cloud users.

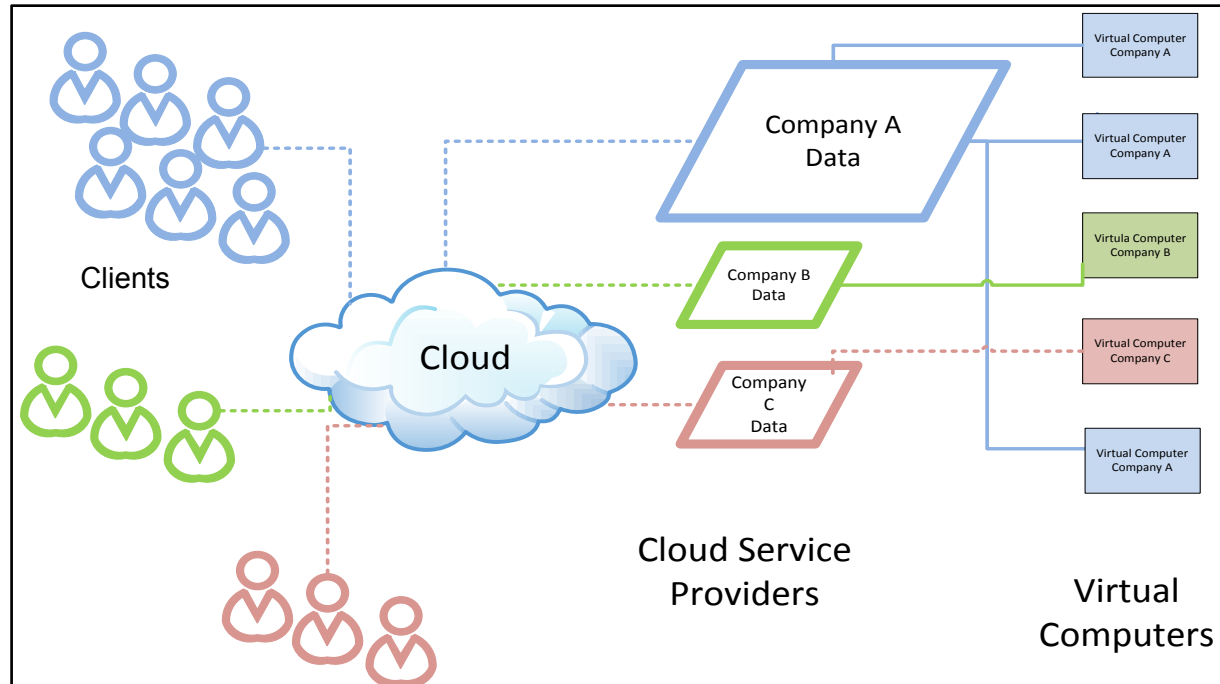


Figure 1: How Cloud Computing Works

Benefits of Cloud for Online Retailers

Cloud computing has three distinctive characteristics that make it a good solution for online retail:

- Scalable
- Sold on-demand
- Service is fully managed by the provider

Cloud service is scalable; the cloud automatically adjusts to the capacity demands of the customer. Online retailers don't need to plan for seasonal surges and unpredicted spikes in demand. Cloud scalability saves time and money in project planning and management. Cloud scalability also abates project risks pertaining to equipment allocation.

Services are sold on-demand, by either the minute or the hour depending upon your provider. You pay for only as much capacity as you need. Capacity is added as soon as it is required and released as soon as the need diminishes.⁶

The service is fully managed by the provider. Online retailers don't need to buy or maintain the hardware necessary to handle seasonal surges. Companies can save considerable costs on hardware if their cloud service providers effectively meet their needs.⁶

Key Features

In choosing a cloud service provider you should consider; the level of services available; response time; and data security, backup, and recovery.

Levels of Service

The three levels of service available through cloud providers are shown in Figure 2:

- Software-as-a-Service (**SaaS**)
- Infrastructure-as-a-Service (**IaaS**)
- Platform-as-a-Service (**PaaS**)

The Software as a Service (SaaS) model is designed for the end-user. The cloud service interacts with the user through a front-end portal. The cloud service provider supplies the hardware and software infrastructures. SaaS applications include: Web-based email, inventory control, and database processing. Because the service provider hosts both the application and the data, the end user can access service from anywhere.⁶

The Infrastructure as a service (IaaS) model is designed for customers who want to maintain their own software environments. The service cloud provides only hardware. The customer's network engineers then access the hardware through a virtual machine to provide their own software services.⁶

The Platform as a Service (PaaS) model provides any level of service in between the SaaS and IaaS models. The cloud service provider will provide the hardware infrastructure, data storage and an agreed upon level of software framework. In the PaaS model, the cloud provider sets up hooks and tools for the in-house software applications developers.

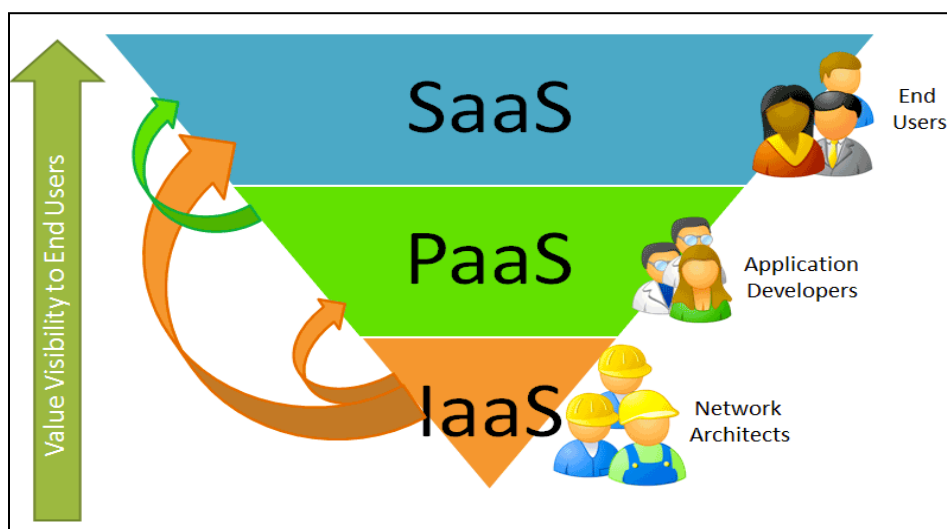


Figure 2: Cloud Provider Service Levels: SaaS, PaaS, and IaaS

A good cloud service provider will help you assess your cloud needs and choose the appropriate level of service

Response Time

In 2011 Compuware conducted a global survey of cloud response time using a sample group of 56 providers. The survey results showed an average response times of 2.32 seconds to 19.03 seconds to reach anywhere in the world.⁷

The survey also showed that response times for a single provider often varied in direct relationship to the geographic distance between the customer and the provider. When choosing a cloud provider, online retailers should inquire about the response times for all of the geographical areas where your company operates.⁷

Data

Lost or stolen data will not only affect an online retailer's immediate sales but also diminish the company's reputation. Online retailers should make sure that a service provider keeps data safe and has resources to recover data in case of an emergency.⁶

It is prudent to choose a cloud provider that backs up data in multiple locations to ensure business continuity and timely disaster recovery.⁸

Cloud data security is controlled through limited access and encryption. A provider should use a unique encryption for each customer.⁸

Our Company

Silver Lining was formed in 2005 for the purpose of providing cloud services, for small to medium sized businesses. The typical *Silver Lining* customer in 2005 was a one to three million-dollar business requiring a maximum of 100 GB of memory over the course of a year.

In 2011 *Silver Lining's* business plan was updated to include a plan to serve the needs of online retail companies:

- Expanded operations to accommodate more IaaS and PaaS customers
- Increased storage capacity to 200 TB (10^{12} bytes)
- Implemented automatic back-up
- Enhanced security features were added to handle sensitive data
- Expanded customer service hours of operation to provide around-the-clock service

Our 100 IT professionals can provide any level of service your company needs –a full SaaS, PaaS, or IaaS. The current capacity of 200 TB makes us one of the largest clouds in the world. We have the capacity to scale as quickly and as much as our customers need.

We take data security seriously. The contents of the *Silver Lining* cloud are automatically backed up every 30 minutes. In addition to our own back-up system, a third-party service provider takes a daily snapshot of our cloud. This extra backup assures that your data is safe.

Silver Lining provides a unique encryption for each customer. Only your company has the key to your encryption. We are happy to provide new encryptions on a regular basis for our customers desiring additional reassurance against hackers.

Our average response time for all geographic locations is 2.41 seconds. Depending upon the distance transmitted, our customers are assured of a response time of 0.50–2.76 seconds.

If our customers experience any problems, our customer service hotline operates around-the-clock, seven days a week.

To get on the Silver Lining cloud, call our customer service hotline:

206-555-7960

A customer service representative will assess your company's needs and provide a cloud plan and cost estimate within three business days.

Citations

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