



Software as a Service

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Abstract.

This special issue of the cluster computing journal will feature articles that discuss tools and applications for cloud computing. Specifically, it aims at delivering the state of-the-art research on current cloud computing tools topics, and at promoting the cloud applications discipline by bringing to the attention of the community novel problems that must be investigated. Software as a Service (SaaS) is a rapidly growing model of software licensing. In contrast to traditional software where users buy a perpetual-use license, SaaS users buy a subscription from the publisher. Whereas traditional software publishers typically release new product features as part of new versions of software once in a few years, publishers using SaaS have an incentive to release new features as soon as they are completed. We show that this property of the SaaS licensing model leads to greater investment in product development under most conditions. This increased investment leads to higher software quality in equilibrium under SaaS compared to perpetual licensing. The software publisher earns greater profits under SaaS while social welfare is also higher.

1 Introduction

Cloud Computing is a recent trend in information technology and scientific computing that moves computing and data resources to large data centers. , Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction. cloud computing is characterized as a computing environment where computing needs by one party can be accessed via Internet from external servers that do not belong to the user's company but to the cloud owner or to a cloud federation, allowing the user to get resources elastically as they change. Thus, cloud computing moves computing and data away from small personal or company systems to large data centers, whose services are provided in a payper-use model. Cloud Computing has attracted a lot of attention in recent times. The me-

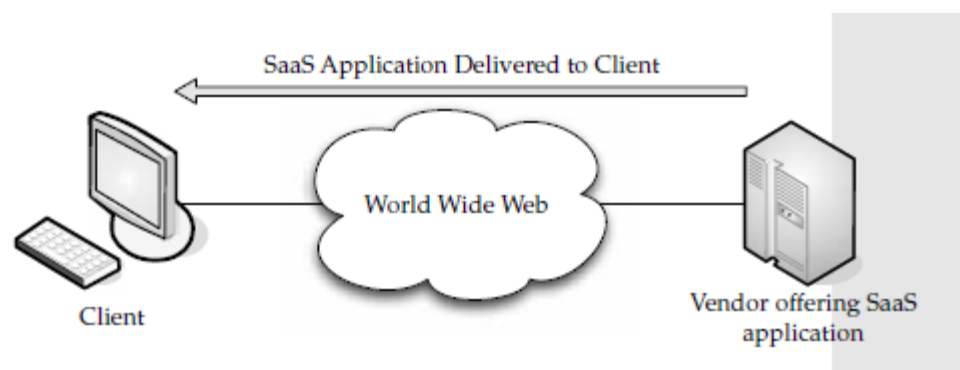
dia as well as analysts are generally very positive about the opportunities Cloud Computing is offering. In May 2008, Merrill Lynch (2008) estimated the cost advantages of Cloud Computing to be three to five times for business applications and more than five times for consumer applications. According to a Gartner press release from June 2008, Cloud Computing will be “no less influential than e-business” (Gartner 2008a). The positive attitude towards the importance and influence of Cloud Computing resulted in optimistic Cloud-related market forecasts. In October 2008, IDC (2008b) forecasted an almost threefold growth of spending on Cloud services until 2012, reaching \$42 billion. Same analyst firm reported that the cost advantage associated with the Cloud model becomes even more attractive in the economic downturn (IDC 2008b). Positive market prospects are also driven by the expectation that Cloud Computing might become the fundamental approach towards Green IT. Despite of the broad coverage of Cloud Computing in commercial press, there is still no common agreement on what exactly Cloud Computing is and how it relates to Grid Computing. To gain an understanding of what Cloud Computing is, we first look at several existing definitions of the term. Based on those definitions, we identify key characteristics of Cloud Computing. Then we describe the common architecture and components of Clouds in detail, discuss opportunities and challenges of Cloud Computing, and provide a classification of Clouds. Finally, we make a comparison between Grid Computing and Cloud Computing.

All these definitions have a common characteristic: they try to describe and define Cloud Computing from the perspective of the end users and their focus is on how it might be experienced by them. According to these definitions, core feature of Cloud Computing is the provision of IT infrastructure and applications as a service in a scalable way.

“Cloud Computing refers to both the applications delivered as services over the Internet and the hardware and systems software in the datacenters that provide those services. The services themselves have long been referred to as Software as a Service (SaaS). The datacenter hardware and software is what we will call a Cloud. When a Cloud is made available in a pay-as-you-go manner to the general public, we call it a Public Cloud; the service being sold is Utility Computing. We use the term Private Cloud to refer to internal datacenters of a business or other organization, not made available to the general public. Thus, Cloud Computing is the sum of SaaS and Utility Computing, but does not include Private Clouds. People can be users or providers of SaaS, or users or providers of Utility Computing.” (Armbrust et al. 2009)

2 What is Software as a Service (saas)?

is an application hosted on a remote server and accessed through the Internet.



An easy way to think of SaaS is the web-based email service offered by such companies as

- ❖ Microsoft (Hotmail)
- ❖ Google (Gmail)
- ❖ Yahoo! (Yahoo Mail).

Each mail service meets the basic criteria: the vendor (Microsoft, Yahoo, and so on) hosts all of the programs and data in a central location, providing end users with access to the data and software, which is accessed across the World Wide Web.

3 SaaS can be dividing into two major categories

1- Line of business services:

These are business solutions offered to companies and enterprises .They are sold via a subscription service. such as :

- supply-chain management applications.
- customer relations applications and similar business-oriented tools.

2- Customer-oriented services:

These services are offered to the general public on a subscription basis. More often than not, however, they are offered for free and supported by advertising. Such as:-

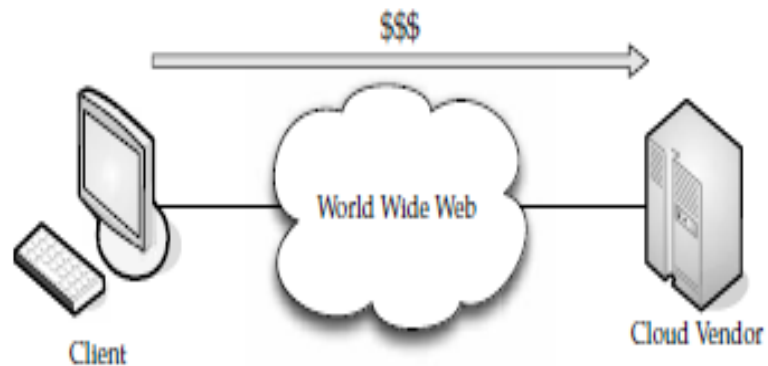
- web mail services.
- online gaming, and consumer banking.

Advantage :

- ❖ There's a faster time to value and improved productivity, when compared to the long implementation cycles and failure rate of enterprise software.
- ❖ There are lower software licensing costs.
- ❖ SaaS offerings feature the biggest cost savings over installed software by eliminating the need for enterprises to install and maintain hardware, pay labor costs, and maintain the applications.
- ❖ SaaS can be used to avoid the custom development cycles to get applications to the organization quickly.
- ❖ SaaS vendors typically have very meticulous security audits.
- ❖ SaaS vendors allow companies to have the most current version of an application as possible.

4 Software Considerations:

- ❖ the user purchases a software package and license by paying a one-time fee. The software then becomes the property of the user who bought .
- ❖ Support and updates are provided by the vendor under the terms of the license agreement.
- ❖ SaaS, has no licensing. Rather than buying the application, you pay for it through the use of a subscription, and you only pay for what you use. If you stop using the application, you stop paying .
- ❖ the software is not installed on the user's computer You can access via your web browser.



You only pay for the applications when you use them.

5 Vendor Advantages:

- ❖ financial benefit is the top one—vendors get a constant stream of income, often what is more than the traditional software licensing set.
- ❖ vendors can fend off piracy concerns and unlicensed use of software.
- ❖ benefit more as more subscribers come online. They have a huge investment in physical space, hardware, technology staff, and process development.

6 Why is saas ?

there are a number of reasons that are driving more cloud vendors to offer SaaS

1- Popularity :-

SaaS has become big buzz to cloud computing and trendy.

2- Software Vendors Love it:-

- ❖ more and more vendors are on board for SaaS.
- ❖ SAP and Oracle have joined the ranks of SaaS developers.
- ❖ there are hundreds of smaller developers cranking out SaaS offerings.

3- SaaS Platforms

There are many SaaS platforms out there, and they grow each month For example:-

- Oracle is developing its own SaaS platform
- Microsoft is working to make their own applications SaaS-ready.

4- Virtualization :

Virtualization makes it easy to move to an SaaS system. One of the main reasons is that it is easier for independent software vendors (ISVs) to adopt SaaS is the growth of virtualization

7 SaaS and SOA

A service-oriented architecture (SOA) :

is one in which IT supports the business processes that cover current and emerging requirements to run the business end-to-end. This ranges from electronic data interchange (EDI) to online auctions. By updating older technologies.

SOA benefits:

- ❖ Internet-enabling EDI-based systems—companies can make their IT systems available to internal or external .
- ❖ SOA unifies business processes by structuring large applications as a collection of smaller modules known as “services” .
- ❖ SOA presents a design framework for realizing rapid and low-cost system development and improving total system quality.
- ❖ SaaS and SOA are quite similar; what they have in common is that they use a services model.

9 companies offering SaaS

1-QuickBooks:-

QuickBooks Online gives small business owners the ability to access their financial data whether they are at work, home. QuickBooks Online features include

- The ability to access financial data anytime and from anywhere, 24 hours a day, seven days a week.
- Financial data is automatically backed up every day and is stored on Intuit’s firewall-protected servers.
- No software to buy, install, or maintain and no network required. The software is hosted online.
- Write and print checks.
- Easy accounts receivable and accounts payable

2-Google

Google's SaaS offerings include Google Apps and Google Apps Premier Edition. The Premier Edition includes hosted services for communication and collaboration designed for businesses of all sizes. Google Apps, launched as a free service in August 2006, is a suite of applications that includes:-

- Gmail webmail services
- Google Calendar shared calendaring
- Google Talk instant messaging
- Voice over IP
- The Start Page feature for creating a customizable home page on a specific domain.
- Google Docs and Spreadsheets
- Gmail for mobile devices on BlackBerry
- Application-level control

Google Apps Premier Edition now joins Google Apps Standard Edition and Google Apps Education Edition, both of which will continue to be offered for free to.

Google Apps Premier Edition has the following unique features:-

- **Per-user storage of 10GB.**
- **APIs for business integration :-**
- APIs for data migration, user provisioning, single sign-on, and mail gateways enable businesses to further customize the service for unique environments.
- **Uptime of 99.9 percent** Service level agreements for high availability of Gmail, with Google monitoring and crediting customers if service levels are not met.
- **Low fee**
Simple annual fee of \$50 per account

3-Microsoft

Microsoft Office Live Small Business:-

Microsoft Office Live Small Business offers features including:-

- Store Manager is a hosted e-commerce service that enables users to easily sell products on their own web site.
- Custom domain name and business email is available to all customers for free for one year .
- E-mail Marketing beta .
- Web design capabilities .
- sending email newsletters and promotions simple and affordable.
- Contact management software for performing basic customer relationship management (CRM).
- Support for Firefox 2.0 means Office Live Small Business tools and features are now compatible with Macs.
- Synchronization with Microsoft Office Outlook .

10 Industries

But it isn't just the big names like Amazon and Microsoft offering general SaaS. Different industries have their own players that offer unique, industry-specific SaaS applications.

10-1 Healthcare

While it seems risky to have health files on the cloud, two prominent systems provide the security for such a solution. Both Microsoft's(HealthVault) and (Advanced MD) offer cloud solutions for the healthcare industry

10-1-1 HealthVault

Microsoft launched its Microsoft HealthVault, a software and services platform aimed at helping people better manage their health information. The company says its vision is for ways in which HealthVault can bring the health and technology industries together to create new applications, services, and connected devices that help people manage and monitor their personal health information, including weight loss and disease management, such as for diabetes.

Industry Support

HealthVault offers more than 40 applications and devices from the following organizations

- American Diabetes Association
- American Heart Association
- American Lung Association
- American Stroke Association

10-1-2 Advanced MD

It is a medical billing software company providing a medical billing software product for physician office and billing office management can be used at anytime, anywhere one can get on the Internet

2-1 Collaboration—WebEx

There are dozens of different collaboration applications on the market, and a big name in cloud collaboration is WebEx. WebEx was acquired by Cisco Systems in 2007. The WebEx collaboration suite consists of five applications, each designed for specific collaborative business processes. The suite consists of five components

- WebEx Meeting Center
- WebEx Event Center
- WebEx Sales Center
- WebEx Training Center
- WebEx Support Center

2-2 Construction—CMiC

CMiC offers its construction software solutions for the architectural, engineering, and construction industry. CMiC's offering—CMiC Emerging—provides for general contractors, saas applications.

CMiC Emerging is divided into three sections:-

- The first level, Getting Started, is intended for smaller contractors, and includes financial and project management applications, human resources, and document management.
- The second level, On The Grow, adds more applications, including CMiC CRM.
- third stage is Emerging and includes CMiC Collaboration and CMiC Imaging and Workflow.

11 Retail—Epicor

Epicor Software Corporation offers its Retail SaaS solution for retailers. The SaaS application gives small and medium specialty and department store retailers a delivery method that reduces capital investment and implementation requirements. Epicor's integrated Retail SaaS solution is a pay-as-you-go model that consists of merchandising, allocation, replenishment, business intelligence, POS, sales audit, and CRM. Epicor SaaS is deployed on IBM's SurePOS 700 series hardware. SaaS services include

- hosting of all applications on secure redundant servers;
- the procurement and management of wide area networks
- helpdesk support
- system maintenance, including data security and backups
- disaster recovery
- and ongoing updates and upgrades to the latest Epicor software releases.

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