Cloud

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CRA's Cloud Solutions

Ins and Outs of the Cloud Computing Stack
White Paper

Cloud computing has gained significant popularity over the last few years because of its agility, flexibility, affordability, and scalability. Although not many business owners completely understand the full potential of the Cloud, they could be leveraging this trend without realizing it.

Cloud computing is generally broken down into four different types of service delivery: SaaS, PaaS, IaaS, and DaaS. On each cloud model, there are several business advantages to consider:

Software as a service (SaaS)

Years ago companies had to endure the expenses of having to pay large upfront fees for applications installed locally on their systems. Most of which couldn't be used anywhere else besides the particular computer where they were installed.

Today, many of these applications can be accessed through the Internet by paying only for the services needed monthly. This is where the name Software as a Service comes from. The new aged web applications are installed on a vendor's server and the data is streamed via the internet. The business leveraging SaaS offerings only has to pay for the number of active users on a monthly basis. That means, no longer will businesses be stuck buying licenses and bulk to have the majority lay dormant. Although it might seem that the application and its data are on the end user computer, the actual process is occurring within the vendor's data center and what the end user sees is just being streamed to their screen.

Characteristics of SaaS

» SaaS offers high scalability giving room to utilize more or fewer features of the application.

» There is minimal to no customization required to the actual application.

» There is no need to locally install software.

» Users only pay for the number of licenses they need.

» The vendor ensures the application's uptime, performance, updates and patch management.

» End users have the ability to utilize the application from anywhere at any time with internet connection.

SaaS for your business

SaaS works well for all businesses, especially when they need the most

common commercial licenses for example email, accounting, clients or employees records applications.

Some examples of SaaS are Office365, QuickBooks, and Salesforce CRM. If you have used these web-apps before, you might have an idea of what is SaaS already. For instance, a commercial real estate company needs Office365 for 5 employees. They purchase these licenses from Microsoft, and Microsoft is now in charge to storage the end users' data and maintaining the application performance. The end users can log in to their Office365 account from their phone, computer or tablet, and manipulate the data in this application as long as they are connected to the Internet.

Things to consider before jumping into SaaS

» Choose a trusted vendor that has been in the market for a while. It is important to do proper research.

» The internet connection should be fast and stable to support all the users in the network.

» The contract should specify the service level as well as the support level.

» The vendor should specify if there is migration support in case there is a need to switch providers in the future.

Platform as a Service (PaaS)

PaaS solutions operate at a slightly deeper level than SaaS. PaaS is mainly targeted for developers who need runtime environment for application code. Depending on the platform, developers can use any programming language like Python, Ruby, and Java Script among others. PaaS is designed to support the complete web application lifecycle: building, testing, deploying, managing, and updating. In some cases, depending on the complexity of the application, developers might make the decision to move the application to an IaaS model for further customization.

Characteristics of PaaS

» Allows developers to frequently change or upgrade operating system features

» Users can collaborate on developing the same project.

» Easier data integration with web services.

» The underlying layers of hardware and software are completely managed by the vendor, so customers don't have to worry about operational aspects outside their core competencies.

PaaS for your business

This service model works for any business that doesn't want to worry about the costs of resources for their servers that they want to build their application on. For example, a startup company who has a group of developers working on a software project needs a platform to write the code and run the application using built-in components with the business enduring the upfront cost of building out an infrastructure to support these tasks. PaaS is also used to run a larger company's proprietary software and developers need to be constantly monitoring and upgrading in order to have better function of their data. For example, Salesforce.com's Force.com provides an enterprise customer relationship management (CRM) platform.[1]

Things to consider before PaaS

» The provider could stop supporting the programming language, and users will need to migrate their data and application to another provider.

» There should be a contingency plan if the application traffic continues to grow.

» In case you switch providers, determine what will be needed to migrate your application with minimum downtime.

» The provider should offer information about the IOPs (Input/Output Operations per Second) *The IOPS measures the ability of the system to perform an action. In this case how fast the host is going to make the application available to the end-user.

Infrastructure as a Service (IaaS)

IaaS can be viewed as the lowest possible level of service provisioning in cloud computing. IaaS provides access to the virtual server, electronic representations of actual devices, with little or no pre-configuration, utilization restrictions, or actual physical resource planning required. The client is completely removed from the physical layer of hardware while still enjoying many of the same advantages of running an actual physical machine. IaaS offers raw, malleable computing power with Cloud scalability and elasticity.

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1 http://searchcloudcomputing.techtarget.com/definition/Platform-as-a-Service-PaaS

Characteristics of IaaS

» The infrastructure comes with basic and common operating systems and users can choose different operating systems from vendor to vendor.

» There are minimal constraints on customization and compatibility.

» Most vendors use the pay-as-you-go model. Therefore, pricing is variable and you only pay for what you use.

» The provider usually manages backups and resiliency.

IaaS for your business

This model of Cloud computing will work best for large business or Enterprises. For example, companies that need phone services don't need to buy the phone box piece of infrastructure, but instead they will 'rent' this infrastructure from a provider and all the company has to do is set up their phone accounts and voicemail. Another example, and one of the most popular of IaaS, is virtual servers. When companies continue to grow, their on-premise hardware becomes less and less powerful, they can deploy most of their IT environment like websites, massive sets of data, or applications to a virtual server. This way the data can scale up without restrictions when it's needed and it will be safe when a disaster happens. Some of the most popular providers of IaaS are Amazon Web Services (AWS), Windows Azure, and IBM SmartCloud Enterprise.[2]

Things to consider before IaaS

» Users should monitor their IaaS environments closely to avoid being charged for unauthorized services.

» It requires more in-house expertise on the client-side to configure and program the virtual machines or containers to accomplish the tasks required, still less than having the servers sitting in-house.

» Bandwidth is really important depending on the amount of data you are uploading to the Cloud.

» Security might be a delicate topic with this service model. Make sure to read the vendor policies carefully.

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2 http://searchcloudcomputing.techtarget.com/definition/Infrastructure-as-a-Service-IaaS

Desktop as a Service (DaaS)

DaaS can be viewed as a hybrid between IaaS and PaaS cloud solutions. DaaS providers offer complete, hosted desktop solutions, mimicking a physical computer instance designed to be used by a single user as their primary work computer. Although it is accessed over the Internet, the virtual machine operates in all other respects exactly like the computers that users typically find humming away beneath their desks in the office.

Characteristics of DaaS

» Migration to another platform is easy.

» This model of cloud computing is easy to use compared to other models.

» End users can experience their desktop operations from any mobile device with internet access.

» No data is stored on the local machine.

DaaS for your business

DaaS is ideal for midsized business. The advantage of DaaS is that businesses are relieved of the responsibility for buying, configuring, and maintaining those physical workstations themselves. The DaaS provider handles all aspects of provisioning the virtual desktops. Yet at the same time, the user experience is virtually unchanged, saving immense costs in retraining.

Things to consider before DaaS

» Latency can be one of the major downsides of DaaS.

» This service model might not be a good fit for those who work high-performance graphics applications.

» DaaS is only good for basic end user work, especially those who are on the go.

Overall, keep in mind that the cloud is a very complex. While technology is always improving, the lines that separate this "as a Service" model become blurred, which allows businesses to take advantage of these service combinations.

Even if a business has tried one of these cloud services models before, it shouldn't leave behind the idea of exploring all of them. With the right provider, businesses can have the ability to customize these cloud services and have them tailored to their needs. Businesses can experience an increase in employee productivity and significant costs savings by having the right Cloud model in place.

CRA Cloud Solutions

CRA offers Cloud services spanning the gamut of types. Public, private, and hybrid cloud infrastructure solutions, Office365 customization, sync and share file solution, DaaS, Hosted Desktop services, and hosted unified communications platforms are all available, together with consulting to help clients make the right choice of services and to integrate them with existing platforms.

In particular, Cloud offers businesses increased agility, elasticity, collaboration, and location independence over traditional IT solutions.