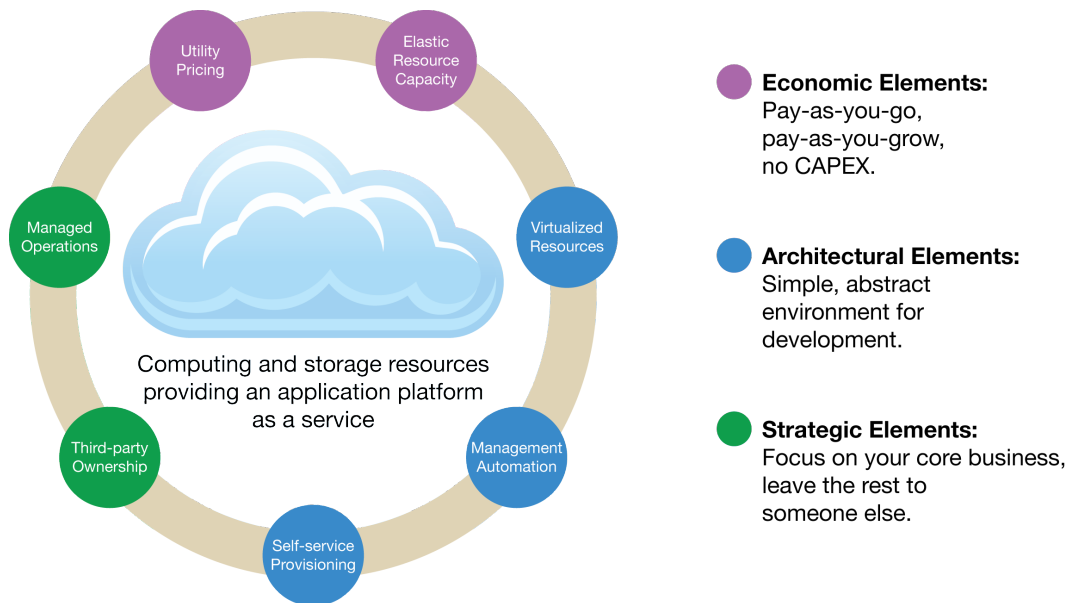


An Intalio White Paper

Ismael Chang Ghalimi, CEO — May 2010

Benefits of Cloud Computing

Cloud computing brings benefits across three categories: economic, architectural, and strategic. First, it helps reduce IT costs and shift budgets from CAPEX to OPEX. Second, it improves the experience of end-users. Third, it helps companies focus on their core competencies.



Utility Pricing

Cloud Computing is first and foremost defined by its utility-based pricing model. Users of the platform consume computing and storage services on demand and pay for them as they go, using an Operating Expenses (OPEX) budget, instead of paying for infrastructure resources up-front using Capital Expenditures (CAPEX). For example, a Director of Sales can create user accounts for 10 of her sales people on some on-demand CRM application by using her corporate credit card, without having to ask the CFO for a budget, and without having the IT Department initiate a requisition process for a new server.

Elastic Resource Capacity

Cloud Computing differs from more traditional forms of distributed computing in the way it scales computing and storage resources up and down. Instead of tapping from a fixed set of resources, users can add or remove capacity at will, almost instantaneously, and only pay for what they actually use. While utility pricing let users pay as they go, elastic resource capacity let them pay as they grow (or shrink). Following our previous example, the Director of Sales can add 5 more accounts for the sales people that were recently added to her team following the merger with another company, without having to worry about adding new servers or buying more hard drives.

Virtualized Resources

Cloud Computing would not be possible without virtualization, not for arcane technical reasons, but for one obvious business requirement: the need for multi-tenancy. In order to benefit from economies of scale, cloud computing is predicated upon the sharing of a common infrastructure by multiple groups of users, often referred to as tenants. And multi-tenancy can only be achieved through some kind of virtualization, either at the database level (Salesforce.com), application server level (Google AppEngine), kernel level (Red Hat), or CPU level (Amazon EC2). Unlike grid computing, which often pooled and aggregated distributed computing resources for the purpose of handling very large computing jobs that could not fit or would take too long to complete on a single server, Cloud Computing creates virtual slices of resources from clusters of servers and storage devices, perfectly sized to fit the specific needs of multiple users. Such virtual resources can be small or large, and scale elastically as user needs evolve over time. In our previous example, virtualization means that the CRM application used by our sales team is served by an infrastructure also used by many other tenants, all securely isolated from each other.

Management Automation

Cloud Computing platforms differ from traditional corporate data-centers in one major way: standardization. While your typical data-center will usually host every versions of every operating systems and databases known to man, thereby creating massive management overhead, most Cloud Computing platforms usually standardize on a single kind of CPU (x86-based predominantly), a single hypervisor (VMware, Xen, etc.), a single operating system (some Linux distribution usually), and a single database (MySQL is the dominant player there). This standardization has an obvious business benefit: dramatic reduction of operating costs through aggressive management automation. Following our previous example, the sales team's CRM application is served by a single infrastructure managed by a team that is orders of magnitude smaller than the aggregated team that would be required to manage the systems used by all tenants if every one of them were to use their own infrastructure.

Self-service Provisioning

Cloud Computing and Software as a Service are often compared to the Application Service Provider (ASP) model that became popular for a brief period of time in the late 90's. One element makes them fundamentally different from each other though: self-service provisioning. With the ASP model, dedicated servers had to be provisioned for every customer, which meant that technical resources had to be involved every time a new customer would be signed. Hefty setup fees would be added to the bill, and the service would become operational within a few days at best. With Cloud Computing, business end-users like our Director of Sales can provision applications and user accounts in a few mouse clicks, and these become available instantly.

Third-party Ownership

Cloud Computing is also a new form of outsourcing. Customers trying to focus the allocation of scarce capital resources to their core businesses soon realize the benefits of moving IT infrastructure off their balance sheet. Furthermore, as technology evolves and leading service providers roll-out ever larger data-centers, the acquisition and operation of state-of-the-art data-center facilities makes less and less sense from an economic standpoint for most organizations. Cloud Computing is all about the transfer of ownership for such resources to a third-party that specializes in their deployment. According to our previous example, the company using the CRM application managed by some service provider does not own any infrastructure beyond a few laptop computers. Everything else, from data-centers to servers and storage systems is owned and operated by the service provider.

Managed Operations

Cloud Computing is finally about allocating human resources to tasks that will directly impact the business, rather than simply managing the infrastructure that supports it. As such, Cloud Computing advocates a model according to which the IT infrastructure is not only owned by a third-party, but managed by the third-party as well. Software upgrades, data backups, and the countless other tasks required to manage mission-critical business applications on a day to day basis become the responsibility of a third-party, according to well-defined Service Level Agreements. Following our example, the Director of Sales discovered this morning the umbrella adorned logo for the Summer 2010 version of her favorite CRM application, without having taken any part in the software upgrade process that happened over the weekend. In the cloud, ignorance is bliss.



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